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SCIENCE AND INDUSTRY MUSEUM

Lower Byrom Street Gateway

Design and Access Statement

PLANIT

Document Control

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1
INTRODUCTION

Structure of this Report

This report summarises works to the entrance of the Science and Industry Museum, along Lower Byrom Street, as part of a wider public realm strategy for the museum. Focusing on ensuring pedestrian safety and overall improvement works to establish accessible and compliant routes.

The report is structured into five sections to provide a comprehensive overview of the project design proposals:

- **Chapter 1 - Introduction**: Sets the project background and objectives.
- **Chapter 2 - Site Context:** Considers the broader context of the site and detailed site analysis, including adjacent developments, heritage significance,
- **Chapter 3 - Strategic Summary:** Provides an overview of this key area, as considered in the context of the wider masterplanning strategy for the Site.
- **Chapter 4 - Detail Design Landscape Proposals**: This chapter presents comprehensive design proposals for the Lower Byrom Street Gateway. It opens with an analysis of the key characteristics of the area, followed by a summary of the design development process. The discussion then explores material considerations, including hard landscaping, drainage, utilities, street furniture, and planting schemes. The chapter concludes with a presentation of the emerging design proposals.
- **Chapter 5 -Access**: This chapter sets out the development of access and circulation strategies across the site, culminating in the final design proposals. It addresses the integration of pedestrian and service movements within the public realm, and considers how the proposed level strategy supports inclusive and accessible routes throughout the area.
- **Chapter 6 -Framework Management Plan**: The final chapter presents a framework for long-term site management, offering a systematic approach to guide the oversight, maintenance, and ongoing development of the area over time.

Project Background

In 2022 A Public Realm Options and Feasibility Study was commissioned by the Science Museum Group. The study sought to enhance the quality of the Science and Industry Museum Site through the potential of its external spaces, or public realm.

The heart of the project was to consider the Site through the public realm, allowing consideration to the collective nature of the Site, the relationships between the different buildings, spaces and experiences and the wider connections.

Planit and Jane Simpson Access were appointed to undertake the Public Realm Feasibility works proposals which focussed on complementing the Museum's offerings through improvements to visitor experience, particularly in terms of accessibility around the estate. Key to the design development were the outputs aimed at producing a strategy that identified a range of potential Site interventions to complement the wider changes within the Museum's estate.

Building on this initial strategy, in 2023, Planit partnered with a consortium of consultants, including Buttress Architects, Buro Happold Engineers, Deloitte Planning Consultants, Appleyard and Trew, KOK Surveyors, and Rachel Hacking Ecology, to advance the project. Together, they developed detailed landscape proposals for multiple phases including: the Upper Yard, the Station Approach; the temporary Route in the Goods Office Yard; and the former location of the Vehicle Ramp. Two of these spaces are undergoing construction at present.

In a separate commission, Planit was asked to review the Lower Byrom Street entrance area and provide a design response to include improvement to DDA accessibility and safety to the main museum and cafe entrance.

2
SITE CONTEXT

Science and Industry Museum in the City

The Science and Industry Museum is situated within a prominent historic Site in Manchester.

It is the place of the world's first steam powered inter-urban railway linking Manchester to Liverpool, designed to transport passengers, as well as imported goods which arrived in the flourishing port of Liverpool including slave-produced goods such as cotton. The museum is formed by a number of railway warehouses and ancillary buildings and there the public realm sits within the core space between the built forms.

The Science and Industry Museum is a key focal point in this area of the City and acts as a key link between a number of cultural destinations. The Museum is situated on the western side of Manchester City Centre between the River Irwell and Deansgate. Water Street to the west provides the main connection between Salford and Manchester. This street is also subject to significant alterations with the development of the new Aviva Studios building.

Train Stations providing regular train services to Manchester are at walking distance to / from the Site. Deansgate Train Station and Metrolink are within 5 mins walking distance, providing connections to / from the region and Greater Manchester. Salford Central and Victoria Stations are within 15 mins walking distance, providing regional and national connections.

The Museum's heritage as the Site of the first inter-city railway in the world, shapes the inherent character and built form of the Site today, such as the level changes across the Site, the red brick materiality and features such as arches, metal colonnades, cobbles and tracks. These elements bear witness of what was once the Station and working yards.

The Site is relatively self-contained within the surrounding built context, due to the nature of the Site's historical development and the presence of a boundary wall, surrounding the extent of the Site. The boundary to the north is more porous as it was once integral to the whole Site, currently security fences delineate the different ownerships and access.

The Site is located within an area of cultural destinations, including the newly developed Aviva Studios, Castlefield Viaduct, Castlefield Basin, Castlefield Bowl, St John’s Gardens, Spinningfields and the commercial district of Deansgate.

Snapshot of the Place

The museum is part of a wider complex of transportation and storage Warehouses, viaducts, railway lines and arches, which bear witness to the industrial revolution.

To understand Science and Industry Museum as a place, we need to understand its surrounding context.

Science and Industry Museum features

1. Power Hall and office
2. New Warehouse
3. 1830 Warehouse
4. 1830 Station
5. Station House
6. Viaduct and Pineapple Line and Colonnades
7. Upper level (outside of Science and Industry Museum ownership)
8. Ordsall chord
9. Bonded Warehouse
10. Upper Campfield Market Halls
11. Castlefield Basin and viaducts
12. St John's Gardens
13. Great Northern Warehouse
14. Castlefield Urban Heritage Park



Science and Industry Museum Site and surrounding significant structures

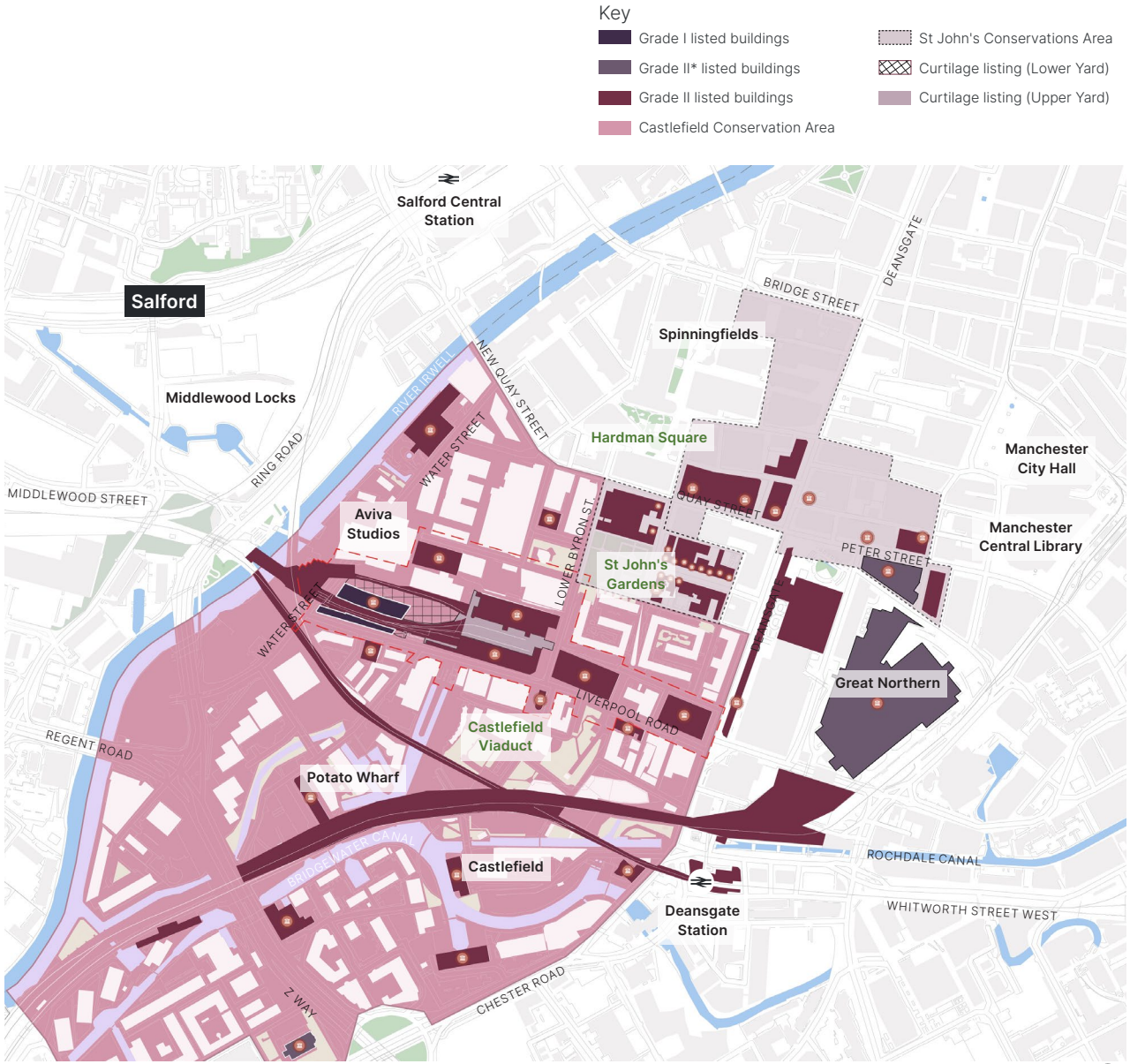
Heritage

The Science and Industry Museum sits within Castlefield Conservation Area and includes a number of Grade I and II listed buildings and structures. It's status as the oldest surviving passenger railway station is worth noting at this stage of analysis.

Castlefield was designated Britain's first Urban Heritage Park in 1983, which led to significant public sector investment, contributing to the cultural tourist destination we see today.

At present, the 'Urban Heritage Park' feels disjointed and fragmented, lacking a clear trail or sequential journey from key arrival points and through the area. This lack of flow or legibility is exacerbated by the 'inward facing' nature of the Site, presenting blank elevations and limited activity along key boundaries, including Water St and Liverpool Rd. Furthermore, the highway treatment along Liverpool Rd segregates the museum from its historic setting to the south, with limited crossing potential and low quality public realm.

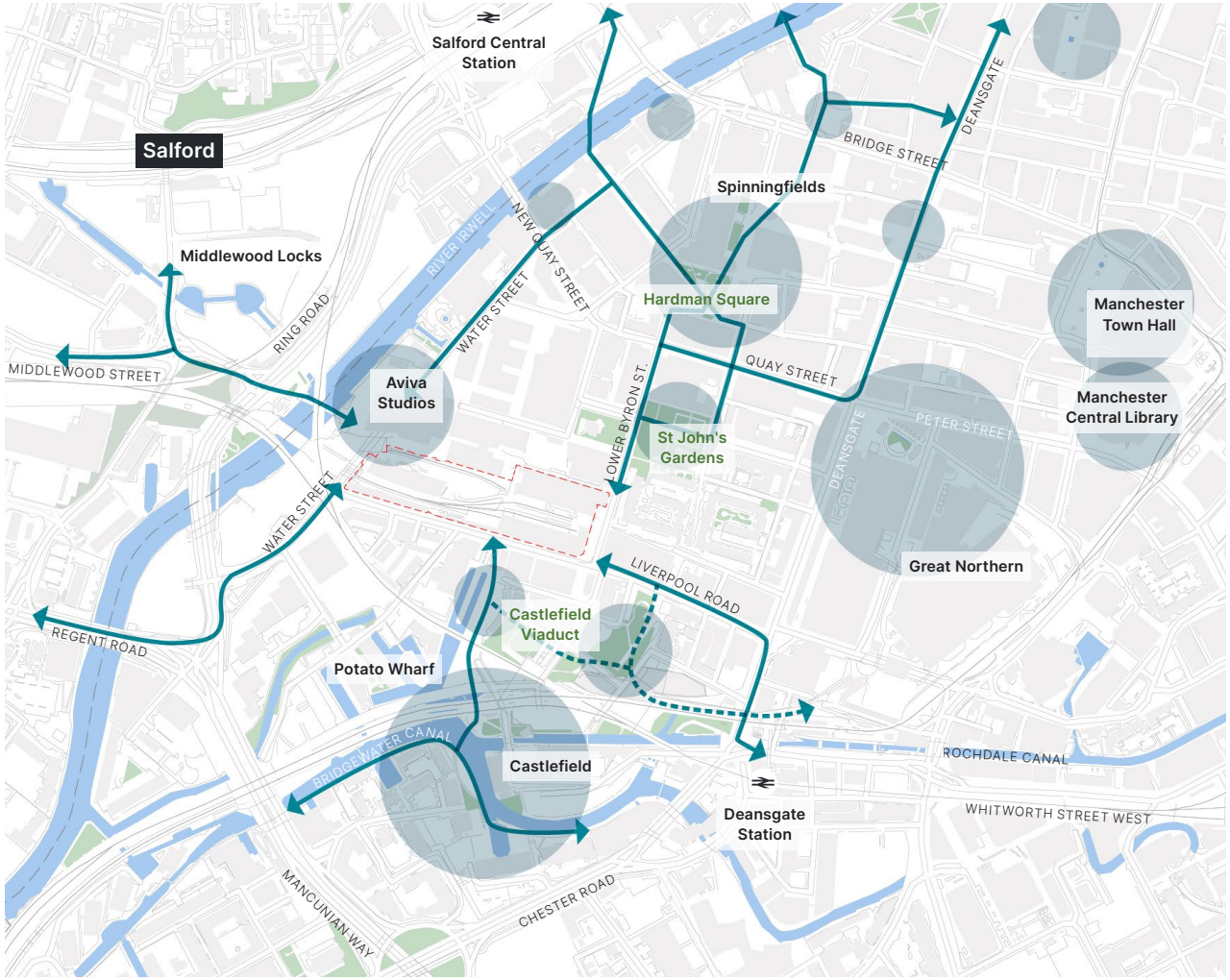
Beyond the boundary of the conservation area, the Site is linked by rail viaduct with former Central Station to the east and Deansgate Station to the southeast, part of a wider historic network which once powered the industrial revolution.



Conservation and heritage plan

Journey to the Museum

There are several ways from which to approach the Museum. Some are clear and safe, and well defined, whilst others are emerging, more convoluted and in need of improvements to create safer pedestrian and cycle connections.



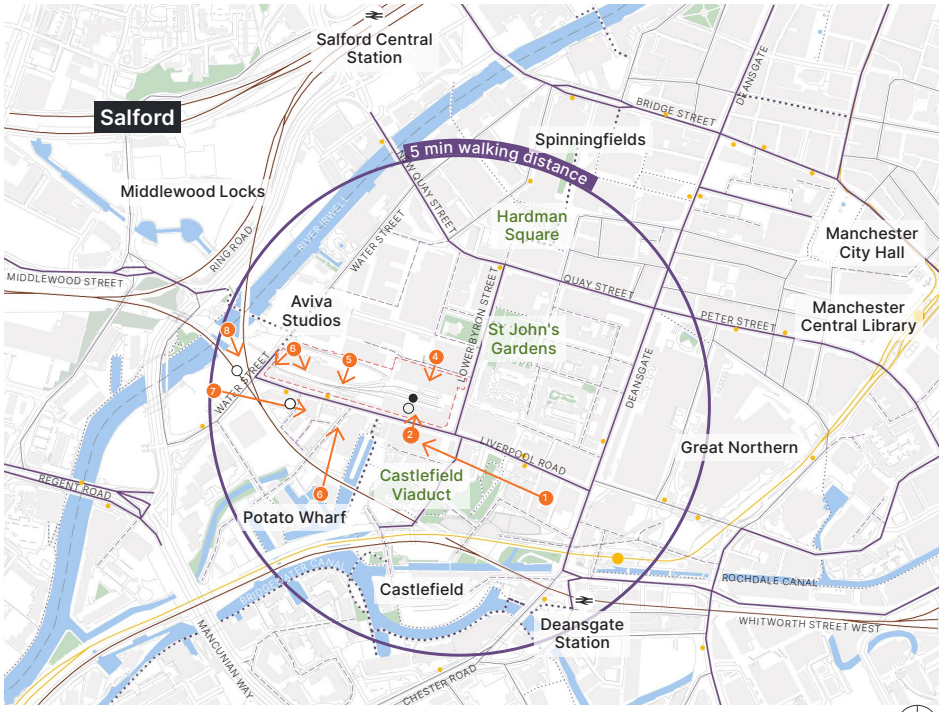
Journey to the museum

Key

- Journey to the museum from key destinations
- Key moment along the journey

Access, Movement and Views

The Science and Industry Museum's setting allows for long range views from various points within its immediate surroundings, setting this Site apart as a landmark.



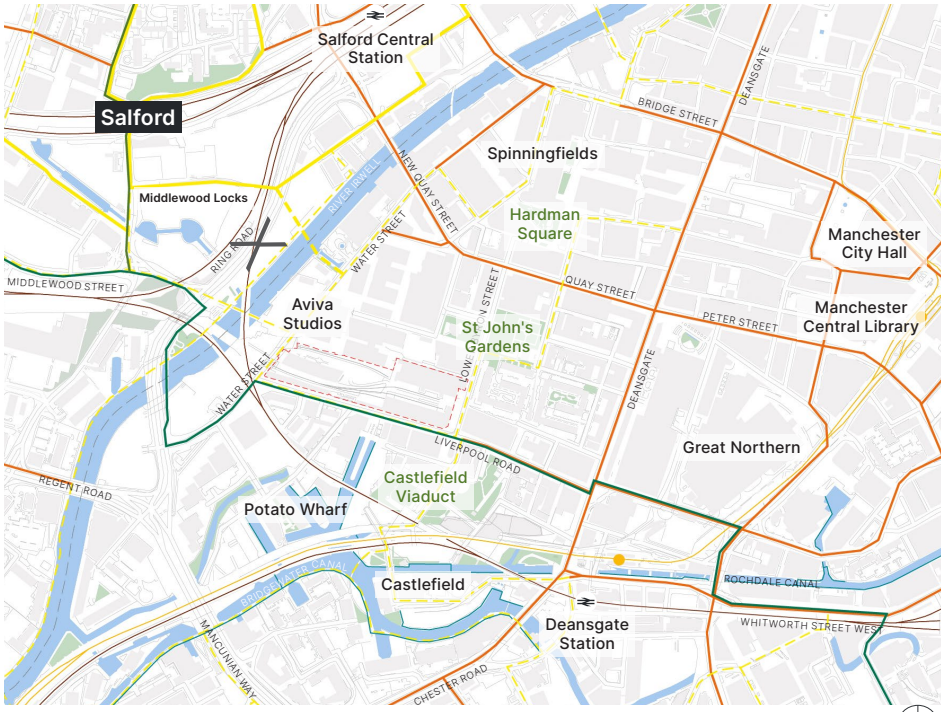
Access, Pedestrian and traffic free movement plan

Key

- Primary movement
- Secondary movement
- Local access movement
- Key views to the Site
- Main traffic free movement
- Traffic free movement
- Main entrance
- Metrolink
- Trainline
- 5mins walking radius
- Bus stops
- Service entrances

Bee Network and Active Travel

Proposed Bee Network circle the Science and Industry Museum Site, along Water Street, Liverpool Street and Lower Byrom Street putting the Museum right in the heart of local cycle network.



Bee Network and active travel plan

Key

- Delivered Bee network
- Proposed Bee network
- Busy Bee network
- National Cycle Route 6
- Metrolink
- Trainline
- Towpaths

3
STRATEGIC SUMMARY

A Vision for the Public Realm

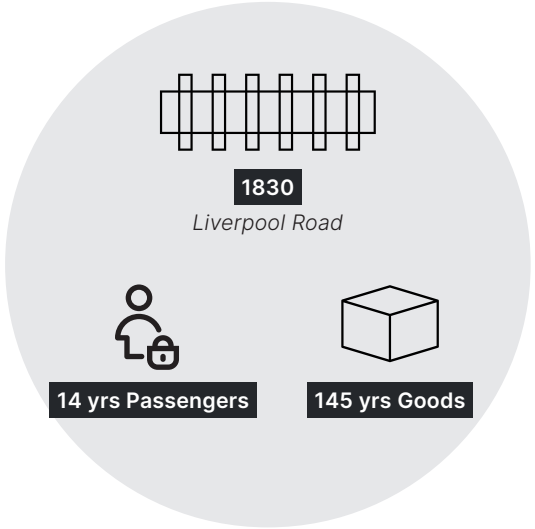
Through the place analysis, understanding of the historical narrative and conversations with the stakeholders, the design team have been able to propose a vision for the future of the Science and Industry Museum Site and the role of it's public realm.

Understanding and approaching the Site through the public realm, it allows us to consider the collective nature of the Site, the relationships between the different buildings spaces and experiences and the wider connections.
Then ultimately what does that offer?

The way to fully appreciate all that the Site has to offer, and fully understand it's history and relevance to the future, is to 'explore'. Exploration is at the heart of the Museum's offer, but currently most of this exploration takes place within buildings; and most recently just one building. Yet the Site in its entirety holds the potential for an explorative walk, or wander, which would take a visitor from; inside, to out; from upper to lower levels; through buildings and spaces reflecting different eras and times; different experiences, from informative, to interactive, resting, play; different perspectives, close up or wide ranging.

Within the Site alone, this 'wander' could be almost 1 km long, and that's before we consider the connection and interaction with Castlefield Viaduct and the surrounding new developments and public spaces.

A French philosopher has a name for it a '*dérive*'.



The Site holds and represents many memories...

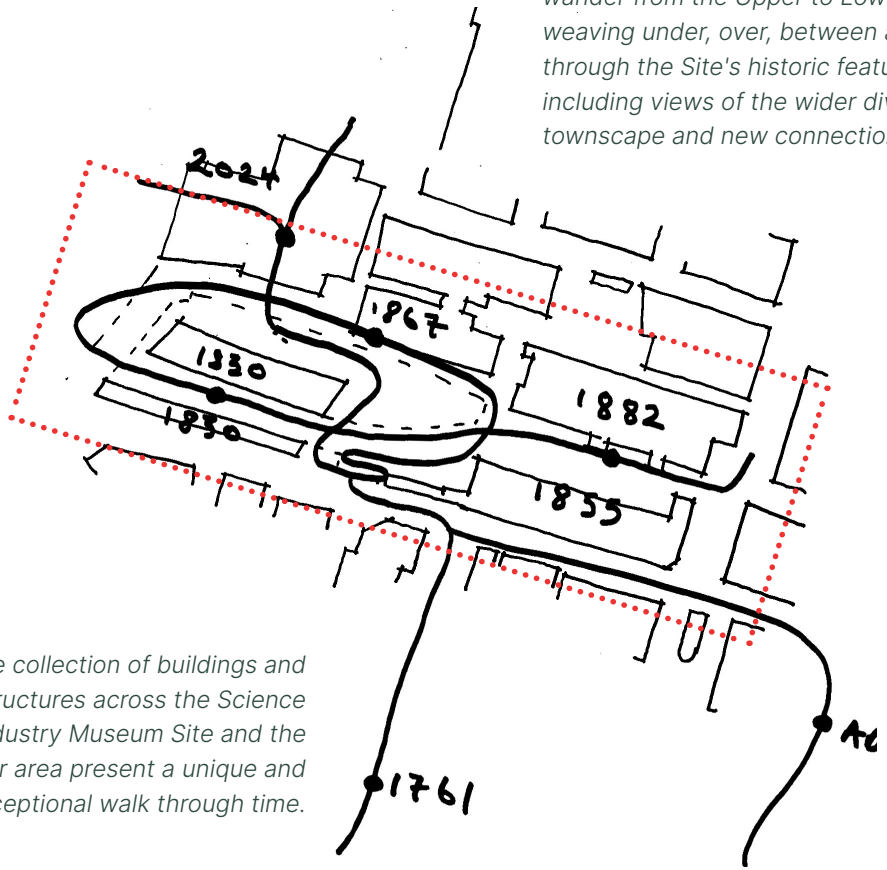


...Sometimes a narrow set of memories emerge when there is a break from the past.

The ***dérive***

The dérive (French: [de.ʁiv], "drift") is a revolutionary strategy originally put forward in the "Theory of the Dérive" (1956) by Guy Debord, a member at the time of the Letterist International. [1] Debord defines the dérive as **"a mode of experimental behaviour linked to the conditions of urban society: a technique of rapid passage through varied ambiances."**[2] It is an unplanned journey through a landscape, usually urban, in which participants drop their everyday relations and **"let themselves be drawn by the attractions of the terrain and the encounters they find there".**

The Science and Industry Museum Site offers the potential for a 1km wander from the Upper to Lower Yard, weaving under, over, between and through the Site's historic features, including views of the wider diverse townscape and new connections.

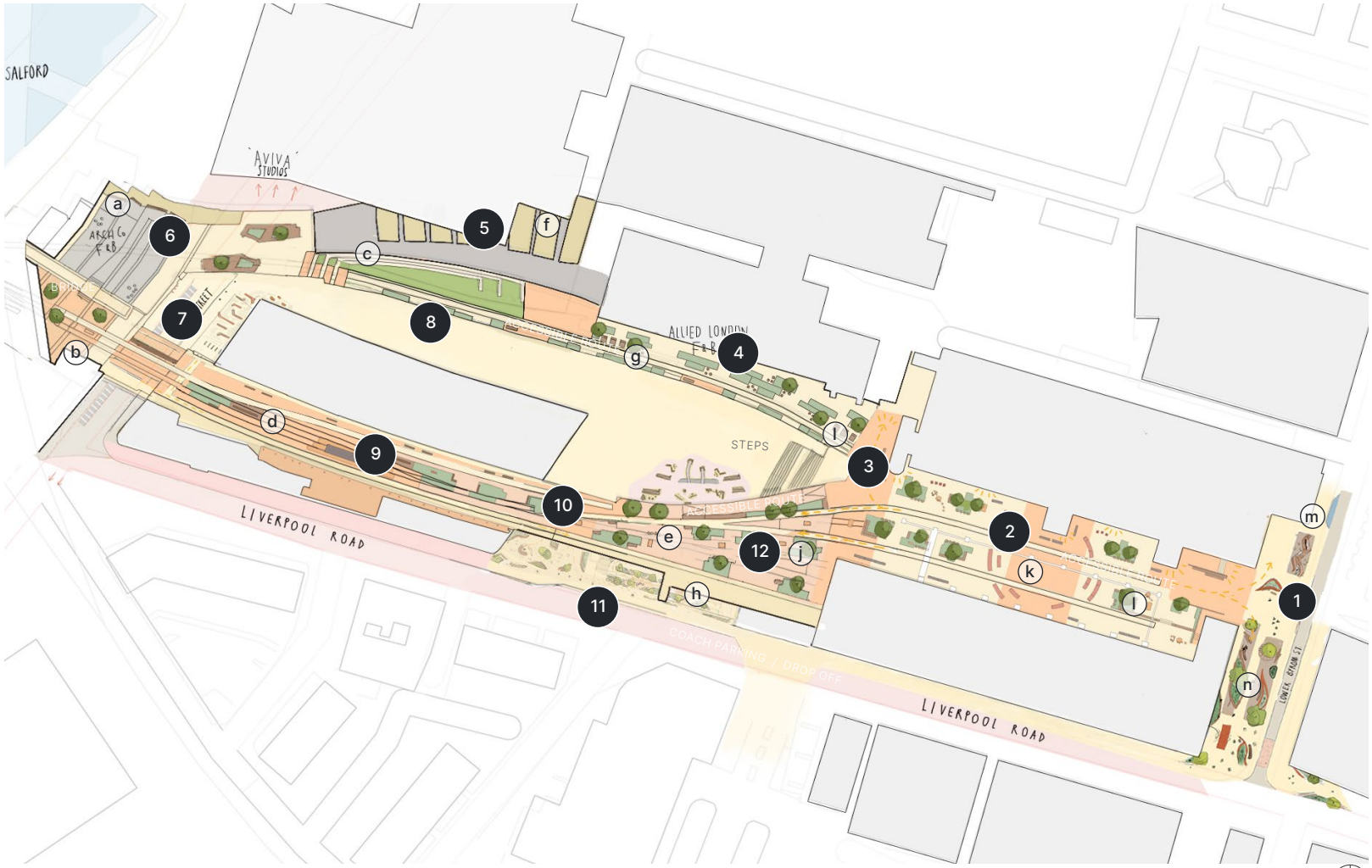


The collection of buildings and infrastructures across the Science and Industry Museum Site and the wider area present a unique and exceptional walk through time.

Overall Strategy Masterplan

Key - Character Spaces

1. Lower Byrom Gateway
2. Upper Yard
3. Viewing area and access
4. Pineapple Line Greenway
5. Aviva Studios Vision for the Upper Terrace
6. Water St Viaduct
7. Water St Gateway (lower)
8. Aviva Studios Link and Lower Yard (lower)
9. Historic Railway (Revolutionary Railroad)
10. Upper Arrival Space
11. Liverpool Road Gateway
12. Goods Office Yard



- **a.** Seating with views of River Irwell and Water St
- **b.** South facing, informal seating
- **c.** Seating terraces over Lower Yard
- **d.** Retained platform and tracks
- **e.** Planters with integrated seating
- **f.** Design references historic bonded stores
- **g.** Wild flower and grassland planted along rail tracks
- **h.** Landscape terraces and sloped access
- **i.** Steps and viewing platform
- **j.** Sculptural garden space
- **k.** Accessible routes link entrances and new spaces
- **l.** Seating areas integrated into planters
- **m.** Enhanced blue badge parking and drop off space
- **n.** Seating, planters and industrial artefacts

Area of Intervention / Partnership Projects

While the projects outlined previously will undoubtedly diversify the Science and Industry Museum's offering within its demise, they should not be viewed in isolation.

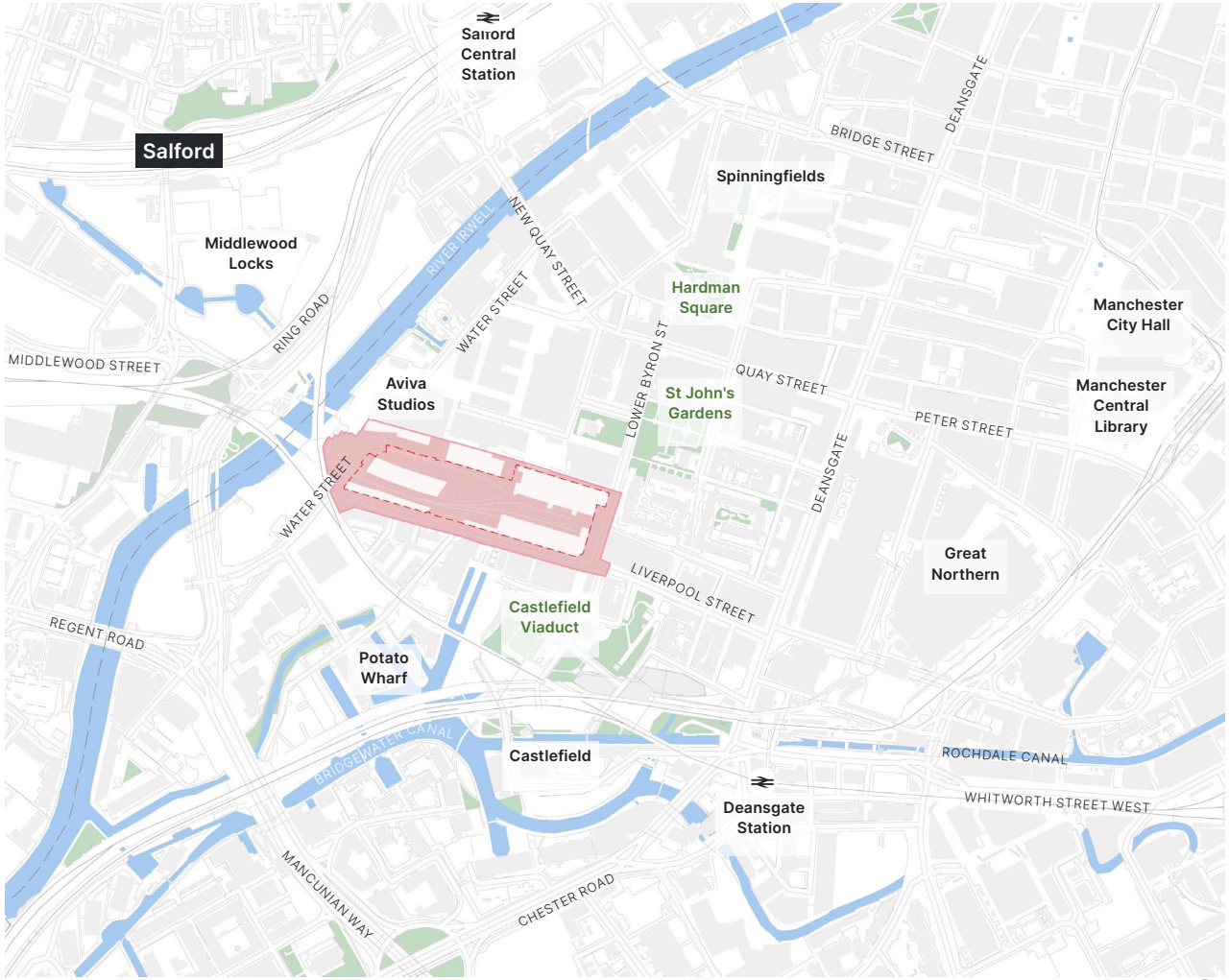
To maximise the value of the project, the Museum should consider working with neighbours and partners to deliver meaningful change in the neighbourhood, and across the Urban Heritage Park more broadly.

Immediate surroundings

The Site would benefit from public realm improvements to surrounding streets and entrance areas, specifically along Liverpool Road and Lower Byrom Street. Not only will this create a more welcoming pedestrian arrival environment to the Museum, but will help breakdown barriers between the Site and its surroundings.

Wider routes and approaches

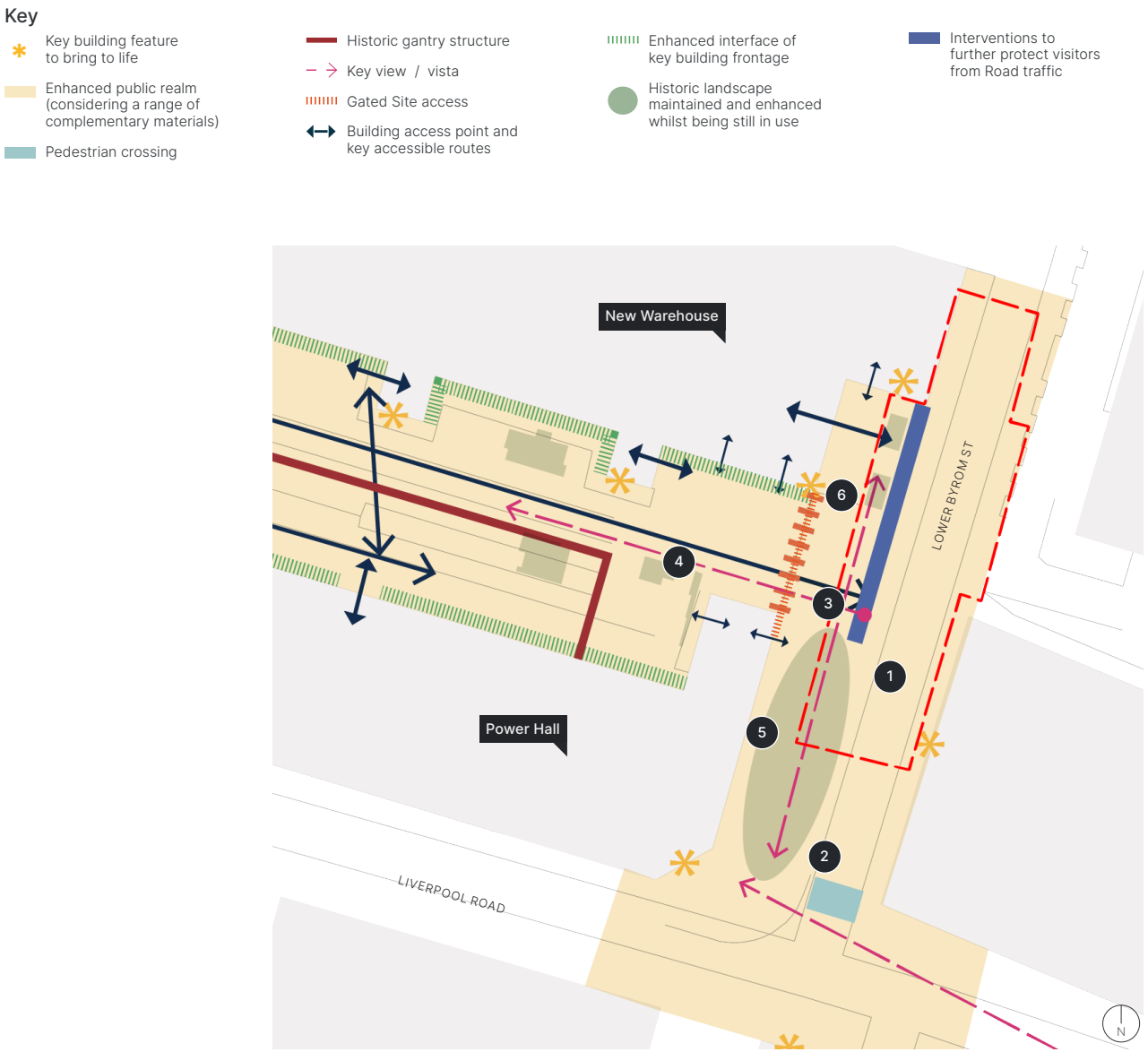
The Museum should be considered as part of a wider cultural offer and tourist destination. The approach to the Site from key surrounding train stations and destinations should be reviewed, considering wayfinding, signage and visual connections with the proposed Castlefield Viaduct Park.



Area of intervention plan

Key Design Principles

1. Enhance and improve Lower Byrom St entrance, creating connections to Castlefield Viaduct and Deansgate. The crossing environment should be enhanced.
2. Potential to approach highways about changing to one way and 20mph zone. This would reduce traffic flows and vehicular dominance of vehicles, strengthening pedestrian priority. Would allow the blue badge holder parking to be relocated and improved (size of bays increased).
3. Short stay loading bay could be relocated at service yard entrance and could be managed during deliveries by museum.
4. Retain and enhance the long range view through the Site. Visual porosity thanks to the nature of the Site and surroundings are a key feature of the public realm to exploit.
5. De-clutter and enhance the museum frontage in order to create a place for people to dwell and appreciate the listed buildings. Careful re-design of the space should enable the area to act as an outdoor lobby.
6. Start the museum experience outside of the boundary, providing interactive elements to bring frontages and key corners to life e.g. lighting, carefully considered signage, temporary art, wayfindings, etc.



Lower Byrom Gateway and Upper Yard - Precedent



Reduced vehicular carriageway - Fishergate, Preston



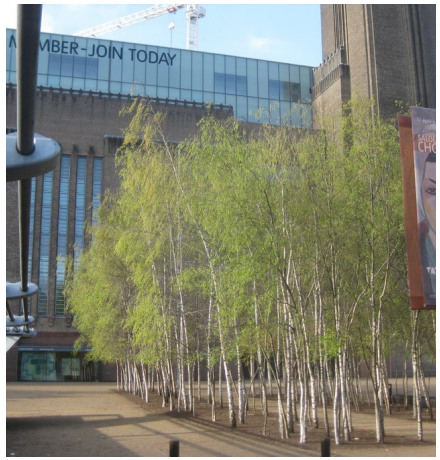
Direct and place to dwell - Hall Pajol, Paris



Simple and identifiable signage and wayfinding - Lyon



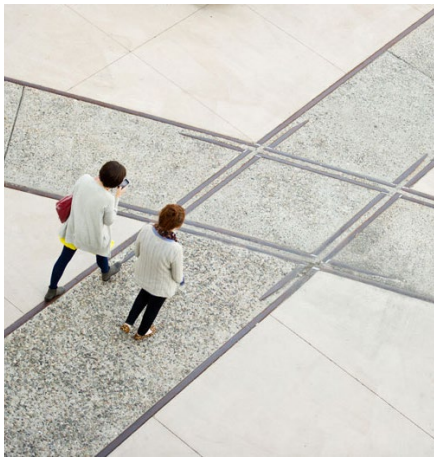
Spaces hierarchy through materiality and better interface with historic buildings - Zollverein



Succession planting using pioneer species - Tate modern, London



Allowing pioneer species and dwelling space - Zollverein



Enhancement of movement while keeping existing feature on the ground floor - Philadelphia



Clear and identified main route leading to the entrance - Lyon

4
DETAIL DESIGN LANDSCAPE PROPOSALS

Lower Byrom Gateway

The Lower Byrom Gateway is the 'front door' to the Science and Industry Museum, with pedestrian and vehicular access off Lower Byrom Street. Leading on from this is the main entrance to the museum and the Upper Yard space, which sits at the centre of the upper tier, linking the New Warehouse and Power Hall.

Current Conditions

- The vehicles and carriageway dominate the entrance to the Site, squeezing the arrival space to the boundaries of the building.
- There is often conflict between delivery vehicles, coaches and visitors as the space is not easily legible.
- Low-quality and tired surface materials with limited opportunity for dwelling.
- Existing MCC bollards are too low and provide no adequate protection to the visitor.
- Compromised route where visitors are cueing due to a step creating a trip hazard that is not DDA compliant.
- The glass balustrade creates a barrier to pedestrian movement across this space, further crowding the area and creating convoluted routes.

What are we trying to achieve?

- Create an active and high-quality front door to the Site along Lower Byrom Street which prioritises pedestrian movement and safety.
- Connect the historic buildings in the Upper Yard through landscape design that is accessible and playful.

Existing Site Photos



Approach to the Site from Liverpool Road, East



Pedestrian crossing on Liverpool Road



Approach towards the Upper Yard



Challenging mix of materials and level change



Approach to the Site entrance



Poorly accessible route from Lower Byrom Street



View of the gates and entrance



View of the Upper Yard from Lower Byrom Street

Existing Site Materials of Significance
Loafed Cobbles

A percentage of the current on-site material includes a distinct paving mix, predominantly granite, with a very small percentage of sandstone within this mix of loafed cobbles. The mix can be generally described as green/grey mix. Other materials include Yorkstone flag paving.

Existing Granite Loafed Cobbles

Mix Size 1: varied gauge (100-120mm), varied length (120-220mm), varied depth (150-170mm)

Mix 1 Loafed Cobble (Green/Grey)

This mix is found outside the entrance gate on Lower Byrom Street. It makes up approximately 227.5 sqm of the Upper Yard. There are two isolated areas found in front of the Power Hall that make up 8 sqm.

Existing Loafed Cobbles within Lower Byrom Street Gateway

Existing cobble material that will remain unused within the Lower Byrom Street Gateway of Mix 1 material will be stored on site for any future phases of the landscape works.

1



Existing Loafed Cobbles Mix 1

2



Existing Sandstone Flags

Existing Sandstone Flags

The existing sandstone flags are to be largely retained. However, a small portion—approximately 218 sqm out of a total of 28 sqm—is proposed to be lifted to allow for a continuous paved area of granite setts between the New Warehouse and Power Hall.

Summary

The new level setts which are proposed to replace the existing loafed ones in new accessible areas have been chosen due to their high-quality and have been specially selected to match and compliment the historic loafed cobbles which are to be retained elsewhere; this will reduce the overall visual impact of the proposed development on the setting and character of the assets. Furthermore, the works will also be reversible with the removed setts being kept safely, and intact, in storage by the museum, should they be required for any future works to the site.

Existing Site Materials of Significance
Loafed Cobbles and Sandstone Flags

The drawing illustrates the extents of Mix 1 loafed cobbles and sandstone flags found outside the entrance gate on Lower Byrom Street.



Existing site cobbles audit to the Upper Yard, Heart Space and Station Approach

EXISTING SURFACES

Surfaces to be retained

Existing Historic Yorkstone Flag Paving - Riven
to be retained.

Existing Cobbles
to be retained

Surfaces to be reused

Existing Site Cobbles Mix 1
Existing granite loafed cobbles lifted and safely stored on site for reuse.

Site Clearance
Surfaces

This drawing illustrates the surfaces to be retained and removed to the entrance of the Science and Industry Museum.

KEY

BOUNDARIES

- Planning Boundary

EXISTING SURFACES

Surfaces to be retained

- Existing Yorkstone Flag Paving - YP1 to be retained.
- Existing Historic Yorkstone Flag Paving - Riven to be retained.
- Existing Site Tactile Paving to be retained
- Existing Cobbles to be retained
- Existing Gully to be retained
- Existing Inspection Manhole Cover to be retained

Surfaces to be reused

- Existing Site Cobbles Mix 1 Existing granite loafed cobbles lifted and safely stored on site for reuse.

Surfaces to be removed

- Existing Yorkstone Flag Paving to be removed
- Existing Historic Yorkstone Flag Paving - Riven to be removed
- Existing Yorkstone Sett Paving to be removed
- Existing Tactile Paving to be removed.
- Existing Concrete Flag Paving to be removed.
- Existing Tarmacadam Road to be removed.
- Existing Inspection Manhole Cover to be removed
- Existing Edging to be removed



Site Clearance to Lower Byrom Gateway - Surfaces

Shadow Study

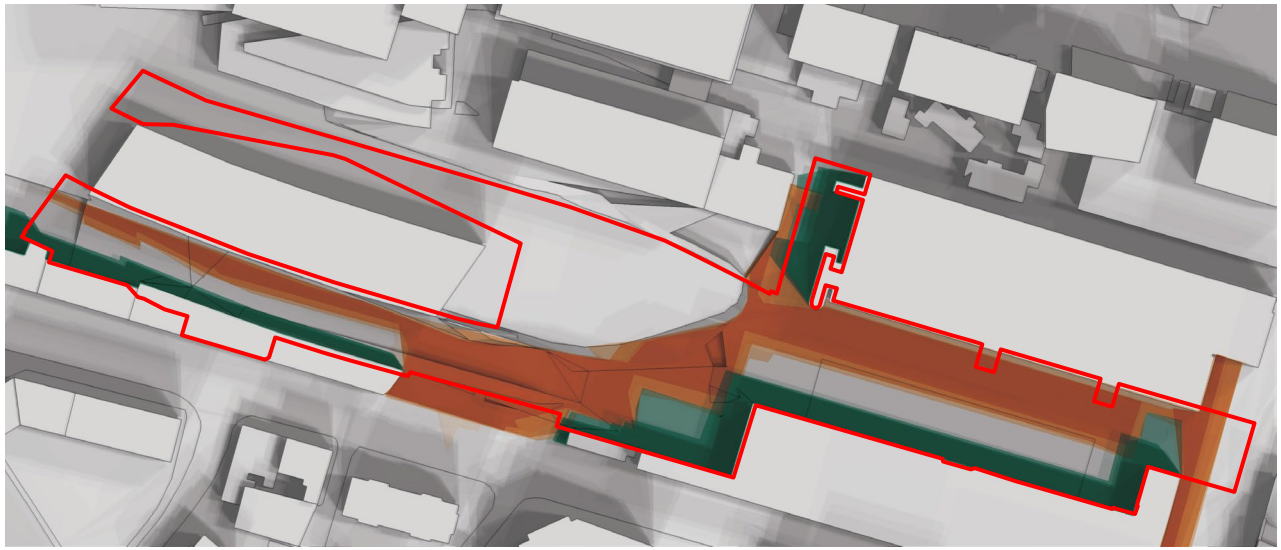
We have focused our detailed assessment on the three hottest summer months to establish the impact on visitors and whether sufficient shaded areas are available for taking respite from hot temperatures. The shadow study demonstrates that the site benefits from good natural sunlight, especially during lunchtime.

Key

Overlaid Sun Studies Illustrate the peak hours of sunshine.

Overlaid Sun Studies Illustrate the shadiest spots

All year combined sun studies



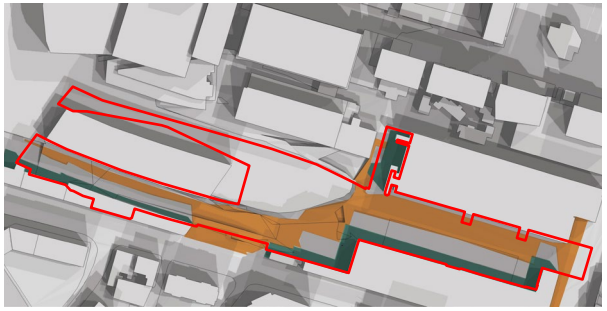
June overlaid sun studies



July overlaid sun studies



August overlaid sun studies

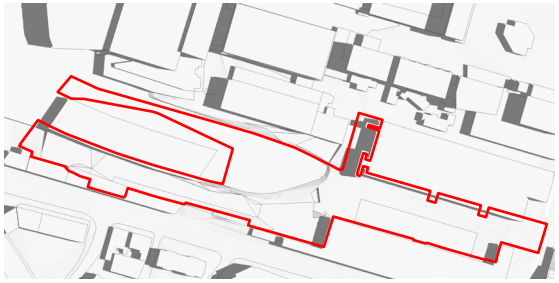


June

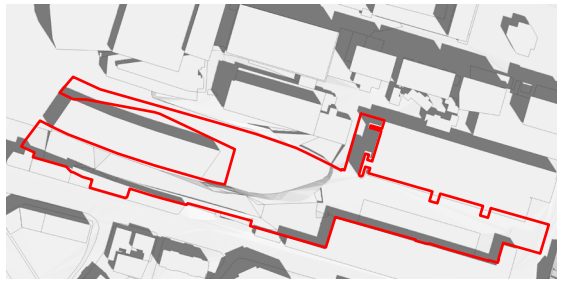
10am



12pm



2 pm

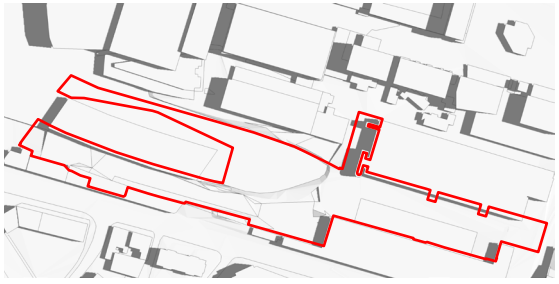


July

10am



12pm



2 pm

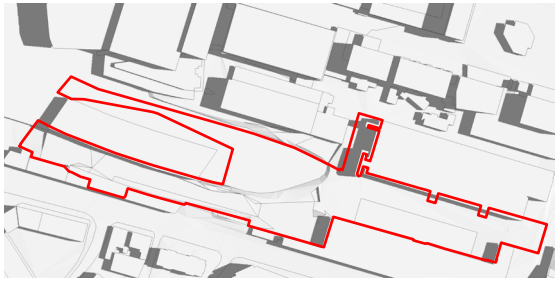


August

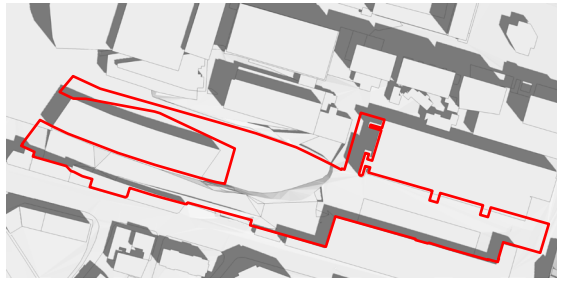
10am



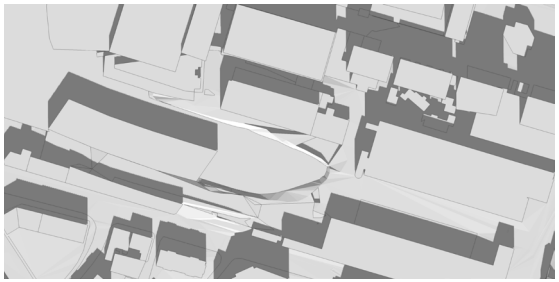
12pm



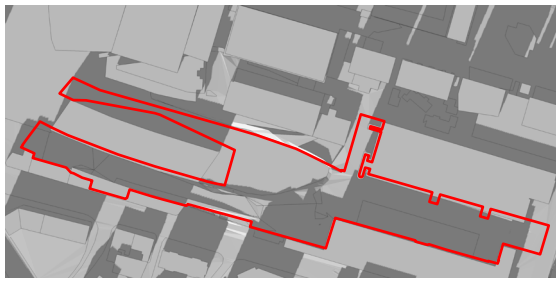
2 pm



4pm

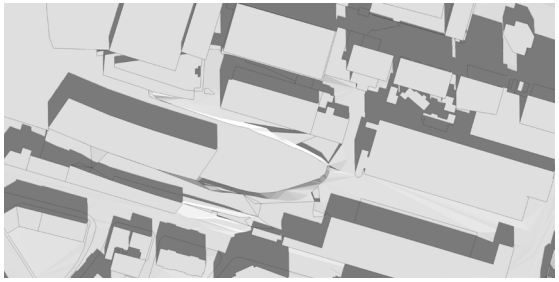


6pm



June

4pm

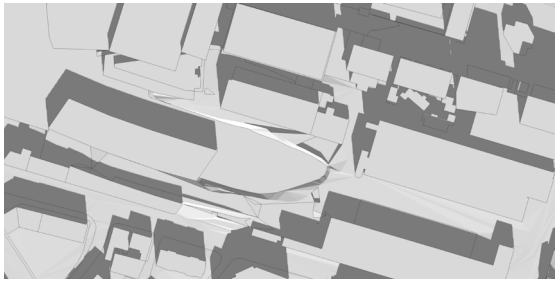


6pm



July

4pm



6pm



August

Design Drivers

Exploration

The outside environment will feel like an extension of the journey that the users have started to experience inside the museum.

Playfulness

The landscape, will encourage engagement with the space creating a lively and fun atmosphere.

Celebrating Heritage

...Sometimes a narrow set of memories emerge when there is a break from the past. It is important that the landscape reflects the changes that have happened in this rich environment, merging old with the new.

Reflection

It will also provide needed dwell space for the users to rest and reflect on their experience within the museum.

Accessible Journeys

Providing key accessible movement routes across the Site. Across the public realm landscape, to main building access points.



Design Development

The initial options looked at three different approaches to the entrance of the Science and Industry Museum.

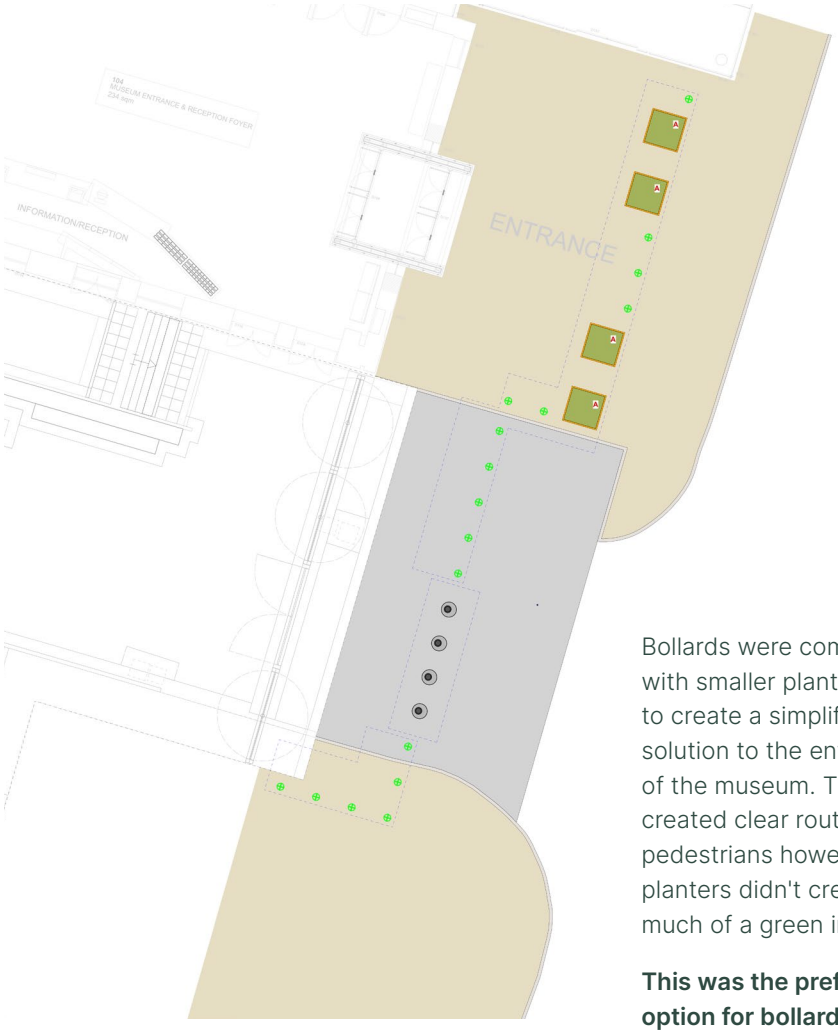
Option 1 Layout



A combination bollards alongside large planters to create a cohesive solution to the entrance of the museum. This created clear routes for pedestrians while establishing a green frontage with the addition of the planters.

This was the preferred option for planter size and location.

Option 2 Layout



Bollards were combined with smaller planters to create a simplified solution to the entrance of the museum. This created clear routes for pedestrians however the planters didn't create as much of a green impact.

This was the preferred option for bollards.

Option 3 Layout



Combined bollards and mid size planters together. The planters were spread out more. One being to the south of the design and the others outside the Entrance. Although this creates a green frontage, the impact was greater on design option 1.

Resolved Design Option

The concept design options looked at three different approaches to the entrance of the Science and Industry Museum.

The final design uses a combination of bollards and large tree planters with multistem tree planting. A timbered tiered retaining wall to provide seating and create a new waiting/ meeting point elevating a step and providing an accessible route to the main entrance.



Hardworks and Edging

The proposed material palette has been carefully selected to define the spatial hierarchy across the site.

The main arrival space at the museum entrance is designed to emphasise a clear sense of arrival and to establish a threshold between the public realm of Lower Byrom Street and the Science and Industry Museum. This transition is articulated through the use of new hard landscaping materials: sandstone setts at the entrance and a blend of granite paving at the main gates leading to the Upper Yard.

The proposed sandstone setts take precedent from those used at Station Approach, where existing sandstone flags have been reclaimed and cut down to improve accessibility. In the case of the Lower Byrom Street gateway, new materials are required, as no further reclaimed slabs are available. However, the new units will match the dimensions of those at Station Approach to maintain visual consistency.

For the access route to the Upper Yard, a blend of granite paving setts is proposed to form a fully accessible entrance area that extends beyond the gate. The proposed granite mix will match the materials used within the Upper Yard, ensuring a coherent and unified appearance throughout the site.

BOUNDARIES

Planning Boundary

HARDWORKS

Proposed Granite/Sandstone Sett Paving
Material: Granit and Sandstone
Colour mix:(pink/red/grey) – 30%, (pink/red/grey) – 30%, (buff/grey) – 15%, (grey/buff) - 10% , (grey) – 10%, (dark grey) – 5%
Size: (H) 120/180/220mm (L) 160-260mm varied. (D) 100mm. Final depth TBC confirmed by engineer.
Finish: Sawn and sandblasted, flamed top. Sawn Bottom. Cropped sides.
Bond: Random stretcher with random gauge.

Proposed Sandstone Flag Paving
Size: 200 mm(W) x RL
Laid random stretcher bond
Finish: shotblasted top
Colour: buff

Proposed Tactile Paving
Material: Granite
Size: 3 rows of 400mm x 400mm
Colour: dark grey/black
Finish: sandblasted top, sawn sides and bottom
Laying Pattern: stack bond

Existing Tarmacadam Road
retained

Existing Yorkstone Flag Paving
to be retained.
riven top finish.
Back of Pavement area minimum scope lifted to accomodate bollard foundation works and relaid.

Existing Yorkstone Flag Paving
sawn/shotblasted top finish to be retained.

Existing Tactile Paving
retained

Existing Cobble Paving
retained

RW 6 & 7 - Retaining Wall
Timber tiered retaining wall with armrests

Drainage Channel
To engineer's specification

Proposed Kerb Edge-K1
To match existing
Material: Granite
Colour: Silver-Grey
Finish: Picked top and sides

Proposed Kerb Edge-K2
Material: Granite
Colour: Red or Black to be confirmed
Size: 300mm (W)
Finish: Flamed top and sides

Existing Kerb Edge
retained

Existing Gully
retained

Existing Manhole Covers
retained



Precedent Image:
Sandstone setts

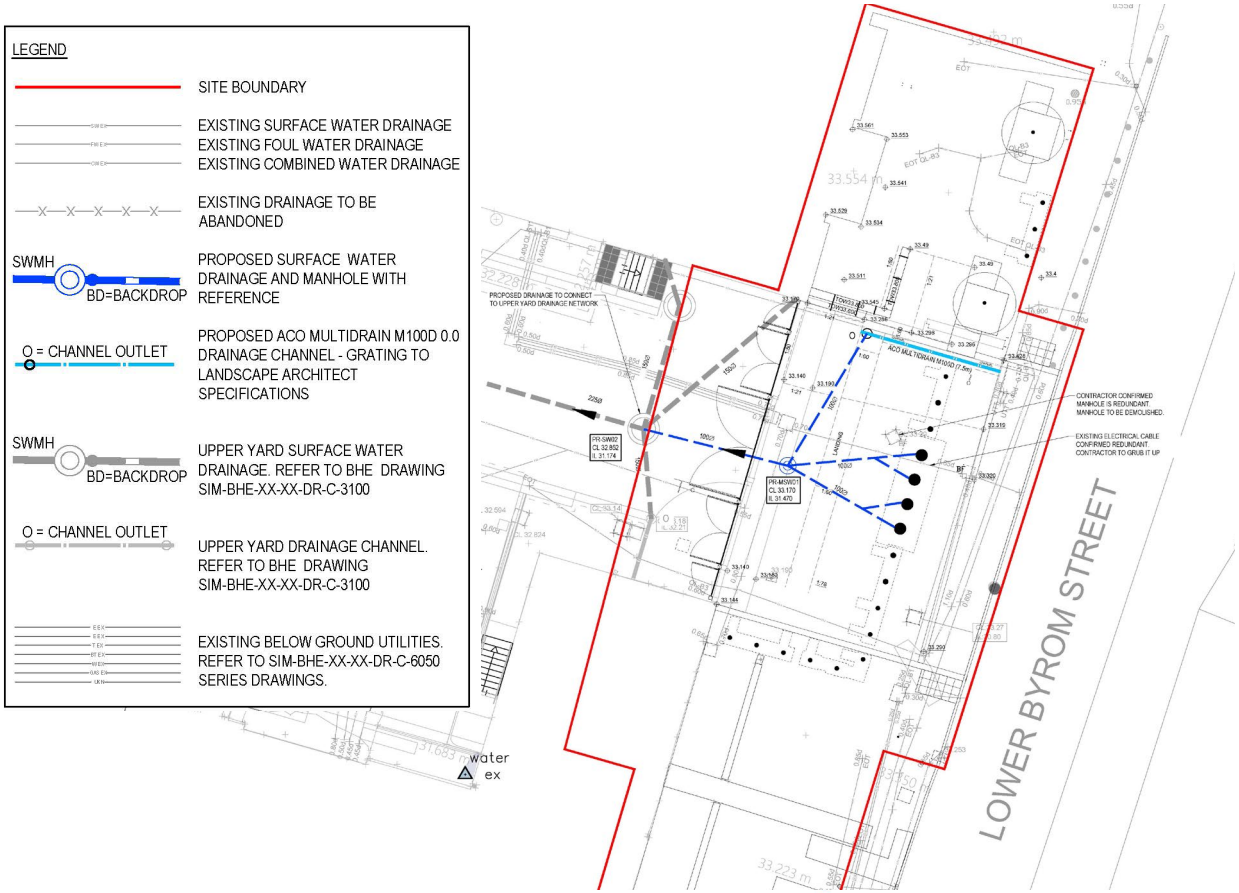
Precedent Image:
Granite paving setts

Supporting Information
Drainage

Surface water drainage has been provided to serve the proposed Upper Yard entrance.

The system involves drainage for the automatic drop bollards and a drainage channel that will capture the surface water runoff generated by the proposed levels in the Museum entrance that have been altered. The remaining Museum entrance will maintain existing levels and therefore, it is envisaged the area will drain as the existing situation.

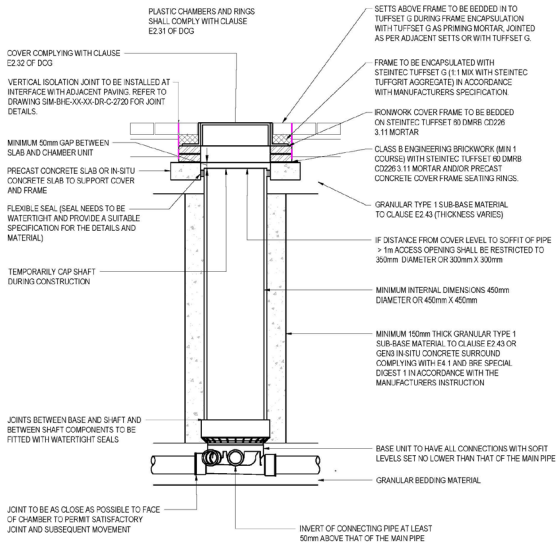
The proposed surface water system will connect to the Upper Yard drainage network that ultimately discharges to the public sewer in Water Street via an existing connection.



MANHOLE SCHEDULE - PROPOSED SURFACE WATER

MANHOLE REF.	EASTING [m]	NORTHING [m]	COVER LEVEL [m]	INVERT LEVEL [m]	DEPTH TO INVERT [m]	MANHOLE TYPE	INNER DIAMETER [mm]	CLEAR OPENING DIMENSIONS [mm]	COVER TYPE	COVER GRADE	INCOMING PIPE INVERT LEVEL [mm]	OUTGOING PIPE INVERT LEVEL [m]
PR-MSW01	383214.768	397831.777	33.170	31.470	1.700	TYPE D	450 DIA.	300 x 300	RE	D400	31.500 (100Ø) 31.500 (100Ø) 31.500 (100Ø)	31.500 (100Ø)

COVER TYPE:
RE - RECESSED COVER

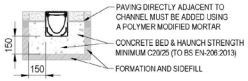


NOTE: WHERE THE ACCESS CHAMBER IS IN THE HIGHWAY (INCLUDING ANY FOOTWAY), THE HIGHWAY AUTHORITY CAN HAVE SPECIFIC REQUIREMENTS

TYPICAL INSPECTION CHAMBER DETAIL - TYPE D (FLEXIBLE MATERIAL DETAIL)

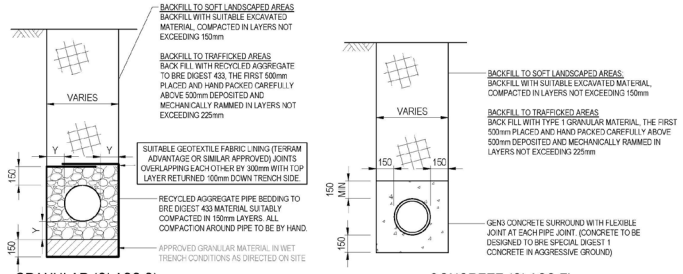
DEPTH FROM COVER LEVEL TO SOFFIT OF PIPE UP TO 3 m
FLEXIBLE MATERIAL CONSTRUCTION FOR USE IN AREAS SUBJECT TO VEHICLE LOADING

NOT TO SCALE



ACO MULTIDRAIN M100D 0.0 CHANNEL DRAINAGE INSTALLATION

SCALE 1:20



GRANULAR (CLASS S)

>1200mm DEPTH TO SOFFIT IN ROADS AND PAVEMENTS

DIMENSION 'Y' TO BE 100mm MIN. UNLESS OTHERWISE SPECIFIED OR DIRECTED BY THE ENGINEER

FOR ADOPTABLE SEWER, GRANULAR SURROUND MIN. THICKNESS OF 300 ABOVE CROWN OF PIPES.

FOR BEDDING DETAILS AND SPECIFICATIONS FOR PLASTIC PIPES AND PRODUCTS REFER TO MANUFACTURER REQUIREMENTS MAKING CONSIDERING FOR:

- LOADING
- LOCATION
- GROUND CONDITIONS
- TYPES OF LIQUIDS BEING CONVEYED (CHEMICALS AND TEMPERATURE)
- ANY OTHER SITE SPECIFIC REQUIREMENTS

CONCRETE (CLASS Z)

<1200mm DEPTH TO SOFFIT IN ROADS AND PAVEMENTS

ALL JOINTS IN CLASS Z BEDDING SHOULD BE SURROUNDED BY COMPRESSIBLE FILLER BOARD (THICKNESS 18mm) TO ENSURE THE PIPE REMAINS FLEXIBLE.

PIPE DIA.	GRANULAR BEDDING			CONCRETE BEDDING		
	Y MINIMUM			MIN. TRENCH WIDTH	MAX. TRENCH WIDTH	L
	Y1 MIN.	Y2 MIN.	Y3 MIN.			
100	100	200	150	450	750	
150	100	200	150	500	800	
225	100	200	150	600	900	18
300	100	200	150	700	1000	
375	100	200	150	805	1105	
450	150	200	150	890	1190	
525	150	200	150	975	1275	
600	150	200	150	1075	1375	
675	150	200	225	1185	1485	
750	225	300	225	1290	1560	
825	225	300	225	1355	1655	36
900	225	300	225	1480	1760	
975	225	300	300	1505	1805	
1050	225	300	300	1580	1880	
1125	225	350	300	1650	1950	
1200	375	400	300	1750	2050	
1350	375	400	375	1920	2220	
1500	375	450	375	2040	2340	54
1650	375	500	450	2210	2510	
1800	375	500	450	2360	2660	

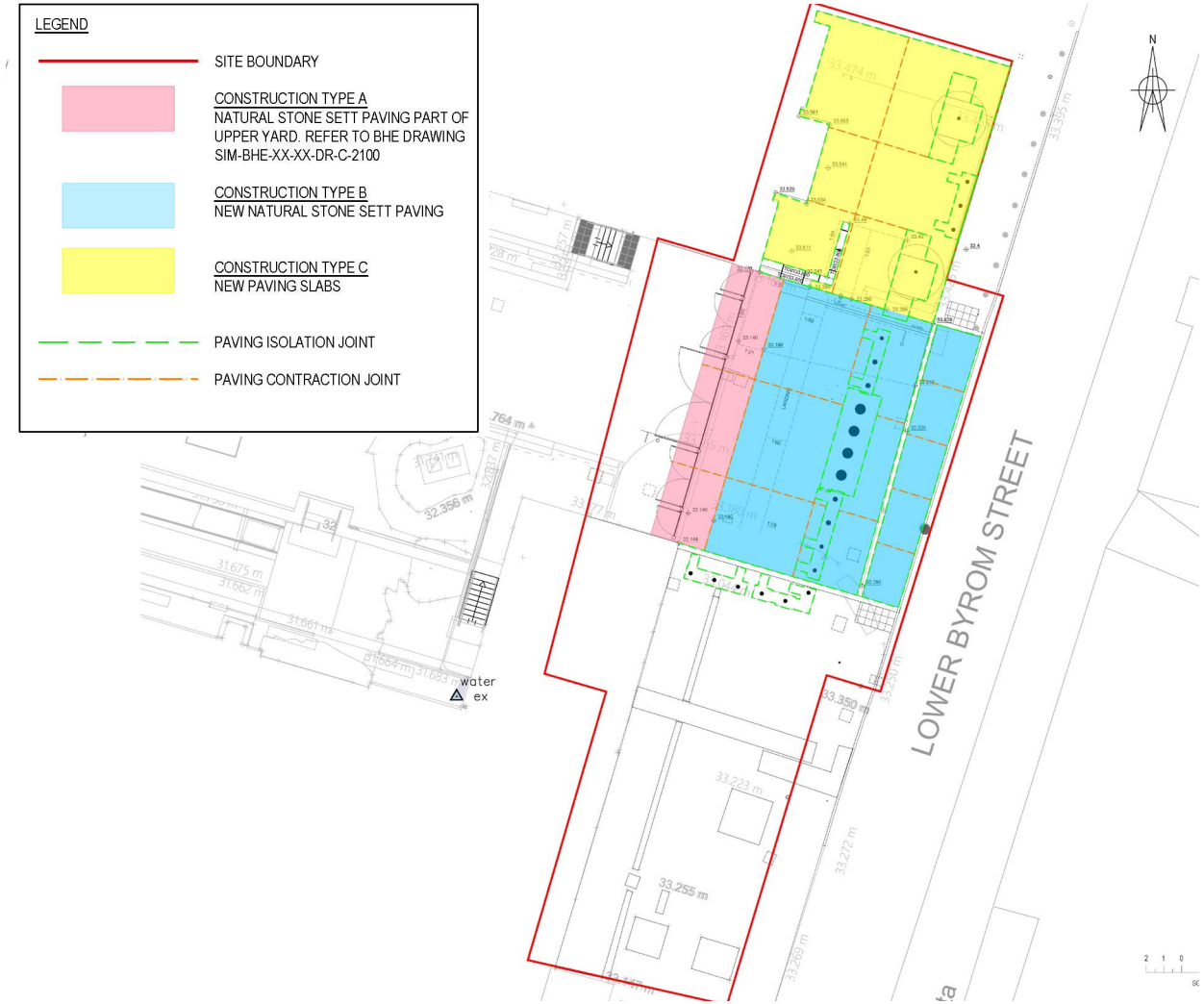
DIMENSIONS FOR BEDDINGS AND TRENCH WIDTHS

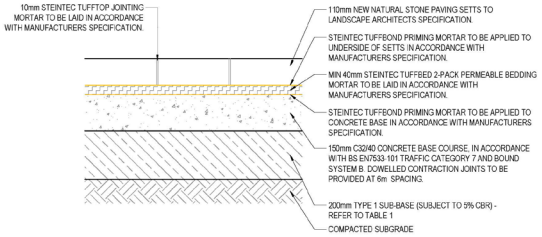
Supporting Information
Build Up's

New pavement has been proposed for the proposed entrance. The proposed paving for the Upper Yard entrance will be an extension of what has been used in the adjacent Yard, whereas new paving slabs are proposed for the Museum entrance.

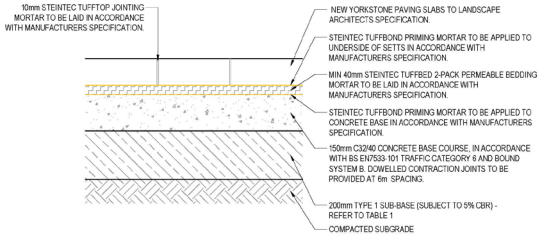
The proposed pavement build-ups have been designed in accordance with the BS7533-101 guidance to provide a suitable load for the area, using a traffic category 7 for the Upper Yard Entrance to allow heavy traffic when required, and traffic category 6 for the Museum entrance to allow for MEWPs or any occasional commercial vehicles.

As the proposed paving build-ups are bound systems, and in line with the BS 7533-101, joints will be required.





CONSTRUCTION TYPE B
NEW NATURAL STONE SETT PAVING
SCALE 1:10

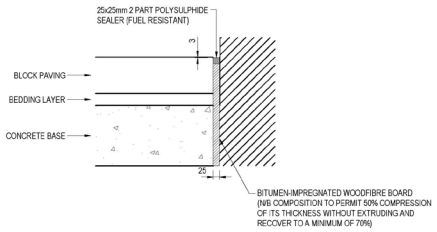


CONSTRUCTION TYPE C
NEW PAVING SLAB
SCALE 1:10

TABLE 1							
CONSTRUCTION TRAFFIC	SUBGRADE CBR DESIGN VALUE						
	2%	2.5%	3%	4%	5%	10%	15%
NO CONSTRUCTION TRAFFIC	NOTE 1	170	150	150	150	150	150
100 s.a.	NOTE 1	240	220	180	160	150	150
200 s.a.	NOTE 1	320	250	210	180	150	150
500 s.a.	NOTE 1	360	280	230	200	160	150

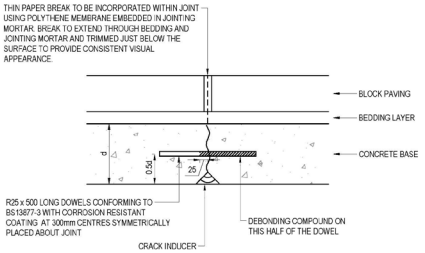
EXTRACTED FROM BS EN7533-101:2021 (TABLE 15 - SUBBASE ONLY DESIGN)

NOTE 1: FOR SUBGRADES WITH A CBR LESS THAN 2.5% A SUB-BASE ON CAPPING DESIGN IS REQUIRED



ISOLATION JOINT
N.T.S

CONSTRUCTION SEQUENCE AND METHODOLOGY FOR INDUCED CRACK TO ENSURE PAPER BREAK WITHIN SURFACE AND LAYING COURSE FULLY ALIGNS WITH JOINT IN CONCRETE BASE.



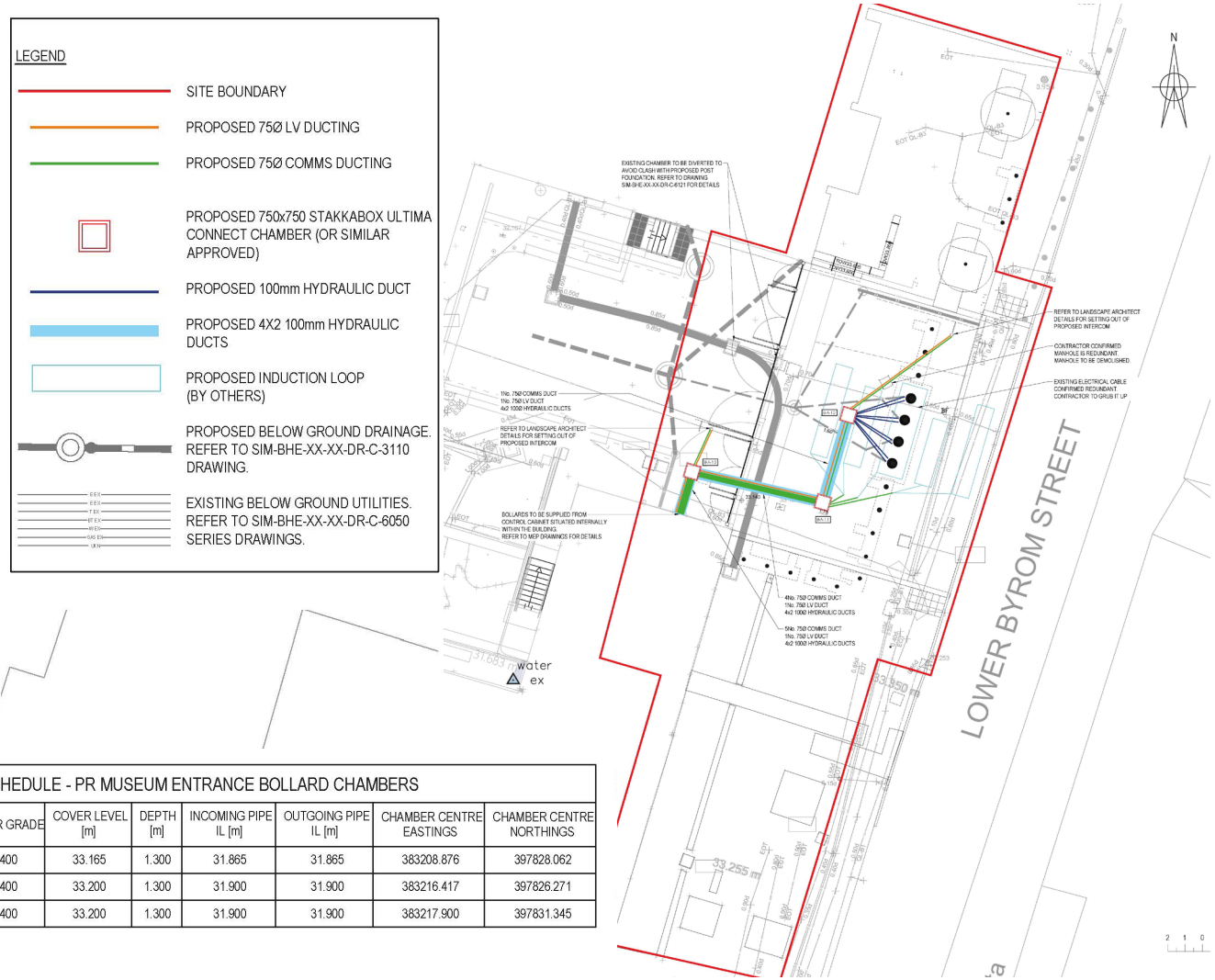
TYPICAL CONTRACTION JOINT
N.T.S

Supporting Information
Utilities

The proposed automatic drop bollards will require the following utilities to work:

- Power
- Communications
- Hydraulic fluid

The proposed utilities will be connected to the security hut building where the bollards will be fed from. The control cabinet to manage the hydraulic fluids is envisaged to be within the building, but this will be confirmed in the next stages.



MANHOLE SCHEDULE - PR MUSEUM ENTRANCE BOLLARD CHAMBERS									
NAME	INTERNAL DIMENSIONS	COVER TYPE	COVER GRADE	COVER LEVEL [m]	DEPTH [m]	INCOMING PIPE IL [m]	OUTGOING PIPE IL [m]	CHAMBER CENTRE EASTINGS	CHAMBER CENTRE NORTHINGS
B-A-1.0	750 X 750	RE	D400	33.165	1.300	31.865	31.865	383208.876	397828.062
B-A-1.1	750 X 750	RE	D400	33.200	1.300	31.900	31.900	383216.417	397826.271
B-A-1.2	750 X 750	RE	D400	33.200	1.300	31.900	31.900	383217.900	397831.345

COVER TYPE:
RE - RECESSED COVER

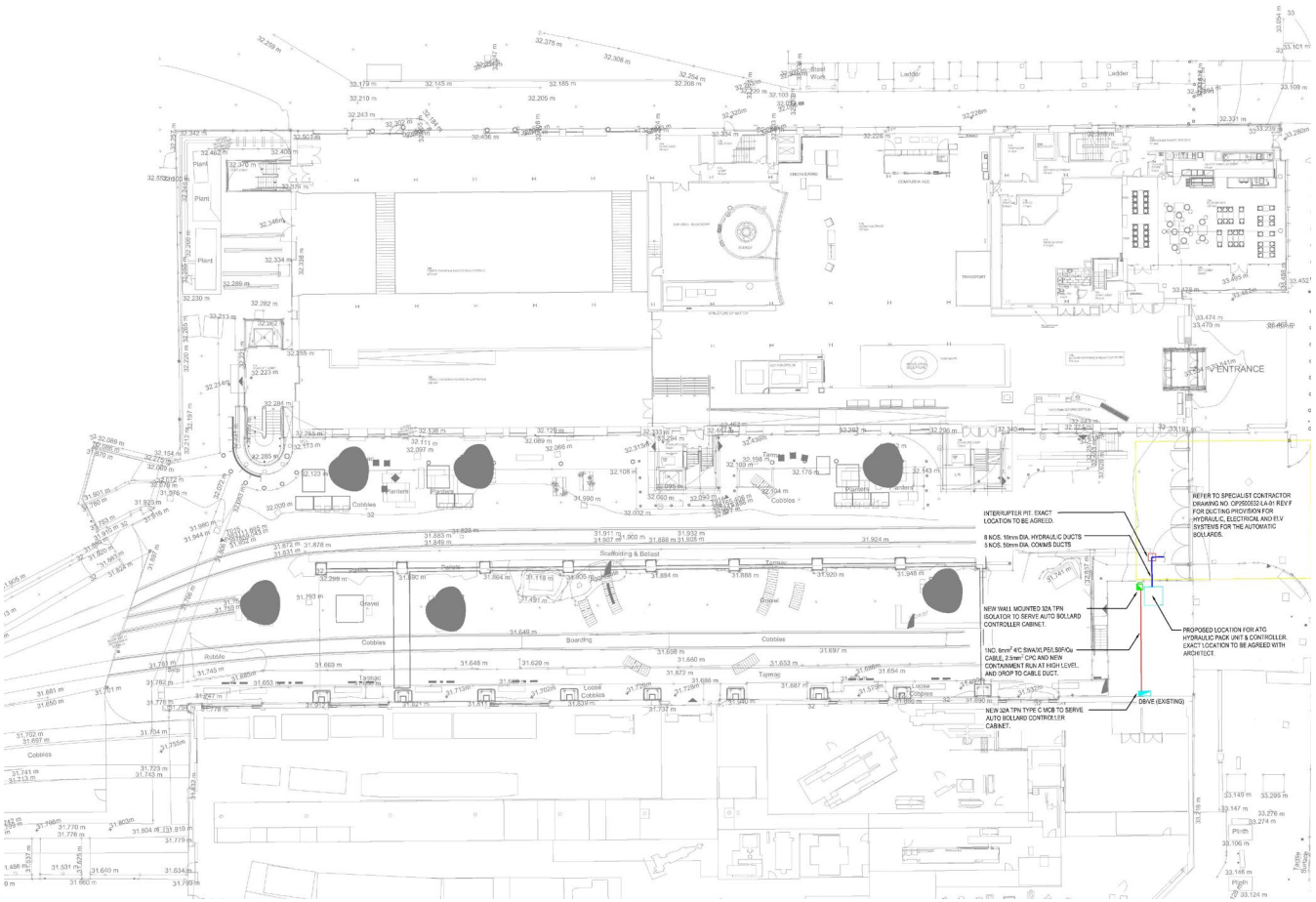
Supporting Information
Utilities - Electrical

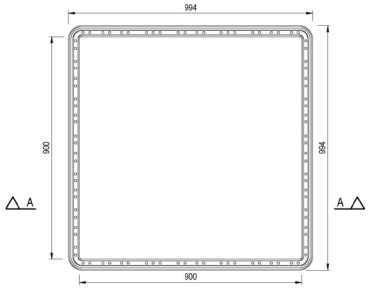
The operation of the proposed automatic bollards will involve the installation of a Control Cabinet (Hydraulic Pack Unit and Control Panel), which will be housed internally inside the Security Office (VE Block). Power for these equipment will be served from the existing distribution board DB/VE in Security Office.

New 32A TPN circuit breaker will be added to the existing distribution board. New power cabling, containment and cable ducting will be provided to serve the power and control cabling from the cabinet to the retractable bollards.

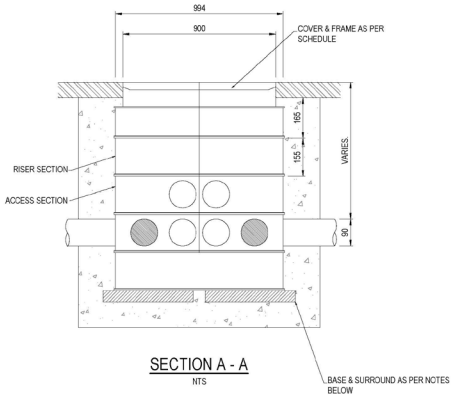
LEGEND

- DISTRIBUTION BOARD (EXISTING)
- UNDERGROUND DUCT SIZE AS SPECIFIED
- CABLE CONTAINMENT
- TPN ISOLATOR RATING AS SPECIFIED

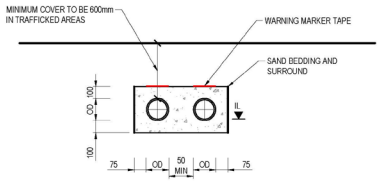




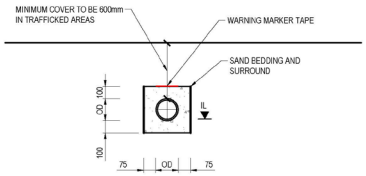
900x900 LOW VOLTAGE DRAW PIT AS STAKKABOX (OR EQUIVALENT)
NTS



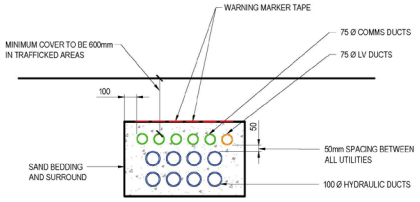
SECTION A - A
NTS



TYPICAL LAYOUT FOR 2-WAY DUCTS



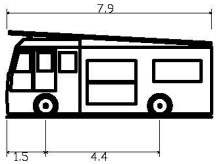
TYPICAL LAYOUT FOR 1-WAY DUCTS



TYPICAL LAYOUT FOR COMBINED DUCTS

Supporting Information
Tracking

A vehicle tracking exercise has been conducted to confirm the proposed Entrance layout is suitable for a fire appliance and a refuse vehicle.

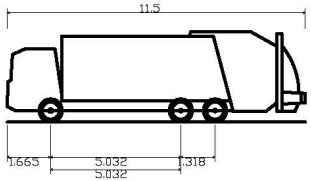


Pumping Appliance	
Overall Length	7.900m
Overall Width	2.500m
Overall Body Height	3.300m
Min Body Ground Clearance	0.140m
Track Width	2.500m
Lock to lock time	4.00s
Kerb to Kerb Turning Radius	7.750m

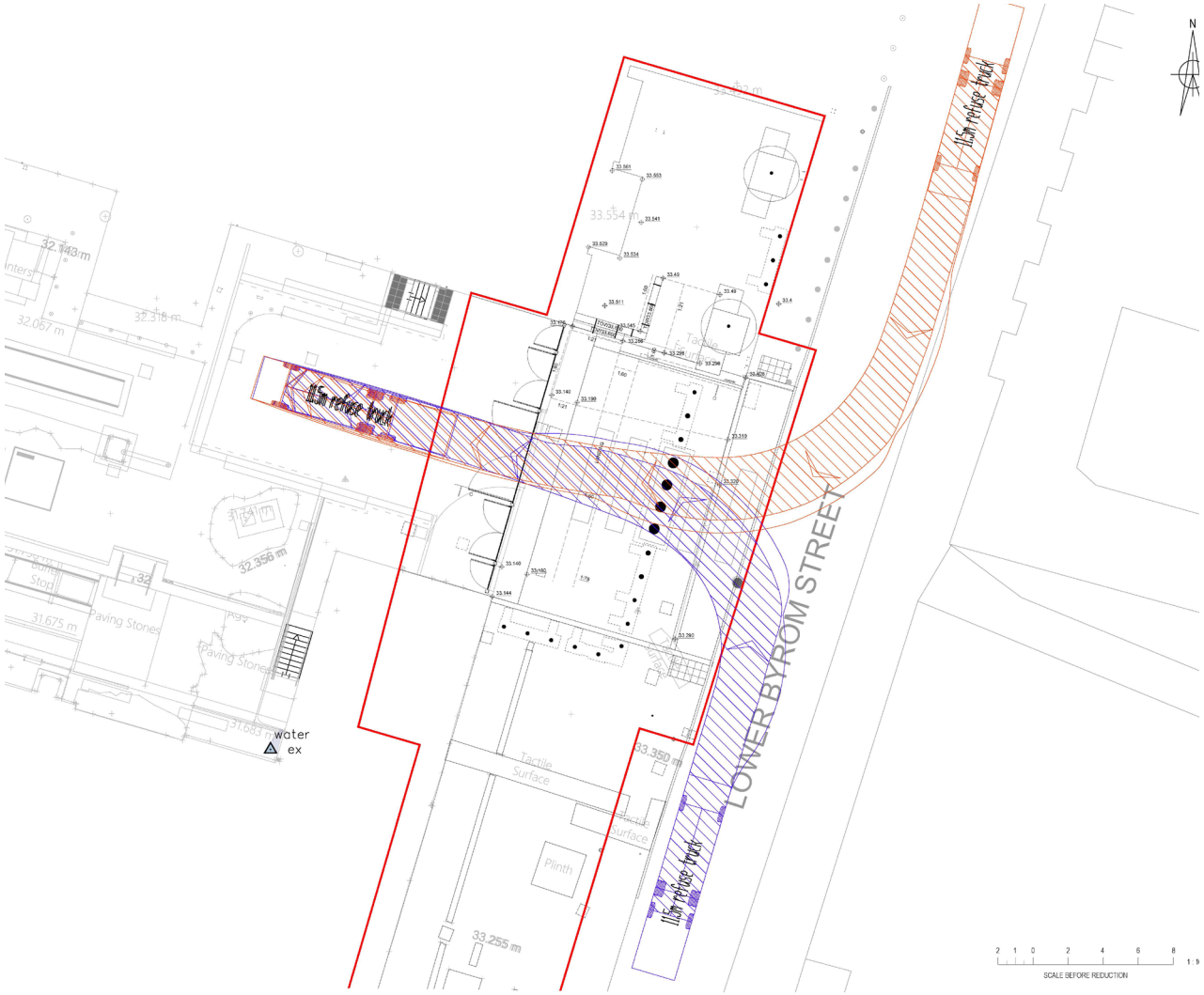


Supporting Information
Tracking

A vehicle tracking exercise has been conducted to confirm the proposed Entrance layout is suitable for a fire appliance and a refuse vehicle.



11.5m refuse truck	
Overall Length	11.500m
Overall Width	2.530m
Overall Body Height	3.500m
Min Body Ground Clearance	0.416m
Track Width	2.530m
Lock to lock time	4.00s
Kerb to Kerb Turning Radius	8.940m



Furniture

The furniture strategy aims to create a welcoming entrance space to the museum.

The materiality extracted from the strategy uses corten steel and chunky timber to pay homage to the rich industrial heritage of the site.

The furniture includes:

- Bollards
- Signage
- Retaining wall with armrests
- Steel planters
- Existing cycle stands
- Existing bench



Steel Planters



Bollards

BOUNDARIES

Planning Boundary

SITE FURNITURE

Planter
Material: Steel
Finish: Corten
Size A: (H)1100 x (L) 2200 X (W) 2200mm
Size B: (H)1000 x (L) 1420 X (W)1420mm

Fixed Bollard
Material: Stainless Steel
Finish: Powder Coated Black RAL 9005 subject to further final client approval
Reflective Visibility Strips to be included
Size: (H)1000 (1300mm total height including below ground) x 219 diameter

Automatic Bollards
Material: Stainless Steel
Finish: Powder Coated Black RAL9005
Bollard size: (H) 1000 x 209mm diameter top section 280mm bottom section
Accessories: LED lighting band to top of bollard, visibility strips.

Removable Bollards
Material: Stainless Steel
Finish: Powder Coated Black RAL9005
Bollard size: (H) 1000 x 209mm diameter top section 280mm bottom section

Signage
Material: Stainless steel
Finish: Powder Coated Black RAL9005 subject to further detail.

Armrests to Retaining Wall
timber tiered retaining wall armrests

Existing Bench
retained

Existing Sculpture
retained

Existing Signage Post
to be retained

Existing Lighting Column
retained

Existing Bollard
retained

Proposed Vehicular and Pedestrian Gates
not part of this application, refer to Power Hall consent application, refence 131489/LO/2021.

Induction Loops to Automatic Bollards

Existing Cycle Stands

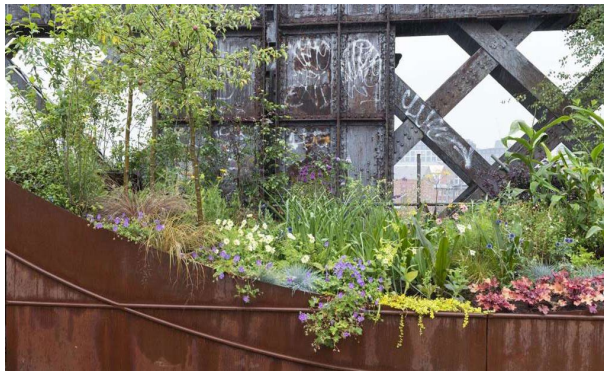


Lower Byrom Street Gateway Planting
Concept

The planting palette will provide a varied and interesting display of plants that will become part of a story telling narrative within the museum. Focusing on the stories of feeding the city and supplying industry. Whilst, enhancing biodiversity and providing stimulation to various senses such as the eye and nose of the Museum visitors.

Planting will include:

- Ornamental raised planters
- Bulb planting
- Multi-stem feature tree





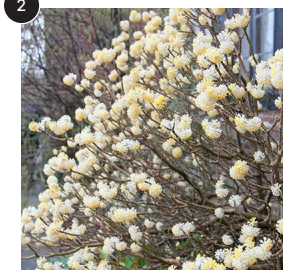




The Lower Byrom Street Gateway Planting Palette
Feeding the City and Supplying Industry - Sun Mix

Tall







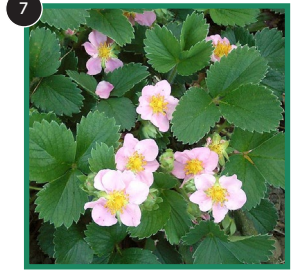
Medium





Low





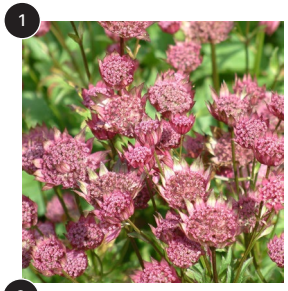




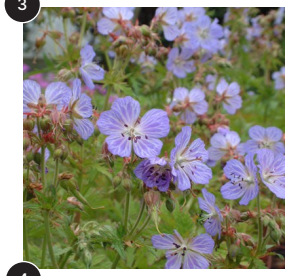
1. *Stipa tenuissima.* Sensory (texture, touch) similar to wheat and barley grain.
2. *Edgeworthia chrysantha* Known as the paper bush, is used to make traditional Japanese Paper.
3. *Achillea ptarmica* 'The Pearl'. Reminiscient of the cotton transported through the site.
4. *Heuchera villosa* 'Palace Purple'. Reminiscient of red wine and grapes transported through the site.
5. *Pinus mugo* 'Mops'. Resin of pine trees is used to make soda-ash turpentine. Links to Oil and turpentine transported on the site.
6. *Heuchera* 'Obsidian'. Black / deep purple flowers reminiscient of the coal transported through the site.
7. *Fragaria* 'Pink Panda'. Produce strawberries. Reminiscient of fruit transported through site.
8. *Stachys byzantina* 'silver carpet'. Known as Lambs ears, reminiscient of the livestock that use to be transported on site.
9. *Juniperus communis* 'Green Carpet'. Links to spirits transported on site. Used in cocktails.

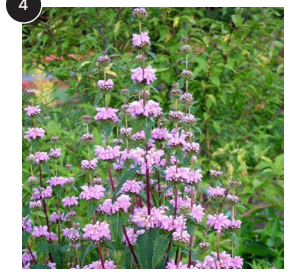
The Base Planting Palette
Sun Mix

Tall













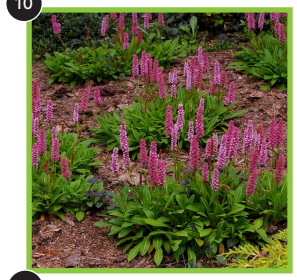
Medium





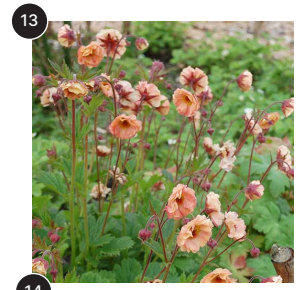


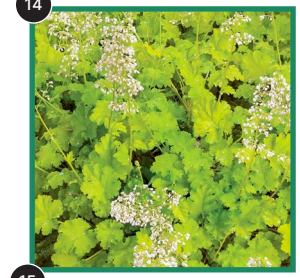
Low

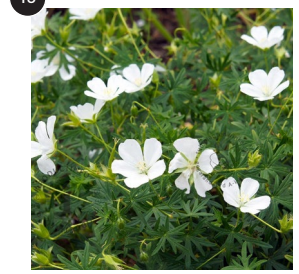












1. *Astrantia* 'Hadspen Blood'
2. *Bistorta officinalis* 'Superba'
3. *Geranium pratense* 'Mrs Kendall Clark'
4. *Phlomis tuberosa* 'Amazone'
5. *Geranium phaeum* 'Samobor'
6. *Perovskia* 'Little Spire'
7. *Nepeta faassenii*
8. *Salvia nemorosa* 'Caradonna Pink Inspiration'
9. *Cyrtomium falcatum*
10. *Bistorta affinis* 'Darjeeling Red'
11. *Veronica* 'Blue Star'
12. *Erigeron karvinskianus*
13. *Geum* 'Mai Tai'.
14. *Heuchera* 'Lime Marmalade'
15. *Geranium sanguineum* 'Alba'

Key

Evergreen

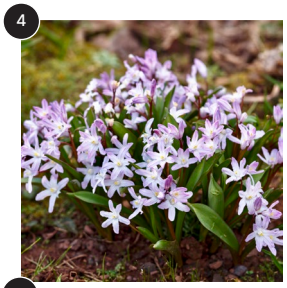
Semi-Evergreen

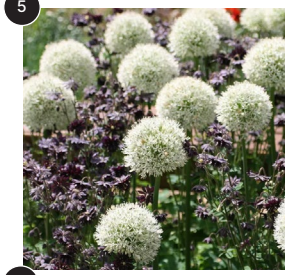
The Bulb Planting Palette
Sun Mix





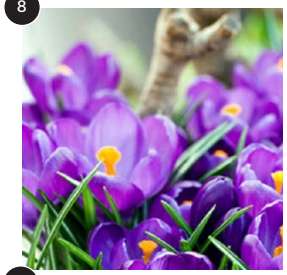


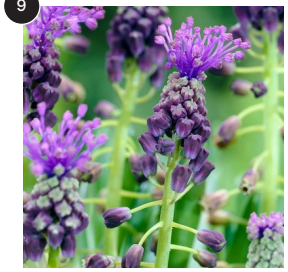














1. ***Allium atropurpureum.*** Sensory, Good for pollinators.
2. ***Allium sphaerocephalon.*** Sensory, Good for pollinators.
3. ***Nectaroscordum siculum.*** Can be used in cooking, particularly in salads and as a garnish, for its onion-like flavor. Good for pollinators.
4. *Chionodoxa* 'Pink Giant'. Biodiversity (early feeding fource)
5. *Allium stipitatum* 'Mount Everest'. Sensory, Good for pollinators.
6. *Galtonia candicans.* Good for pollinators.
7. *Galanthus nivalis 'Viridapice'*
8. *Crocus 'Flower Record'*
9. *Muscari comosum*
10. *Scilla siberica*

The Tree Planting Palette

Malus Sylvestris

Produces apples which are used to make jellies, jams, and ciders.











Landscape Proposal

The final proposal utilises a combination bollards and planters to the entrance of the Science and Industry Museum.

This strategy allows pedestrians to queue safely behind the bollards as they approach the main entrance.

Whilst the planters help to soften the frontage and provide seasonal visual and sensory experiences.

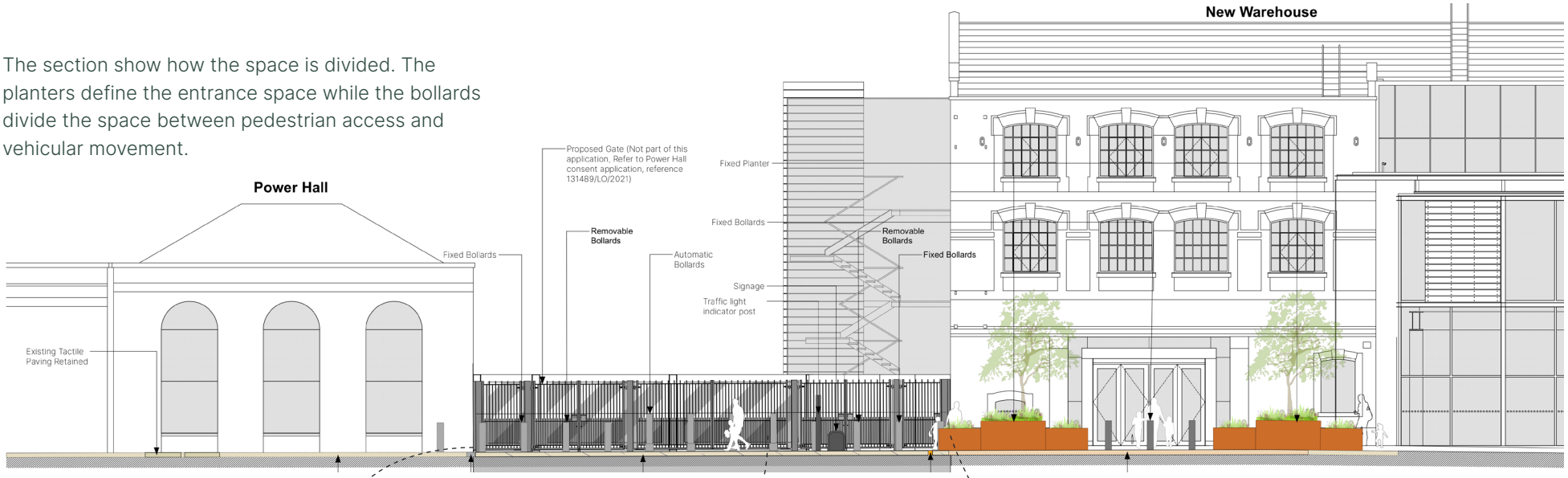
To deal with the level change in this area a timber retaining wall has been proposed that ties into the design language in the Upper Yard. Visually blending the two spaces to create a more seamless and cohesive whole.



Proposed Landscape General Arrangement

Proposed Elevation

The section show how the space is divided. The planters define the entrance space while the bollards divide the space between pedestrian access and vehicular movement.



Proposed Elevation





Precedent Images of Bollards





Precedent Images of Planter with tree

3D Visualization

A series of 3D visualisations were created to illustrate the proposals.

a. Users are able to queue up behind the bollard line.

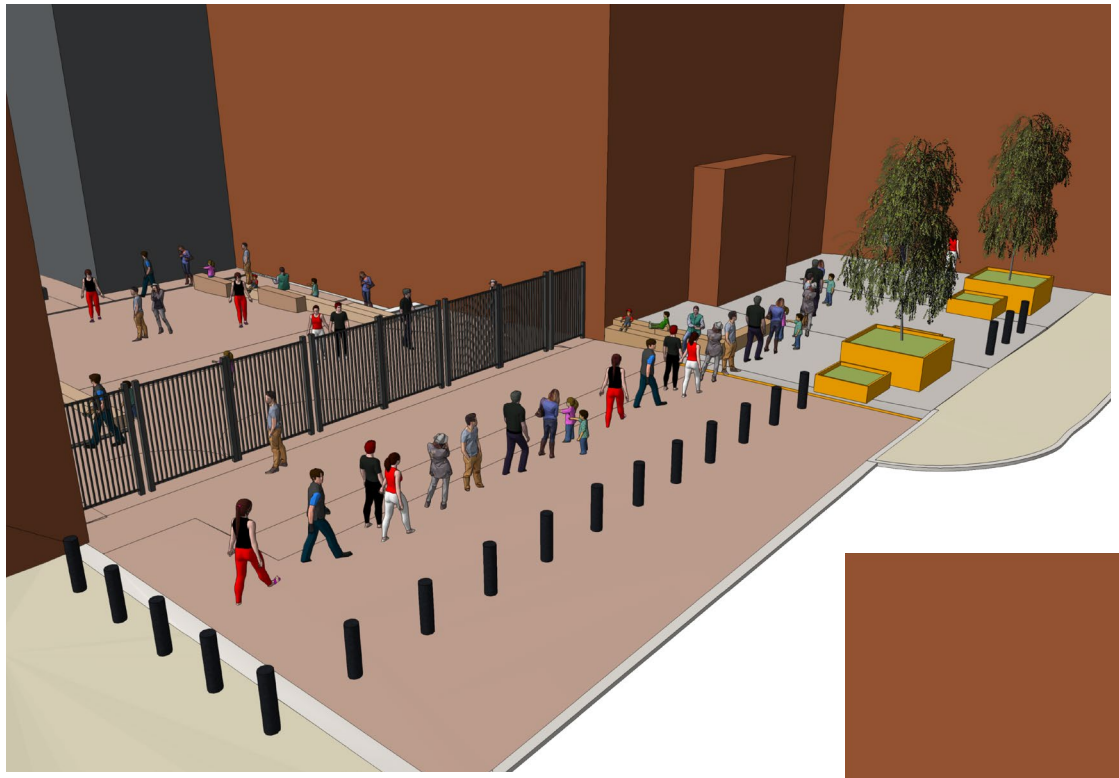
b. The planters create a welcoming arrival with opportunities for the pedestrian to dwell, socialise and interact.



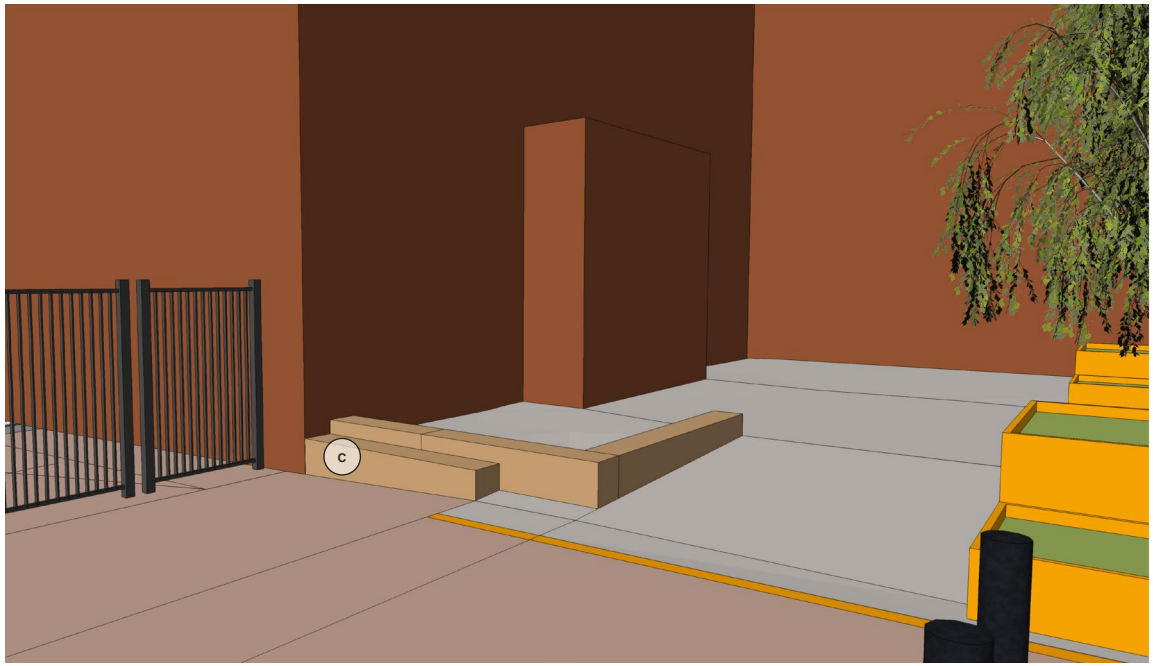
1. Lower Byrom Street Entrance Area View 1



2. Lower Byrom Street Entrance Area View 2



3. Lower Byrom Street Entrance Area View 3



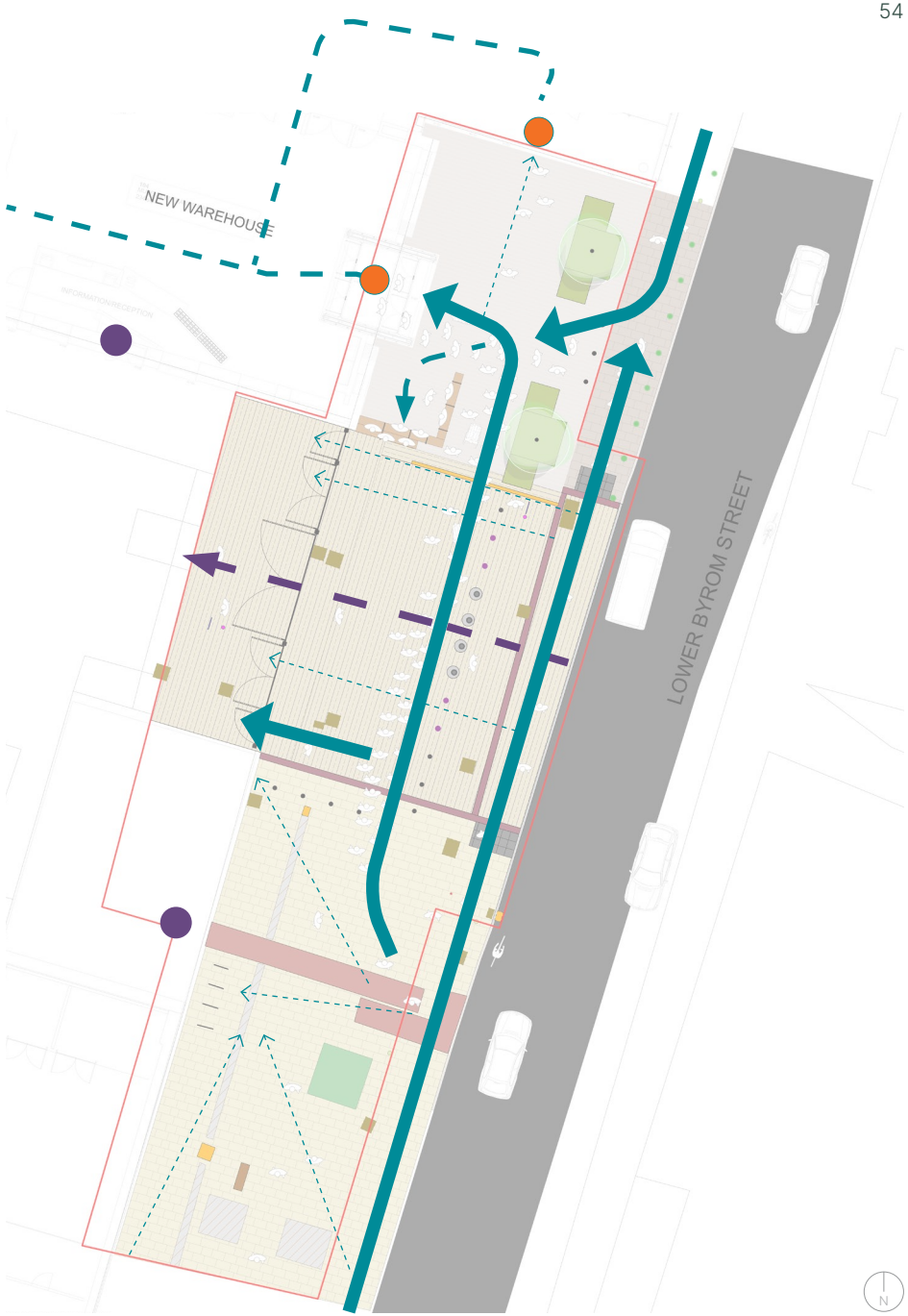
4. Lower Byrom Street Entrance Area View 4

C. The Retaining wall bench provides a welcoming seating feature at the entrance, while dealing with the levels in a compliant and accessible way.

5
ACCESS

Pedestrian Movement and Servicing

This diagram illustrates the strategic thinking for movement. The external landscape is viewed as an extension of the internal museum space and ensures accessible routes externally. These connect the important building entrances on site whilst offering a sense of exploration.



Key

- Main movement through site
- Main movement inside the museum
- Entrances
- Secondary routes
- Fire escape route from adjecent resi unit
- Servicing

Movement

This diagram illustrates the strategic thinking for levels and movement across the site. The external landscape is viewed as an extension of the internal museum space and ensures key accessible routes externally. These connect the important building entrances on site whilst offering a sense of exploration.

The British standards state that we should be "designing to address and integrate the access requirements of all people, irrespective of their personal circumstances, as part of mainstream design" as this is "always preferable to designating separate or specific features. Designing in this way doesn't isolate or "socially separate" but accommodates a wide array of user requirements.

The site is generally perceived as predominantly flat with the exception of the gated access point to Lower Byrom Street. The proposal aims to provide a DDA compliant route with landings where appropriate.

Retaining wall seating features have been incorporated to take up level differences where required. Cross falls are mainly kept at 1:40 maximum. Stepped access complies with Part M of the Building Regulation.

Fire and emergency access is retained in the Upper Yard from Lower Byrom Street via controlled access gates. The vehicles proceed past the Gantry to the western part of the Yard where the dry riser is located and are able to turn around and manoeuvre back out.

Age-friendly outdoor spaces checklist:

Pleasant and clean environment

Importance of green spaces

There are well maintained and safe green spaces, with adequate shelter, toilet facilities and seating that can be easily accessed.

Somewhere to rest

Spaced at regular intervals: the seating is well maintained and patrolled to ensure safe access by all.

Age-friendly pavements

- A smooth, level, non-slip surface;
- Sufficient width to accommodate wheelchairs;
- Priority of access for pedestrians.

Accessibility

- Remove physical barriers where possible.

Global age-friendly cities : A guide.
World Health Organization 2007



Levels and Accessibility

The levels diagram ensured DDA compliant routes also worked with the new spatial arrangement of bollards and planters. To support this a retaining bench was designed, that carries on the same design language as the Upper Yard and responds to the levels in a usable and compliant way.



Key

- Retaining Features
- Access Points To Buildings
- +31.000 Key Levels
- Falls
- Accessible Routes/ Surfaces
- Resting Points At Minimum 50m Distance.

6
FRAMEWORK MANAGEMENT PLAN

Management Plan

Objective

Consideration has been given to the future management requirements of the hard and softworks elements for Lower Byrom street. As a result the following objectives have been identified:

- To ensure the successful establishment and continuity of the overall design concept.
- To prescribe all necessary management and maintenance principles and management tasks to ensure satisfactory establishment and maintain plants in a continuing healthy and attractive condition.
- To establish appropriate amenity and biodiversity value.
- To provide a mechanism for the ongoing monitoring and reviewing of the management plan and the specific maintenance operations contained therein.
- To establish a mechanism for the replacement of any failing plant or one which has reached maturity.

Duration

Once the initial construction defects and maintenance period is complete, general activities will need to be addressed by the museums maintenance team as part of the standard maintenance procedures. This can include the existing volunteering program already present on site.

Monitoring

Monitoring is of fundamental importance, since this is the means by which the success of the plan will be measured. It is therefore important to establish standardised survey and monitoring methods, which enable valid year on year comparisons to be made. There will be a need for flexibility during its implementation. The Management Plan must be an evolving one, able to adapt to the specific needs of the site.

This maintenance provider should undertake an annual review of the site, providing written documentation as to the ongoing establishment of the planting.

This report should include a condition review of all new /existing plant material, success rates of newly planted material, and recommendations for future management regimes and immediate management requirements.

Health and Safety

A Health & Safety plan is an important consideration for any area of public realm. The landscape maintenance team are expected to produce a risk assessment and method statement for the maintenance of the planting management and maintenance procedures.

Waste

Recycled bins will be distributed on site. Waste management will be undertaken in line with SMG Waste Management Policy.

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