DESIGN AND ACCESS STATEMENT IN SUPPORT OF PROPOSED SCHEME TO RECONFIGURE PLATFORMS AND ASSOCIATED WORKS AT LIVERPOOL LIME STREET STATION

September 2016

Introduction

This document is intended to outline the programme of works proposed to be undertaken to the platforms at Lime Street Station. The 'proposals' section below explains the works in further detail, setting out the rationale and justification for the proposals. This will also include analysis of the proposals' heritage implications.

Site Location

Liverpool Lime Street is a major station on the West Coast Main Line, and is the largest of Liverpool's train stations. The station also lies on the Wirral line of the underground service.

Lime Street occupies a central position within Liverpool, and is considered to be the gateway into Liverpool city centre. There have been previous improvements to the station and forecourt following a substantial investment for refurbishment as part of the Lime Street gateway project. The station is 'divided' into two sections, including the main line services and the Merseyrail underground services.

In total, Liverpool Lime Street (mainline benefits from 9 passenger platforms, serving national and local services. Platforms 1 -6 lie to the north of the station, generally serving short regional services. Access to these platforms is gained through a ticket inspection barrier from the main concourse. Platforms 1 -6 are currently shorter than platforms 7 -9, the latter dealing mainly with long distance services.

Historic Context

The station was designated a Grade II listed building in March 1975, and included the station building, the façade and the train sheds.

Lime Street's first station was opened by John Foster Jnr in August 1836, on land purchased by the Liverpool Corporation, with a wooden train-shed. The station, however, was replaced by a new station built by Sir William Tite in 1849. It included the first totally innovative iron segmental- arched vault train shed. The earlier portion has a long glass roof in a curve and spans c. 219 ft, supported on double Doric columns of iron. The rear wall of the c.1849 station still exists along the back edge of platform 1.

In 1867 the original train shed was replaced by London and North Western Railway (LNWR). It is still in use today and constitutes the north vault of the present station. A second train shed vault by Stevenson and Ives was added in 1874 and currently exists as the south vault of the station, bordering Skelhorne Street. The later portion is on square piers with a span of 186 ft.

The station façade, facing Lime Street is constructed of stone, Tuscan pilestrade with round-arched openings with architraves and keystones. Skelhorne street entrance has Tuscan columns with dosserets and arch braces supporting cornice.

The concourse was remodeled in 1955 and again in 1984. The 1984 remodeling included the construction of the barrier-line building in the north vault and glazed artwork screen, by Radford, Ball, Rainey and Cooper, in the south shed. The platforms were previously paved, as shown below in the c.1890 photograph. However, the paving was later replaced with asphalt.

The train sheds were refurbished under Station Regeneration Programme (SRP) in 1999 to 2000. The SRP train shed refurbishment was given the London Underground Award in the National Railway Heritage Awards 2001 and a Structural Heritage Commendation in the Institute of Structural Engineers Awards 2002.

Planning Policy

Relevant National and Local planning policy is outlined below:

National Planning Policy Framework

The NPPF sets out the Government's vision for planning to help achieve sustainable development. Central to this is that economic, social and environmental gains should be sought through the planning system. The NPPF's approach to Heritage is fundamentally unchanged from that of PPS5, in that there is still a focus on the identification of 'heritage assets', outlining their 'significance' and considering any impact upon that significance as a consequence of any proposed works.

NPPF paragraph 128 establishes the information requirements for an application for consent affecting a heritage asset. Local Planning Authorities (LPAs) should require an applicant to describe the significance of any heritage assets affected, including any contribution made by their setting. The level of detail should be proportionate to the assets' importance and no more than is sufficient to understand the potential impact of the proposal on their significance.

Paragraph 129 details the policy principles that should guide LPAs in determining applications in relation to heritage assets. It states that in considering the impact of a proposal on any heritage asset, Local planning authorities should identify and assess the particular significance of any heritage asset that may be affected by a proposal (including by development affecting the setting of a heritage asset) taking account of the available evidence and any necessary expertise. They should take this assessment into account when

considering the impact of a proposal on a heritage asset, to avoid or minimise conflict between the heritage asset's conservation and any aspect of the proposal.

When determining applications, LPAs should take account of (paragraph 131):

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

Paragraph 132 states that when considering the impact of a proposed development on the significance of a designated heritage asset, great weight should be given to the asset's conservation.

Paragraph 134 states that where a development proposal will lead to less than substantial harm to the significance of a designated heritage asset, this harm should be weighed against the public benefits of the proposal, including securing its optimum viable use.

Liverpool Unitary Development Plan

When developing the proposals, regarding was had to the policies within the Liverpool Unitary Development Plan, including the following:

Policy HD4 – Alterations to Listed Buildings
Consent will not be granted for:
i. extensions, external or internal alterations to, or the change of use of, or any other works to a listed building that would adversely affect its architectural or historic character;
ii. applications for extensions, alterations to, or the change of use of, a listed building that are not accompanied by the full information necessary to assess the impact of the proposals on the building; and
iii. any works which are not of a high standard of design in terms of form, scale, detailing and materials.
2. Where the adaptive reuse of a listed building will be used by visiting members of the public, the needs of disabled people should be provided for in a manner which preserves the special architectural or historic interest of the building.

T2 - RAIL FACILITIES
The City Council will support and facilitate proposals involving the construction or upgrading of rail facilities which will improve the efficiency of freight transport to, through and across the City.

The efficiency of the network has been further improved through investment in signalling measures and electrification. Further improvements undertaken to the Merseyrail and Inter-City network will be supported. This will not only serve to attract investment to Liverpool - and in particular to the City Centre - but will also play a role in reducing private car use, thereby contributing to reductions in urban congestion and pollution levels.

HD18 - GENERAL DESIGN REQUIREMENTS
When assessing proposals for new development, the City Council will require applications to comply with the following criteria, where appropriate, to ensure a high quality of design.

Scheme Proposals and Assessment

Scheme Context

Network Rail is proposing to undertake a significant programme of works to enhance rail services at Liverpool Lime Street Station. This will involve the remodelling of Lime Street Station's platforms and the provision of improvements to signalling equipment on the approach to the station.

The rationale for the works is that Liverpool Lime Street station area and throat are controlled by electro-mechanical signalling equipment which, along with the complex and difficult to maintain track layout is life expired, and fails to meet current standards. The project is renewing the complete signalling system utilising state of the art equipment, and transferring signalling control to Manchester Rail Operating Centre (in alignment with the National Operating Strategy). The track layout is to be completely remodelled. The revised track layout will more maintainable and require less disruptive access to maintain, as well as meeting current standards. Line speed improvements have been included within the design of the scheme where practicable in a terminus station, providing a performance benefit over the existing layout. Redundant sidings between platforms will be removed to make way for wider platforms and improved track alignment.

The opportunity has been taken to align these planned signalling and track renewals works with resolution of capacity restraints at Lime Street station. The new layout has been designed in conjunction with remodelled platforms to remove non-compliant platform area and provide an overall platform capacity improvement suitable for 20 trains per hour in support of the Northern Hub.

The wider scheme will also involve the installation of new Relocatable Equipment Buildings ('REB') at five locations between Lime Street and Edge Hill (St Andrew St; Pembroke St; Crown St; Mason St and Harbord Street.

Application site proposals and analysis

The scheme proposes the alteration and modification of the existing station platforms. This includes either adding new copers and tactile paving, or the movement of the existing platform coper positions, platform resurfacing, additional drainage and cable ducting.

The existing platform layout will be renumbered as the re-signalling proposals require localised widening, extension and creation of new platforms. The works will involve remodelling of the existing coper edges, demolition of existing platform riser walls and installation of new platform riser walls to compliment the track proposal. In order to facilitate the platform works, the existing platform furniture and ancillary retail and non-retail facilities on the station platforms will be decommissioned, in particular on Platform 7 & 8. The project's proposed approach to specification of materials for new surfacing aims to utilise high quality products, which are appropriate within the context of the Listed station. New surfacing will mirror that utilised on the existing Platforms 1-4, which were installed circa 2013 in connection with a programme of works to resurface and install new drainage to these platforms.

In summary, the following alterations are proposed for the existing platforms:
Platform 1 (current) – The current Platform 1 will be made redundant from an operational railway perspective, although the platform will continue to be utilised for access to office units at the northern portion of the station. It is proposed to install a series of glazed handrails to the platform edge, in order to ensure the safety of users of the former platform. The existing Platform 7/8 area currently features an existing glazed handrail, in the vicinity of the existing Virgin First Class Lounge structure. The proposed platform modifications to this area of the station will remove the requirement for a handrail and it is therefore proposed to relocate this handrail to the Platform 1 area. As a consequence of the diaphanous nature of the glazing within this handrail system, views to and from the former platform area will be maintained. Furthermore, the reuse of existing infrastructure represents a sustainable approach to design and construction.

Platform 2 (current) – The current Platform 2 will be renumbered as Platform 1 (P1) as part of the proposal. The existing track will be re-aligned at the approach at this location and subsequently requires extension (approximately 93 m to the east) to the existing island platform between the current platforms 2 & 3 to accommodate longer trains. The existing end ramp will be decommissioned and proposed riser wall will be constructed to tie into the existing platform. The proposed construction of the platform will be with traditional concrete riser walls.

Platform 3 (current) – The current Platform 3 will be renumbered as Platform 2 (P2) and the civils works will be mainly associated with the existing Platform 2/3 island modifications detailed above. Existing macadam surfacing at the eastern end of the platform will be resurfaced in Marshall Perfecta paving.

Platform 4 (current) – The current Platform 4 will be renumbered as Platform 3 (P3). A portion of the existing platform towards the east (ramp end) will be demolished to accommodate new track alignment. The element to be removed features modern macadam surfacing.

Platform 5 (current) – The current Platform 5 will be renumbered as Platform 4 (P4) and the modifications will be largely similar to the works detailed for current Platform 4.

The portion of the station currently accommodating existing Platforms 6 to 9 will be modified through the introduction of a new operational platform to the southern side of the existing Platform 6 (where an area of macadam-surfaced platform to the eastern end will be demolished). A new REB building is proposed to be constructed in this area. The structure will be of light grey colour and secured via an adjustment and extension to the existing palisade fence line.

The new Platforms 6-10 will be facilitated by the demolition of the existing Virgin 1st Class Lounge and GPO building structures. The existing macadam paving will be removed as part of the works, with Marshall Perfecta paving installed. There will be a number of modifications and alterations to the length and configuration of the platforms.

The presence of extensive historically-significant Yorkstone paving at various locations beneath the existing mastic asphalt platform surfaces has been an important element in the project design development process. The proposed station works will require the removal of the existing Yorkstone in limited areas to enable the platform modifications and associated works. In order to ensure that the scheme is respectful to this important element of the station's historic significance, Network Rail commissioned a Conservation Architect (Bernadette Bone ARB RIBA(CA) GradDiplCons(AA)) with extensive experience of providing advice on major railway projects affecting the historic environment. Following analysis of the scheme proposals, the following general principles are considered to be pertinent to the development of the scheme design:

- Care should be taken in developing any proposals for relocation and storage of the stonework to ensure that the approach is consistent with the significance of the heritage asset, the material affected and the proposed works overall.

- The Yorkstone is listed as part of the Grade II listing of the station and provides evidential value demonstrating the previous construction and appearance of the station. However it does not currently contribute to the aesthetic value of the heritage asset as it is covered and not visible. It is therefore recommended that proposed options for incorporating areas of Yorkstone should be based on an understanding of what the original paving configuration was and should aim to reveal this to key areas which can contribute to the understanding of the heritage asset and better reveal its significance (rather than haphazard placing which could reduce the heritage significance of the salvaged material).

- As the paving has been covered for a considerable time the condition and therefore extent salvageable is not known and will not be known until the works have taken place. Therefore any calculations should assume a percentage loss. It is recommended that a sample area of removal is undertaken to try to assess the percentage loss likely.

- The salvaged stonework is unlikely to be consistent in size and thickness, both due to the condition and the fact that limiting the extent of removal to the minimum necessary in all areas will require

some cutting of stonework. The final extent of salvaged material is likely to consist of random sizes of stonework. This might limit the opportunities for re-use.

Technical Requirements

Network Rail has engaged with Liverpool City Council in a process of extensive pre-application discussion, throughout the project development period. Most recently at a site meeting on 05/05/16 attended by representatives of Network Rail with its design consultants and Liverpool City Council's planning and conservation officers, it was agreed that, in order to make an informed assessment regarding the strategy for the management of Yorkstone the following will be required:

- Confirmation of the amount of Yorkstone to be removed

- Confirmation of the areas where the removed Yorkstone could be incorporated/stored within the remodelled station.

Remodelling and replacement of the track within the station requires compliance with the following standards:

- NR GI/RT7073 – Requirements for the position of infrastructure and for defining maintenance clearances – Network Rail
- NR GI/RT7016 - Interface between Station Platforms, Track and Trains – Network Rail
- NR/L3/CIV/163 – Platform Extensions – Network Rail
- Design Standard for Accessible Railway Stations (version 04) – Department for Transport

These outline the requirements for stepping distance from a train to the new platform, platform furniture and the design parameters for use (including gauging requirements). The proposed works must comply with all of the above standards. Existing platforms 6 to 9 do not comply with platform gauging and accessible station guidelines set out in the "Design Standard for Accessible Railway Stations" (Version 04). To achieve compliance the platforms will require a number of modifications including:

- Contrasting tactile paving along the platform edges;
- Coper movements to meet stepping distance and platform clearance requirements;
- New platform cable ducting to relocate cables currently attached to riser walls; and
- Modifications to riser walls to permit increased platform loading.

In addition to the works listed above, the following works will also require localised Yorkstone removal/modification:

- New platform based REB (Relocatable Equipment Building) and compound;
- New signals, New OLE (overhead line electrification) gantries and lighting columns; and
- New cross track cable route UTX (Under Track Crossing) with chambers in each platform.

Site constraints

The following issues are specific to the Yorkstone and need to be considered in the development of options considering its further use:

- Grade II Listing: The Yorkstone is currently covered under the station's Grade II listing. Where feasible the Yorkstone should remain undisturbed, or disturbance of the stone should be kept to a minimum. It is the advice of Liverpool City Council that where Yorkstone is disturbed / needs to be removed, it should be lifted and retained in the station.

- Existing Riser Walls: Existing platform riser wall construction varies throughout the station. The stability of the wall and permissible over hangs must be considered in the solution. In a number of

areas the large overhang of the Yorkstone slabs, poses a significant risk of overturning at the platform edges.

- Yorkstone capacity: The structural capacity of the Yorkstone is unknown and is likely to vary throughout the station, which creates significant risk where it is used as a coper edge. This is due to an unsupported overhang that could fail under loading, with the potential for station users to fall onto the track. Strength testing of a representative number of the slabs, would require extensive intrusive investigation, which would not be desirable due to the impact on the stones.

- Yorkstone Surfacing: Yorkstone is characteristically slippery underfoot, therefore it is necessary for any exposed areas to be coated with a non-slip resin. A number of such products, including Resupen SF by Resin Surfaces Limited, are available which can generally attain the required slip resistance but vary in finish. Therefore it may be that the finish achieved through use of the product compromises the appearance of the Yorkstone It is advised a test patch of Yorkstone is treated with these products and assessed for suitability

Yorkstone Works – Previous platform resurfacing

As part of the recent resurfacing works on platforms 1 to 5 (2013), areas of the Yorkstone were exposed and alterations similar to some of those proposed in this memorandum were undertaken. Drawing 132627-ATK-DRG-ECV-120211 shows a plan of the works undertaken as part of this resurfacing scheme, which included adding new copers, tactiles and duct routes. Pictures taken from these works show the appearance and condition of the Yorkstone slabs under the mastic asphalt layer (see images below).

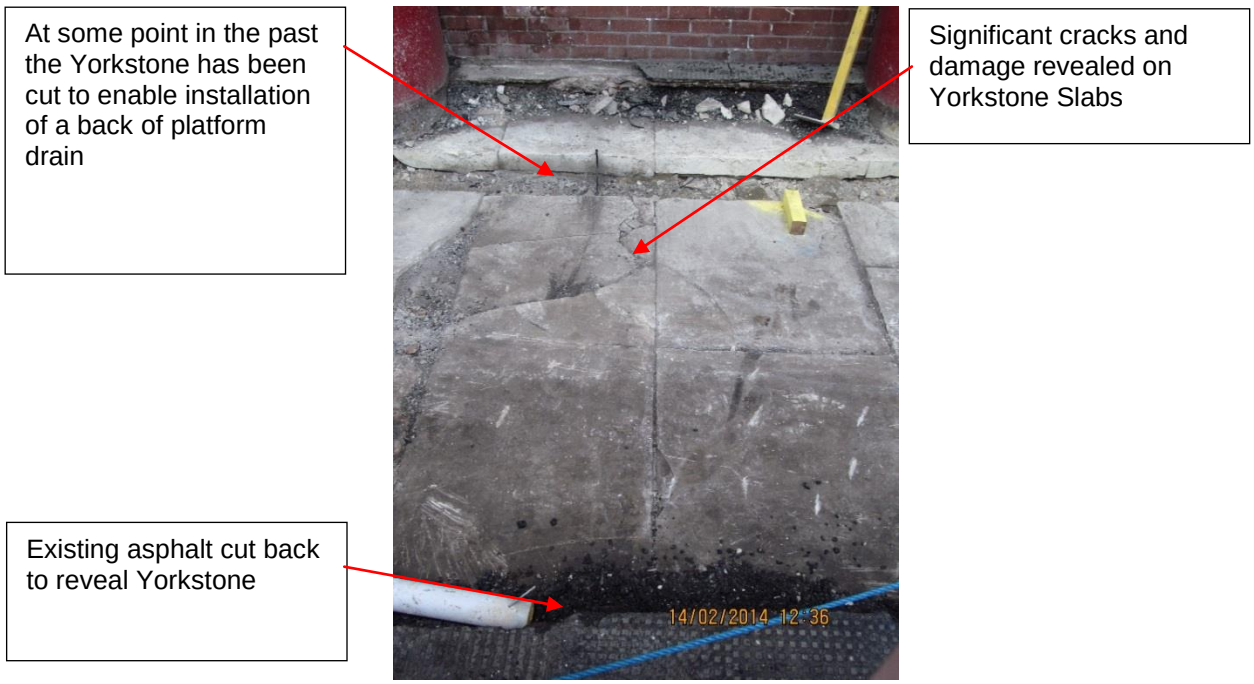

Figure 1 - Yorkstone Slabs exposed as part of previous works on existing platform 1

Figure 2 - Yorkstone Slabs exposed as part of previous works on existing platform 3

To highlight the historical significance of the Yorkstone in the station, the engraved slab on Platform 1 shown in Figure 3 below, was installed as part of the works in 2014. It serves as a historical notice to the public, informing them of the presence of the Yorkstone.

Figure 3 - Platform 1 engraved Yorkstone slab

Impact on Yorkstone

Figure 4- Existing platform 9 copers

To achieve the requirements outlined in section 1.3, a 1.6m strip of Yorkstone will need to be removed from the platform edge. Investigation of the Yorkstone indicates that it varies between 90mm and 130mm in thickness.

A 1.6m strip of Yorkstone will be removed from the platform to accommodate:-

- 760mm Standard Sized Coper
- 400mm Colour contrasting tactile
- 420mm Cable/services duct behind tactile
- 20mm allowance for mortar joints between coper, tactile and paving.

Note – See cross-section AA, 132627-ATK-DRG-ECV-120214

The Table below shows the expected areas of Yorkstone to be removed for the platform edge works

Existing Platform	Yorkstone Strip width to be removed (m)	Total (m^2)
6	1.6	65
7	1.6	385
8	1.6	350
9	1.6	160
	Total	960

All of the current mastic asphalt surfacing will have to be removed. On 05/05/16, Liverpool City Council planning and heritage officers requested that, where the asphalt is removed, this be replaced with Marshalls Perfecta Paving as used on platforms 1-5.

The table below summarises the areas of Yorkstone requiring removal, to accommodate the other aspects of the station redevelopment. This includes new signals, the proposed REB on platform 5, platform furniture and the Under Track Crossing required to route cables across the station. Note: new overhead line structure foundations, also required in the station, do not disturb the Yorkstone.

Description	Approximate Total (m²)
New Signal foundations	20
REB and compound	105
UTX including access chambers and cable ducting	180
Platform drainage	125
Total	430

Area of Total Yorkstone Disturbance = 1390 m²

Incorporation of recovered Yorkstone

It is estimated that some 1,390m² of Yorkstone paving will be disturbed within the station curtilage. Record drawings and previous work undertaken on platforms 1 to 5, indicate that the Yorkstone is irregular in size and thickness. Based on the condition of the slabs revealed through the works carried out in 2013, it is likely a number of the slabs may also be cracked or damaged, due to previous surfacing work in the station. On the basis of the findings of works, we estimate 25% of slabs to be damaged. This would result in approximately 1,043m2 of re-usable Yorkstone paving being revealed.

Submitted drawing 132627-ATK-DRG-ECV-120211 shows the extent of the existing Yorkstone paving in the station and drawing 132627-ATK-DRG-ECV-120213 shows the areas where disturbance of the Yorkstone is planned. Drawing 132627-ATK-DRG-ECV-120214 shows the possible storage locations for the slabs.

Note: All quantities are approximate and assume the Yorkstone is in a single layer (unstacked).

The following paragraphs describe possible options for re-using the Yorkstone at the station and/or station curtilage for its safe storage.

Option 1 – Non-accessible areas of platform

Option 1a - Existing Platform 4 & 6 features

The Yorkstone removed from the platforms could be relocated to the areas of platform adjacent to the buffer stops, created by widening existing platforms 4 and 6. This would require retention of the existing end impact wall layout. A handrail would need to be installed to control the flow of passengers. The area would be visible to the public but not directly accessible.

As these sections are new platform, the transplanted stone would be laid in these sections as the top platform surface. Although the area is not to be accessed by the public, it may house operational lineside equipment (Lockout Devices which need to be accessed by Network Rail staff), hence the Yorkstone would require treatment to become slip resistant, as described in section 1.4.

In addition to this a section of Yorkstone could be exposed in the centre of the platform area (approximately 30m²) in order to show the Yorkstone in its existing location and layout. The area is away from the platform edge, but would still require either non-slip surface treatment (as described in section 1.4) or to be hand-railed from public access.

The total amount of Yorkstone that could be re-used on platforms 4/6 is approximately 135 m²

Option 1b - Existing Platform 1
As part of the station development, the existing Platform 1 will become a non-operational section of platform. It may be possible to store some of the Yorkstone removed from the other platforms to Platform 1. This option would keep the retained stone within the station curtilage.
The stone would be stacked on top of the current platform surfacing (which includes existing Yorkstone overlaid by Marshalls Perfecta paving). As it would be visible to the public it would need to be placed to form a feature, or alternatively be screened from view. The stockpiles of Yorkstone must be placed clear of any existing service duct access chambers and any operational platform equipment to allow for maintenance.

The total amount of Yorkstone that could be stored at this location is approximately 120 m²

Option 1c - Existing formation adjacent to Platform 1 or Platform E
Another possible location would be to store it on the redundant track bed adjacent to existing Platform 1 or Platform E. The stone would be stored in a single layer in this location, rather than stacked.
Positioning the Yorkstone on the former track bed (adjacent to the new track bed), would however, expose the stone to a potentially damaging environment. Oil and exhaust from trains could have a degrading effect on the stone over time. This is also at a level that is different to the original position and not a true reflection of its historic use.

The total amount of Yorkstone that could be stored at these locations is approximately 530 m

Option 1d - Inside platform widenings and extensions
During the station modifications, existing platforms 4 and 6 will be widened and existing platforms 2 / 3 and 9 will be extended. It would be possible to re-use some of the Yorkstone as backfill within these new sections of platform. This would reduce the requirement for imported fill but would require suitable works staging to ensure the Yorkstone is removed prior to the platform extensions / widening. Suitability as a “fill” material would need confirmation by the Network Rail Asset Manager.
The stone would be fully encased in the new platform structure and would be covered by the proposed platform surfacing, making removal of the slabs in the future impossible without damaging the stone.
Any stone re-used in this way would not be visible to the public.
The total amount of Yorkstone that could be re-used at these locations is approximately 500 m²

Option 2 - Station Basement
There is a basement space beneath the concourse and the Lime St Chambers building (former North Western Hotel) on the west side of the concourse. Although the space is difficult to access and comprises a number of small rooms, it could be possible to safely store all of the removed Yorkstone. This option would allow for re-use of any intact Yorkstone paving slabs in the future, at the station. It would avoid any impact on the operational extents of the main station area. The basement is currently accessed by a narrow staircase, located close to the Merseyrail stairs.

The stone slabs may be too large and heavy to be moved by anything other than a forklift or a pallet truck. Due to the shape of the slabs and the width and configuration of the existing stair access, it will not be practical or safe to try and move the slabs into the basement down the existing stairs. The only feasible method would be to install a goods lift, especially given the large volume of stone slabs to be moved.

Construction of a goods lift of sufficient size and capacity to receive a forklift or pallet truck, would require a significant space with clear vertical access into the basement. The basement is beneath Lime St Chambers and part of the concourse. The goods lift would need to be set in the perimeter of the concourse, not in the centre of the floor space. The perimeter of the concourse is surrounded by retail outlets and there is no available space for a new goods lift.

Construction of a goods lift with the capacity to move the stone slabs, and then use of a forklift within the basement is not a feasible option. Consequently, storing the Yorkstone in the basement is not recommended.

Option 3 - Platform centre 'spine'
Another option for the re-use / incorporation of the removed Yorkstone into the station layout is to create a feature spine along the station platforms. This spine would consist of a strip of the reclaimed Yorkstone laid down the centre of the island platform, on top of the existing Yorkstone. To minimise the impact on pedestrian flow on the platforms, the strip width is proposed to be approximately 1m. The inconsistent size of the Yorkstone and thickness, as proved in previous exposures of the slabs, means that it would need to be cut to suit this solution. During this reshaping of the stone, it could also be treated appropriately to ensure slip resistance.
Implementation of this option would cause clashes with the existing platform lighting columns, proposed operational cabinets and centre platform drains. To allow for this some of the slabs would need to be shaped around the lighting columns, to incorporate them within the spine. Due to these clashes it is unlikely that a consistent, "unbroken" spine down the platform would be achievable. The spine would be more likely to have breaks along it to allow for platform operational equipment.
The total amount of Yorkstone that could be stored at these locations is approximately –
• Between Platform 6 & 7 – 220 m²
• Between Platform 8 & 9 – 220 m²
• Platform 10 – 250 m²

Option 4 – Structural glass floor over historic paving
A glass viewing section within the platform could be created to view the Yorkstone in its existing / historic position. This option is commonly used in areas of archaeological interest, where a glass floor is created to expose the area of interest below. The viewing section would be constructed from glass, fixed in a frame and suspended above the Yorkstone, leaving it preserved in its original context.
One issue with this option is the feasibility of construction a viewing area on a busy station platform. The viewing area would likely cause pedestrian flow issues at peak times and could lead to a serious accident or injury. The two areas highlighted as possible locations for this in drawing 132627-ATK-DRG-ECV-120214 have been positioned in areas with low pedestrian traffic to reduce this risk. The two positions suggested are:
 Existing Platform 1 – A glass floor section could be constructed close to the existing feature slab on existing platform 1, creating a heritage area. As part of the station development, this platform will be made non-operational, therefore there would be no pedestrian flow implications. As the area is non-operational, there would be more flexibility in manipulating surface levels to enable a larger area of glass on a structural frame to be installed over the existing exposed Yorkstone. This would however, introduce re-surfacing works in an area of Marshalls Perfecta paving that was not planned to be disturbed as part of the development works.
 Proposed Platform 6 – A glass floor section could be created in the mid-section of proposed platform 6. There is currently no Yorkstone in this area, so the section would have to be created from the stone removed from the other platform works and recreated accordingly. Doing this would give greater control over our available construction depth, and using this area would have negligible impact on pedestrian flow. However this would be a recreation of a Yorkstone area, not exposing the stone in its existing state.
Initial discussions with manufacturers of such systems have indicated that this solution is feasible with our available construction depth. As this option is not a standard railway station installation further discussions with Network Rail would be required to see if they approve of its usage within the station.

An alternative to this may be a thickened resin "screed", however this would be so thick it would be difficult to see the Yorkstone beneath.

Summary
A summary of the potential solutions and the quantities of stone that could be stored there is shown below.

Option		**Description**	**Approximate amount of Yorkstone Storage**
Option 1	a	Existing Platform 4 & 6 feature	135 m²

	b	Existing Platform 1	120 m²
	c	Existing formation adjacent to Platform 1 or Platform E	530 m²
	d	Inside platform widenings and extensions	500 m²
Option 2		Station Basement	Further survey required – likely to accommodate all the Yorkstone.
Option 3- Platform centre 'spine'		Between Platform 6 & 7 – 220 m²	690 m²
		Between Platform 8 & 9 – 220 m²	
		Platform 10 – 250 m²	
Option 4		Glass Floor Sections are anticipated to expose 2m x 3m sections of existing stone. This option does not permit for any storage of the stone removed from other platforms	n/a

The advantages and disadvantages of each of the options are summarised below:

Option	**Description**		**Advantages**	**Disadvantages**
1	a	Existing Platform 4 & 6 feature	• Out of main pedestrian flow. • Creates an aesthetically pleasing element of the station platforms.	• Requires Non-slip coating of Yorkstone. • Would cost more than the current surfacing solution in this area.
	b	Existing Platform 1	• Easy to implement, with no additional construction required • Out of main pedestrian flow when platform recommissioned.	• Stockpiled Yorkstone slabs could have a negative visual impact. • Maintenance underneath or behind stockpiles is likely impact on efficient station maintenance. • Will still need non-slip treatment for railway staff.
	c	Existing formation adjacent to Platform 1 or Platform E	• Easily implementable, with no additional construction required	• Yorkstone slabs, exposed to train pollution including oil, are likely to degrade and be permanently damaged. • Stockpiled Yorkstone slabs could have a negative visual impact. • Not easily viewed by the public
	d	Inside platform widenings and extensions	• Reduces the requirement for platform backfill.	• Slabs encased within platform will not be accessible in the future. • May not be desirable to Network Rail as a

			construction detail
2	Station Basement	• Stone can be securely stored in an indoor, pollution free environment. • Stone can be catalogued and is available for access at any time.	• Requires the construction of a goods lift to basement. • A goods lift would be prohibitively expensive • Construction of the lift may not be feasible as there is no obvious location available.
3	Platform centre 'spine'	• Can be formed as an aesthetically pleasing element of the station platforms. • Creates a historical feature of the stone.	• Slabs would need to be re-shaped/cut to size. • Spine is likely to clash with lighting columns, drainage cabinets and other platform furniture. • Raised spine (as Yorkstone is thicker than proposed paving) in the centre of the platform could potentially cause a pedestrian flow issue or trip hazard.
4	Structural glass floor over historic paving	• Yorkstone slabs preserved in historic location and viewable by station users. • Creates an aesthetically pleasing element of the station platforms.	• Expensive to construct and maintain. • Likely to cause construction issues • May to cause pedestrian flows and safety issues if not located on platforms identified. • Requires internal Network Rail approval.

Heritage Architect's Recommendations

It has been estimated that there will be circa 1,390m² of Yorkstone paving required to be removed, reducing to 1,043m^2 on the basis of previous research which has suggested that 25% of slabs will be broken and unusable.

Previous advice from Liverpool City Council was that where Yorkstone needs to be removed it should be retained within the station. The design team has interrogated the options for retention within the station. None of the options outlined provide a single solution for re-using the paving. It has also been advised by the design team that the long term strategy for the station means that there will be very limited opportunity, if any, to re-use any salvaged stone within the station. As previously noted within Section 1.3, the re-use of the Yorkstone should aim to better reveal the heritage asset. There is a risk that if a number of solutions are employed to retain the Yorkstone within the station then the result could be haphazard and reduce the heritage significance of the salvaged material. In addition the following heritage issues for the different options should be considered;

Option 1a) Existing Platform 4 & 6 Feature
If this option is to be taken forward the re-laying of Yorkstone in this area would need to be carefully detailed to ensure that it reflects the historic paving pattern. Consideration should be given to incorporating engraving as the approach taken in 2014 (see Figure 3). The non-slip coating may alter the appearance of the stone and should be carefully specified (subject to confirmation of specification and trial samples).
Option 1b) Existing Platform 1

Stockpiling of the Yorkstone in this location could have a negative impact on the visual appearance of the station and it is not recommended as a suitable solution.

Option 1c) Existing formation adjacent to Platform 1 or Platform E

Storage in this location where the stone is exposed to train pollution is not beneficial for the long term conservation of the material and is not recommended as a suitable solution.

Option 1d) Inside platform widenings and extensions.

Whilst re-using the Yorkstone in this manner would keep some of it within the station it would not better reveal the heritage significance or be beneficial for the long term conservation of the material. This option is feasible but not recommended due to the necessary compromises.

Option 2) Station Basement

This option is not considered to be viable due to the constraints on constructing lift access.

Option 3) Platform centre 'spine'

As with Option 1a) if this option is to be taken forward, the re-laying of Yorkstone in this area would need to be carefully detailed, ideally to aim to reflect the historic paving pattern. Consideration should be given to incorporating engraving as the approach taken in 2014 (see Figure 3). The non-slip coating may alter the appearance of the stone and should be carefully specified (subject to confirmation of specification and trial samples). This option is feasible but not recommended due to the necessary compromises.

Option 4) Structural glass floor over historic paving

This option would enable the historic fabric to be revealed in a manner which would contribute to a better understanding of the heritage asset.

Overall Assessment of Scheme Proposals

Upon consideration of the scheme in its entirety it is clear that the proposals to remodel the station are required in order to facilitate a significant improvement and upgrade to rail facilities at Lime Street Station. Given the station's role and function as a key gateway to Liverpool City Centre, there will be indisputable economic benefits arising from the scheme. There is strong policy support offered to the principle of upgrades to existing rail facilities through Liverpool Unitary Development Plan T2 and the scheme will be consistent and in accordance with the spirit and principles of this policy.

From a Historic Environment perspective, it has been demonstrated in the analysis above that detailed consideration has been given to the interface between the scheme proposals and the historic context of the station. Throughout the design development process the presence of the extensive Yorkstone paving was a key driver in the evolution of the scheme design. It is considered that this proposed solution represents the best balance between respecting the station's heritage and delivering a scheme that will bring benefits to the travelling public. The design of the reconfigured platforms will utilise high quality paving, which will provide visual continuity with earlier resurfacing works and ensure that there is a consistent design approach throughout the modified platform areas. The scheme's design proposals will conform with the design and heritage requirements set out in both the NPPF and the Liverpool Unitary Development Plan.

Conclusion

To conclude, it is considered that the works proposed are respectful to the character and appearance of the listed structure. The proposed works – which are essential in order to deliver a significant upgrade to the station, which has the potential to deliver a plathora of environmental, economic and social benefits - will be done in a sympathetic manner that harmonises with the viaduct and its surroundings.

In light of the above, the proposals are considered to be in accordance with relevant policy stipulated by the NPPF and the Liverpool Unitary Development Plan. Consequently, it is requested that Listed Building Consent be granted for the proposed development.

Network Rail
One Eversholt Street
London
NW1 2DN

www.networkrail.co.uk