

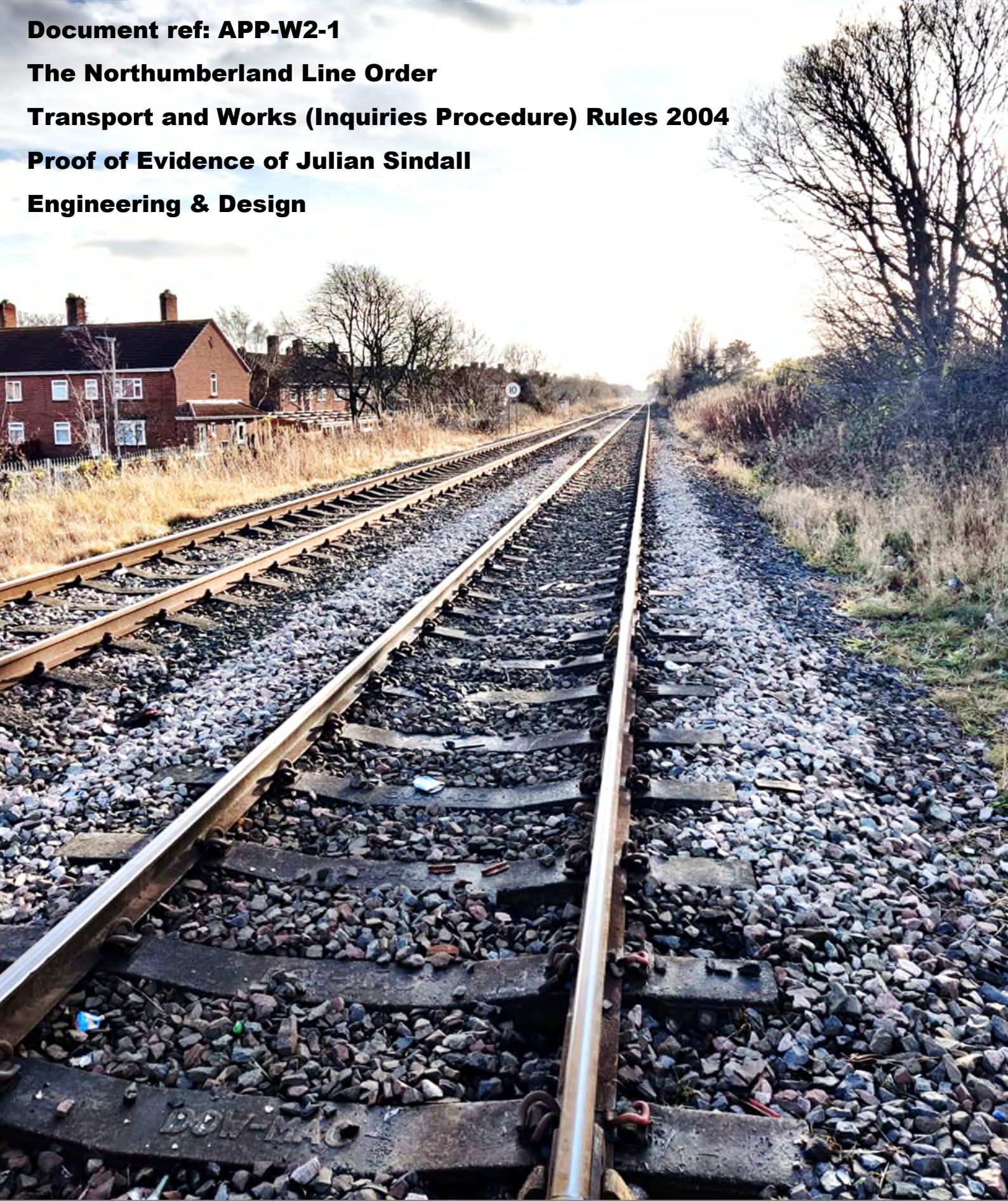
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**The Northumberland Line Order**

**Transport and Works (Inquiries Procedure) Rules 2004**

**Proof of Evidence of Julian Sindall**

**Engineering & Design**



**Northumberland**  
County Council



**NORTHUMBERLAND COUNTY COUNCIL**  
**NORTHUMBERLAND LINE ORDER**  
**ENGINEERING AND DESIGN**  
**JULIAN SINDALL - PROOF OF EVIDENCE**

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## GLOSSARY OF TERMS

Term / Acronym	Meaning
<b>ABCL</b>	Automatic half-Barrier Crossing Locally Monitored
<b>AECOM</b>	AECOM engineering company – lead design consultants for the scheme
<b>AHB</b>	Automatic Half Barrier
<b>BEMU</b>	Battery Electric Multiple Unit
<b>CEMP</b>	Contractor's Engineering Management Plan
<b>CFA</b>	Continuous Flight Auger
<b>CTMP</b>	Contractor's Traffic Management Plan
<b>DfT</b>	Department for Transport
<b>DMU</b>	Diesel Multiple Unit
<b>ECML</b>	East Coast Main Line
<b>FP</b>	Footpath crossing
<b>MCB</b>	Manually-Controlled Barrier
<b>MCB-CCTV</b>	Manually-Controlled Barrier monitored by CCTV
<b>MCB-OD</b>	Manually-Controlled Barrier with Obstacle Detection
<b>NCC</b>	Northumberland County Council
<b>OBJ-??</b>	Objection with reference number
<b>OMSL</b>	Overlay Miniature Stop Lights
<b>PRM</b>	Persons of Restricted Mobility
<b>RoSCo</b>	Rolling Stock Companies
<b>RRAP</b>	Road/Rail Access Points
<b>RRV</b>	Road/Rail Vehicles
<b>Sleeping Dog</b>	A crossing that is unused but for which rights remain
<b>SoM</b>	Statement of Matters
<b>Tphpd</b>	train per hour per direction
<b>TWAO</b>	Transport and Works Act Order
<b>UWC</b>	User-Worked Crossing
<b>UWC-T</b>	User-Worked Crossing with Telephone
<b>WG</b>	Wicket Gate

## 1. INTRODUCTION

- 1.1 My name is Julian Sindall.
- 1.2 I am a Director of Cadenza Transport Consulting Ltd and have 30 years' experience in the design and delivery of railway projects in the UK and overseas.
- 1.3 I hold a Masters Engineering degree with Honours from the University of Birmingham in Civil Engineering with Management with Language (Japanese), and a Masters Engineering Degree from The University of Sheffield in Railway Systems Engineering.
- 1.4 I am a Chartered Civil Engineer and Fellow of the Institution of Civil Engineers. I am also a Member of the Association for Project Management and a Member of the Institute for Asset Management.
- 1.5 I started work on the British Railway 30 years ago as a British Railways Sponsored Student., I have worked in a variety of roles since then including track maintenance and renewals, structures design and assessment, and for the last 15 years in the development or review of early-stage railway projects. These have included light rail, heavy rail, freight and high-speed rail, in the UK, Europe and the Middle East.
- 1.6 After British Rail was privatised and I completed University training I worked for Atkins Plc for 15 years, then Steer Davies Gleave as Head of Engineering for three years, then set up my own company, Cadenza Transport Consulting Ltd ("Cadenza"), nearly seven years ago. Cadenza specialises in railway feasibility studies and strategic railway asset management.
- 1.7 I have been closely engaged in the design development and project delivery of the Northumberland Line since 2018, originally to lead the early multidisciplinary engineering feasibility work for the AECOM design team, and have subsequently been retained as part of the engineering leadership team to advise on project development, support negotiations with affected landowners, and develop Social Value initiatives to maximise the local economic and community benefits of the project.
- 1.8 A selection of other relevant projects I have worked on are summarised as follows:
  - 1.8.1 Cork Area Commuter Rail strategic rail advisor (AECOM for Iarnród Éirann, 2021-ongoing, UK)
  - 1.8.2 Railway engineering peer review for Hoo Peninsular Passenger Service conversion (Medway Council, 2021-ongoing, UK)
  - 1.8.3 Railway expert witness for Confidential Project Development Consent Order, (Pinsent Masons LLP, 2020-2021, UK)
  - 1.8.4 Sizewell C consultation technical response to a Development Consent Order (AECOM for Suffolk County Council, 2020)
  - 1.8.5 Northumberland Line Feasibility study technical lead through to TWAO support (AECOM for Northumberland County Council, 2018-ongoing, UK)
  - 1.8.6 Bedford Midland station redevelopment concept design (Kilborn Consulting for Bedford Borough Council, 2020-ongoing, UK)
  - 1.8.7 Confidential railway expert witness project (RIAA Barker Gillette LLP, 2020, UK)
  - 1.8.8 Southern Manydown railway concept design (AECOM for Basingstoke & Deane Borough Council, 2020-ongoing, UK)

- 1.8.9 East West Rail Consultation support (Kilborn Consulting Ltd for Bedford Borough Council, 2019 – ongoing, UK)
- 1.8.10 The Wixams station feasibility study through to Outline Design (Kilborn Consulting Ltd for Bedfordshire Borough Council, 2018-ongoing, UK)
- 1.8.11 Abbey Line Feasibility Study (The Railway Consultancy for Abbey Flyer User's Group, 2018, UK)
- 1.8.12 Lakes Line Feasibility study (The Railway Consultancy, 2017, UK)
- 1.8.13 New Malden Urban Integration station concept design (Gensler for Royal Borough of Kingston, 2016-7, UK)
- 1.8.14 Peer Review of Crossrail 2 central section (Arcadis Consulting, 2016, UK)
- 1.8.15 Independent technical review of HS2 Phase 2 proposals in a confidential location (Atkins for Network Rail, 2016, UK)
- 1.8.16 HEx depot relocation review and selected as expert witness for HS2 Select Committee (2015-6, Slough Borough Council, UK)
- 1.8.17 Independent technical review of Crossrail 2 central section (2015, Hyder Consulting, UK)
- 1.8.18 TransNorth Engineering Support for trans-Pennine rail routes (2015, Atkins for Network Rail)
- 1.8.19 One North for trans-Pennine rail routes (2014, Transport for Greater Manchester, UK)
- 1.8.20 South London Stations reopening feasibility report (2014, Transport for London, UK):
- 1.8.21 High Speed Rail Advice – Crewe and North Staffs concept design (2013, North Staffordshire Chamber of Commerce, UK)
- 1.8.22 Invergowrie station relocation feasibility study (2012, Transport Scotland, UK)
- 1.8.23 Etihad Rail Stage 2 Concept Design technical lead (2011, Etihad Rail, UAE)
- 1.8.24 Kuwait Metro initial route design (2011, Kuwait Ministry of Communications, Kuwait)
- 1.8.25 Košice to Vienna Broad Gauge Study engineering manager (2010, Breitspur Planungsgesellschaft, Slovakia and Austria)
- 1.8.26 Evergreen 3 Bicester to Oxford TWAO technical advisor (2010, Chiltern Railway Company Ltd, UK)
- 1.8.27 Great Western Access to Heathrow engineering feasibility study lead (2009, Berkshire Strategic Transport Forum, UK)
- 1.8.28 DLR Dagenham Dock Extension engineering and project manager (2006-2009, Docklands Light Railway Limited, UK)
- 1.8.29 DLR Stratford International Extension, Network Rail works engineering and project manager (2004-2006, Docklands Light Railway Limited, UK)

## **2. SCOPE OF EVIDENCE**

- 2.1 The scope of my evidence includes the basis and outcomes of the engineering design for the Scheme, outlining the main influences and constraints on design development. This is generally contained within section 3, with further detail in response to the Statement of Matters or Objections in section 5 and section 6 respectively.
- 2.2 The detailed assessment of the risk assessments leading to the proposed closure of level crossings is covered by the evidence of Darren Lord [APP-W5-1]. My proof explains the choice of grade separated crossing where it has been determined that a level crossing should be closed.
- 2.3 In this engineering and design Proof of Evidence I describe in section 4 the principles by which the works will be constructed, referring to the draft Construction Environmental Management Plans (CEMP) that accompany the station planning applications and which the stations contractor will be obliged to work to, which sets a high standard of behaviour and communication with neighbours.
- 2.4 I then refer to the Statement of Matters in section 5, addressing each point in turn.
- 2.5 In section 6, I have addressed each of the objections relating to the engineering works and design of the Scheme, grouping similar objections together and responding to each of the objectors' concerns.

### 3. **SUMMARY OF PROPOSED WORKS**

- 3.1 In this section I describe the Scheme as a whole. This section extends and supplements the description of the Scheme in section 5 of the Statement of Case.

#### **Overview**

- 3.2 This section describes the different elements of the Scheme the delivery of which is facilitated by the powers in the Order [APP-01]. The Scheme comprises:

- New stations
- Works within the railway corridor
  - Track works
  - Signalling
  - Structures
  - Earthworks
- Crossings
- Operations

#### **New stations**

- 3.3 The six stations will be (working north to south) at Ashington, Bedlington, Blyth Bebside, Newsham, Seaton Delaval and Northumberland Park, where the station connects with the Nexus metro services as shown in Figure 1.
- 3.4 Passenger services will run as a shuttle between Ashington and Newcastle Central, adopting the East Coast Main Line (ECML) between Benton North junction and Newcastle Central where no changes are necessary to the infrastructure or systems.

Figure 1: Route overview diagram



- 3.5 The general location of the proposed stations is covered in the evidence of Stuart McNaughton [APP-W1-1]. The background to the specific location and layout of the stations is covered in this section. The original line had several railway stations along the track although relatively little of these stations is left with the exception of derelict platforms at Ashington and one platform with two buildings at Bedlington.
- 3.6 Modern design standards require platforms to be straight and level wherever possible, and modern access expectations create a need at most stations for a car park of sufficient size to meet anticipated demand.
- 3.7 The catchment areas and operational demand at each location also play a role in selection of stations to ensure that there is a sufficient population and not too much overlap in demand to maximise the benefit of each station and avoid the operational penalty of stopping too frequently, which is a disbenefit to all other passengers on board.
- 3.8 There is a further operational penalty associated with providing too many stations which is that the overall journey time increases to the extent that one or more additional trains is necessary to be able to complete the circuit at the required frequency of two train paths per hour in each direction. It is for this reason that additional stations at Woodhorn or further north/east were discounted, though the design of Ashington Station provides passive provision to allow this if future demand justifies the additional operational and infrastructure cost.
- 3.9 The combination of these factors has constrained the potential specific locations to be used. A summary of the decisions which informed the location of each station is provided below.



#### Ashington station

- 3.10 The remnants of the historical Ashington station platforms may be clearly seen today on both sides of the railway in the approximate location of the proposed station. Since it is close to the High Street and has space on either side for car parking the location is appropriate for a station to serve this community.
- 3.11 As the northern limit of the proposed operations, each train will arrive from the south, stop in the station and remain there for approximately ten minutes while the driver completes their safety checks, walks to the other end of the train and sets up the cab for the return trip. During this time, in some circumstances there is a likelihood that a following northbound freight train would be blocked if a passenger train were to use a rehabilitated platform.
- 3.12 Therefore the proposed Ashington platform has been placed on a spur off the main line so that a train 'turning back' in the platform can do so without constraining the movement of freight on the main line and thus providing service resilience. The spur has been designed to allow future reconnection to the main line to the north of the platform if the passenger service were to be extended further north.

#### Bedlington station

- 3.13 The historic location of Bedlington, its catchment area, and the lack of alternative suitable space nearby influenced the selection of the proposed station on the footprint of the old station. Although the physical constraints of this site are less than ideal, in particular the curved southbound platform, there are no other suitable locations nearby.
- 3.14 The historical Bedlington station only had a platform on the east side, the west side being given over to a spur line taking the track to Bedlington Colliery. The Scheme, however, includes a platform for northbound traffic to avoid the operational constraints that would result from a northbound service crossing over to the east side, waiting at the platform and then back onto the northbound track. This movement would occupy the southbound track for several minutes, and conflict with some of the southbound freight services. The provision of a northbound platform also future proofs the station for any future connecting service to Morpeth.

#### Blyth Bebside

- 3.15 A key determining factor in the positioning of Blyth Bebside station is the level crossing on Front Street, and the A193/A189 interchange roundabout. A station car park that is too close to the level crossing could lead to traffic congestion 'blocking back' over the crossing, and for this reason (amongst others), the car park and station are accessible from the east via a left-hand turn to the south of Front Street.
- 3.16 Earlier studies had proposed a station a little north of Front Street, behind the Bebside Inn pub. This would have had the advantage of being mainly constructed on farm land and being close to the Front Street bus stops.
- 3.17 However, traffic from the roundabout would have to turn right to access the station, and this would be very likely to lead to traffic backing up over the level crossing which would have operational impacts and introduce a safety risk.
- 3.18 A further alternative was considered, placing the station beyond the Railway Cottages to the north and providing a highway access off Front Street adjacent to the Jet Garage as well as a western access to the station off Bebside Furnace Road to push a right hand turn further West. The access roads to the station, as well as an increasing level difference between the falling ground level and the railway approaching the viaduct as well as the complication of working near several sets of Extra High Voltage cables and towers meant that this option looked increasingly expensive and distant from the Bebside and Blyth population catchment it was designed to serve.

- 3.19 Consequently a location further to the south was sought, making use of the waste ground accessed off Errington Street to the west of the railway. This would avoid the risk of traffic backing-up across the level crossing, would directly serve most of Bebside directly, and the anticipated majority of traffic coming from Bedlington. A further advantage was that the land was commercially available for sale, reducing the risk of land access.
- 3.20 Although it had been initially expected that cyclists and pedestrians from the east of the A189 would access the station via Cowpen Road and Front Street via the roundabout, a survey and initial design work indicated this would not be practicable for safety reasons because sight lines are poor, there is insufficient width for suitable paths, and signalisation may well lead to traffic backing up onto the A189.
- 3.21 For this reason, a footbridge access across the A189 and the field to the station was identified as the preferred way of enabling people to safely cross the A189, with the added advantage that it would increase the walking catchment of the station to more people in north west Blyth.

### Newsham

- 3.22 The Newsham site location was selected because it would provide suitable access and car parking for the predominant traffic flow to and from Blyth along the A1061.
- 3.23 The decision to close the level crossing in this location and divert the A1061 onto a new overbridge was driven by a combination of not exacerbating congestion along the main route to the employment hub of the Port of Blyth, and the operational and safety impacts of retaining a level crossing in this location. This is discussed further in the evidence of Darren Lord [APP-W5-1].
- 3.24 Various alternate sites were considered for Newsham, including the original historic site adjacent to the now disused Newsham junction and also the north-west of Newsham pond where there is a green open space to the west of the railway. Both of these were discounted as being difficult for passengers to access by car from the main part of Blyth to the east via the A1061.
- 3.25 Therefore, the project team adopted a location adjacent to the A1061. Various permutations of platforms to the north and south of the road were tested, considering impact on local residents, impact on railway operations, and accessibility from any car park that would need to be located to the south. Of these, the preferred solution was to place both platforms to the south, sufficiently far from the A1061 to avoid an approaching northbound train triggering the level crossing too soon and increasing highway disruption.
- 3.26 The proposed car park was located to the south west off the B1523 Newcastle Road and A1061 South Newsham Road roundabout to avoid the right hand turns and residential property land take that a car park on the east would incur.
- 3.27 The team carried out a level crossing census, operational analysis, and engaged in discussions with the Port of Blyth as a major local employer for whom the A1061 is the designated access road for its staff and clients. The census indicated several instances of blocking back over the crossing for traffic in both directions, the operational analysis indicated likely service resilience problems, and the Port of Blyth indicated deep concern over increased congestion caused by many more level crossing closures on this key road. In addition, it became apparent that the ongoing congestion on the A1061 were likely to trigger the need for dualling the road in the next few years, which would result in the closure of the level crossing in favour of a highway bridge over the railway.
- 3.28 In the light of this, the team reconsidered its proposal and developed a bridge solution that would eliminate the safety risk and operational concerns through the closure of the level crossing. It would also avoid creating additional congestion for traffic to or from

Blyth centre and create passive provision for future widening when that became unavoidable.

- 3.29 The bridge solution will result in the loss of Arden house, which is the property owned by Mr and Mrs Doyle (see the discussion of objection 'OBJ-26' on page 32) but would facilitate the construction of a car park on each side of the railway, improving car access to the station on each side of the railway.

#### Seaton Delaval

- 3.30 Seaton Delaval station is positioned to the south-west of the A192 bridge to be accessible to more residents at Seaton Delaval and Seghill than other options. The specific location is a balance between walking distance from the A192 and limiting the visual impact on properties on Delaval Court. Passive provision has been created for any future dualling of the track in this location for greater operational capacity or resilience, which also constrains its position along the railway.
- 3.31 Several locations were considered for Seaton Delaval station, based around access from the A192 where it intersects with the railway.
- 3.32 A proposal to create a new single platform station to serve the single track from the north side opposite the Co-Op building was discounted because there was already a known traffic congestion issue along Double Row and the likely location for car parking had very limited capacity. It was also significant that it would place the station the furthest walking distance from the majority of the Seaton Delaval population and a long way from Seghill which is otherwise not served by the railway.
- 3.33 A similar option for a platform between the railway and the Co-Op supermarket would have similar difficulties and could compromise the ability for the Co-Op's customers to find a space if commuters used their parking. A multistorey car parking option was considered disproportionately expensive and not very efficient.

#### Northumberland Park

- 3.34 The Nexus metro station at Northumberland Park is a critical interchange for the Northumberland Line. As well as facilitating the transfer of passengers from the Ashington direction onto the metro to either the east or west, it also provides much-needed public transport access to Cobalt Business Park to the south.
- 3.35 The single platform station is located on the north side of the railway because there is no practical means of providing cross-platform interchange with the Nexus services. Further discussion of this point is presented in response to OBJ-23 (Mr Watson) on page 35.

#### **Journey times**

- 3.36 The estimated journey times to and from each station are as listed below in Table 1, though these will be subject to final timetable discussions with the wider railway industry to interface with the East Coast Main Line as efficiently as possible.

*Table 1: Estimated journey times (mins) to/from Northumberland Line stations*

Station	To Newcastle (mins)	To Ashington (mins)
Ashington	35	0
Bedlington	30	5
Blyth Bebside	27	9
Newsham	25	12
Seaton Delaval	20	17
Northumberland Park	13	23
Newcastle Central	0	35

- 3.37 For comparison, the Metro service takes 24 minutes from Northumberland Park to Newcastle Central station, almost double the travel time to be taken by the Northumberland Line. Along with an interchange time penalty, it is unlikely that many Northumberland Line passengers will interchange at Northumberland Park if they want to go to Newcastle Central station.
- 3.38 The relative difference in journey times also explains why the service does not simply shuttle between Ashington and Northumberland Park, and why the Northumberland Line is not simply an extension of the Metro service – the journey time penalty for a large number of passengers going to/from Newcastle Central would have a heavy impact on the business case.

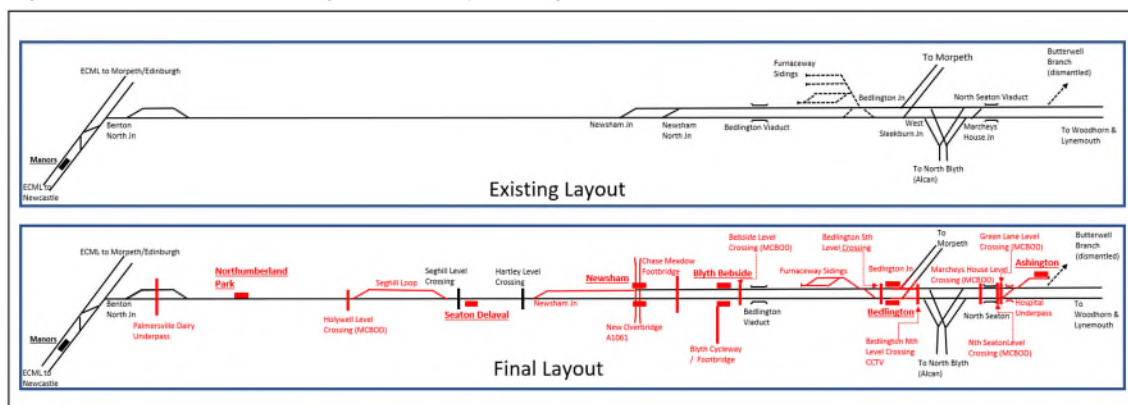
### Rolling stock

- 3.39 Journey times are closely related to the performance characteristics of the rolling stock vehicles used, in particular the acceleration and deceleration rates rather than the top speeds theoretically possible.
- 3.40 Particularly with the advent of Great British Railways, which will take over the role of Network Rail and the operations of the railways in the next couple of years, the decision over which rolling stock to use is one taken by the Department for Transport (DfT) as part of the efficient management of rolling stock across the region.
- 3.41 The DfT has the intent to provide Battery Electric Multiple Unit (BEMU) trains for this route, which will probably recharge while running or resting under the 25kV overhead lines on the East Coast Main Line (ECML). Although battery trains have begun to come onto the market in the last few years, it is still relatively new technology and thus it will be a few years before the DfT can have new battery vehicles delivered to the region and this route.
- 3.42 In the interim, it is likely that Class 158 Diesel Multiple Units (DMUs) will be used because Northern's drivers and train crew depot already know them and there are some spare vehicles available from two of the major Rolling Stock Companies (RoSCos).
- 3.43 Although it would be greatly desirable to gain the environmental benefit of BEMU trains from the start of operations, it will not be possible to procure them in time for the start of operations, and so the interim solution of temporarily using diesel trains allows the scheme to start delivering its benefits without delay.

### Works within the railway corridor

- 3.44 Figure 2 illustrates in schematic form the infrastructure changes to be made showing the long single-line section between the loop at Benton North Junction and Newsham. A larger version may be found in Appendix C.1.

Figure 2: Schematic of Existing and Final layout diagrams (not to scale) [see also Appendix C.1]





- 3.45 The existing railway infrastructure is currently used for freight services only since the withdrawal of passenger services as part of the national railway rationalisation exercise by Dr Beeching in the 1960s.
- 3.46 The track ride quality and line speed requirements for freight are much lower than are required to run a passenger service efficiently and hence a range of infrastructure (track, earthworks, bridges, stations) and systems (signalling, level crossings, telecommunications, and power supply) interventions is required.
- 3.47 As well as the stations described above, the infrastructure interventions include improvements to the track with its supporting earthworks and bridge structures to provide suitable ride quality for passenger trains.
- 3.48 The systems interventions include an upgrade to the existing signalling system and modifications or removal of level crossings to meet operational performance requirements and modern safety standards. This is necessary because the increase in number of trains and the shift to passenger services with many people on board creates an increase in the risk profile of each level crossing and requires suitable mitigations.
- 3.49 The new stations and signalling require improved railway telecommunications systems and low voltage power supply to support them. The route will not be operated by traction-powered electric trains because of the cost of the infrastructure that would be needed, and so high voltage traction power supply systems are not required.
- 3.50 The existing route includes two specific features that have a significant bearing on the ability to run an efficient half-hourly passenger service in either direction between Newcastle Central station in the south and Ashington in the north, whilst also retaining a single path per hour in one direction for freight.
- 3.51 The first is the presence of a single line section from just after the route departs from the ECML to just south of Newsham. Since two trains clearly cannot travel in opposite directions along this single line section at the same time, they must be timed to pass at either end of the single line section, or a passing loop created in the middle. The former strategy enables one passenger train per hour per direction (tphpd). The addition of the passing loop is necessary to achieve two tphpd whilst also retaining the existing freight path.
- 3.52 The second is the presence of three low radius curves between Newsham and Northumberland Park, and the slow junction off the ECML. The radius of the curves results in a speed restriction for the trains and hence increases the train journey times from what they may have otherwise been. As a result, it is necessary to increase the capacity of the route wherever practicable in compensation so that the trains have enough time to be ready for the return trip. A slower end-to-end journey time would require an additional train plus crew, which would add significant operational cost and reduce the strength of the business case.
- 3.53 The Scheme includes features to mitigate risks that would otherwise occur at level crossings along the line of the route. Risk is commonly described as the combination of the likelihood of an event occurring and the impact if it happens. An increase in frequency of train services at any level crossing also increases the likelihood of an accident, and the presence of more people on a passenger train increases the potential loss of life. The combination of these two factors therefore increases the risk to human life at level crossings. These principles are more fully explored in the evidence of Darren Lord [APP-W5-1].
- 3.54 It is necessary to mitigate that risk through industry-standard risk assessments and increased safety measures at level crossings where necessary. In some cases, the resulting mitigation takes the form of the closure of the level crossing and the provision of a replacement means of crossing the railway, i.e. a footbridge or underpass. In others, the mitigation involves upgrading the crossing with additional equipment designed to monitor the level crossing, or prevent or advise users not to cross when a

SECTION 3: Summary of proposed works

train is approaching. At some crossings it is necessary to make changes to the signalling system to 'interlock' the automated and human safety checks with the signals so that if, for example, a car is stranded on a level crossing, a train will be instructed to stop before the level crossing is reached. Darren Lord's evidence [APP-W5-1] considers level crossing safety issues in more detail.

- 3.55 The existing signals represent several generations of signalling technology, including Victorian 'semaphore' mechanical signals. Although these (and other signals) are still functional, operated through a series of staffed signal boxes along the route, the increase in line speeds also means that some signals must be repositioned to maximise the train driving efficiency.
- 3.56 Train driving efficiency is maximised by avoiding frequent changes of speed through braking and accelerating. The interface of a steel train wheel on a steel rail has very low friction in comparison to a car tyre on a road. Although it makes trains very energy efficient when travelling at speed, it means their ability to accelerate and decelerate in comparison is much reduced. Therefore signals are generally positioned to enable drivers to continue on a green light or 'aspect' wherever practicable such that they are only required to slow for stations or physical constraints like low radius curves as referred to previously.
- 3.57 The Seghill loop length is a function of the need to avoid freight trains stopping in the loop whenever practicable because it can take a long time for the freight train to re-start, particularly in the uphill direction, and this can have knock-on impacts to the operational efficiency of the route.
- 3.58 As well as signal upgrades, the linespeed increases trigger infrastructure upgrades to the track, underbridges and earthworks, described further below.

Track works

- 3.59 The track works broadly fall into two categories: 1) works to improve the alignment, and 2) works to provide additional functionality.
- 3.60 Works to improve the alignment are generally to improve the ride quality and line speed where lower maintenance standards for a freight railway mean that the alignment no longer meets the relevant standards for passenger train services, or constrain trains from operating at optimum line speed. The track works include improvements to the horizontal and vertical alignment, and replacement of very old components that are not suitable for passenger services.
- 3.61 The additional functionality required is for operational purposes, namely to enable a new turnback siding in the Ashington station platform, rehabilitate the Furnace Way sidings, reduce the length of the single track section south of Newsham, and provide a passing loop south of Seghill which is necessary to enable a second passenger train per hour in each direction.
- 3.62 A brief commentary on the alignment works follows, working south to north and indicating the route chainage in metres from the design start point near Benton North Junction:
- 3.62.1 Chainage 1670 metres (Ch1670) (Palmersville) to Ch3520 (Northumberland Park): Minor realignment for line speed improvements;
- 3.62.2 Ch3900 (Northumberland Park) to Ch5000 (Holywell Level Crossing): Some new track on existing formation and some re-railing only;
- 3.62.3 Ch5000 (Holywell Level Crossing) to Ch7440 (Seghill level crossing): New NR56 FV24 Transition turnout into Seghill loop which consists of a new track

- alongside a realigned existing track for approximately 2km to a new NR56 FV24 Transition turnout south of Seghill level crossing;
- 3.62.4 Ch7440 (Seghill level crossing) to Ch10660 (Hartley Curve): Some realignment works and formation renewal around Seghill curve for line speed improvements, followed by re-railing on the existing formation and alignment through Seaton Delaval to the Hartley Curve;
  - 3.62.5 Ch10660 (Hartley Curve) to Ch1180 (Red House Farm): New realigned track through Hartley Curve to increase the line speed from 25mph to 30mph through the level crossing and improve the exit alignment to better connect to the following straight section;
  - 3.62.6 Ch1180 (Red House Farm) to Ch13070 (Newsham level crossing): New NR56 FV24 Transition turnout into new double track railway for operational efficiency and resilience up to Newsham Level Crossing with some re-railing of the existing single track alignment between Ch12300 and Ch12980;
  - 3.62.7 Ch13070 (Newsham level crossing) to Ch14130 (Plessey Road Level Crossing) : Re-railing of the southbound track and minor realignment of the northbound track, removal of the disused Newsham North Junction crossover;
  - 3.62.8 Ch14130 (Plessey Road Level Crossing) to Ch16690 (Bebside Level Crossing): New trackwork on the southbound track to Ch15380 followed by minor alignment works, and re-railing on the northbound track throughout to achieve ride quality requirements;
  - 3.62.9 Ch16690 (Bebside Level Crossing) to Ch18140 (Furnace Way sidings) : Minor realignment to southbound track but new trackwork for northbound track throughout;
  - 3.62.10 Furnace Way sidings: New trackwork within the sidings to create a 321m standage and run-round loop for freight reversing movement needed by the service from Fort William, along with associated turnouts;
  - 3.62.11 Ch18140 (Furnace Way sidings) to Ch18600m (Bedlington North level crossing) : New track and crossover on the approach to Bedlington South level crossing, new double track through station into new BVS 8/7/5.5/4.5 double junction for improved radius (244m) and line speed (20mph up from 10mph) through the platform, and new track to connect with existing alignment for both routes;
  - 3.62.12 Ch18600m (Bedlington North level crossing) to Ch19950 (West Sleekburn Junction): Re-railing to Ch19640 then minor alignment only for both tracks;
  - 3.62.13 Ch19950 (West Sleekburn Junction) to Ch20700 (Marchey's House Junction): Renewal of West Sleekburn with renewal of the northbound track and re-railing of the southbound track to Marchey's House Junction which remains with minor realignment;
  - 3.62.14 Ch20700 (Marchey's House Junction) to Ch20990 (North Seaton Viaduct): A short length of new double track replacing the existing up to Marchey's House Level Crossing and then re-railing the southbound track, and minor realignment of the northbound track on the approach to North Seaton Viaduct;
  - 3.62.15 Ch20990 (North Seaton Viaduct) to Ch22800 (Ashington Junction): New track alignment across North Seaton Viaduct, continuing for the northbound track across North Seaton Level Crossing to Ch22200 before changing for re-railing. The southbound track is re-railed to Ch21880 and is then new track to Ashington Junction; and

- 3.62.16 Ch22800 (Ashington Junction) to Ch23130 (Ashington station): New NR56 CV13 transition crossover leading into a NR56 CV13 transition turnout for the new station turnback terminus siding; the main line has a short section of renewed track followed by realignment to tie in with the existing adjacent to the platform.

### Signalling

- 3.63 The existing signalling infrastructure which is mainly mechanical in nature which includes points, and semaphore signals controlled by signal boxes along the route. Some of this equipment dates back to the Victorian era.
- 3.64 The position of signals is linked to track infrastructure, line speeds and types of trains using the route so as to enable trains to run efficiently, but make emergency stops if, for example, a level crossing at a highway is blocked. The change in type, frequency and speed of trains drives changes to the level crossings as described below, and to the placement of signals. Similarly, the position of the loop, and relocation of junction locations each require signal protection to avoid train collisions and hence the provision of additional signals.
- 3.65 The changes to the signalling infrastructure required make it necessary to upgrade most of the lineside signalling equipment which include a number of level crossings. These changes all take place within the railway corridor and are unlikely to have a significant impact on neighbours to the railway apart from the changes at some level crossings where there is a closure or change in form of crossing.

### Power supplies

- 3.66 The changes to the signalling system and introduction of mechanical and electrical plant and telecoms systems for the Scheme result in a range of low voltage requirements such as signals, lighting, information screens, CCTV cameras, drainage pumps, and the like.
- 3.67 Electrical power for the signalling system will be provided from the Distributed Network Operator via a Principal Supply Point at Bedlington north of Barrington Road, and Auxiliary Supply Points in the car parks at Ashington and an existing Network Rail Access Point at Seaton Delaval. The electricity will be fed from these to the stations via low voltage cabling alongside the route within the railway corridor. Electrical power for station and car parks systems will be fed from cubicles with the relevant station or car park, and for heating of the railway points will be fed from cubicles within the Network Rail boundary.

### Structures and earthworks including access

- 3.68 The structural works include works to existing underbridges and new proposed structures. The earthworks are primarily works to support the wider track bed or realigned track as described above.
- 3.69 Works to existing underbridges are triggered by the increase in loading or repositioning of loads as a result of trains travelling faster, or needing to carry two tracks where there is currently only one, or where the track needs to be realigned for various purposes as described above. The works include strengthening and renewal.
- 3.70 New structures include the underpasses at Palmersville Dairy and Hospital crossing, several new footbridges at stations and to replace a footpath crossing at Chase Meadows, and a new highway overbridge at Newsham station.
- 3.71 A summary of the various structure changes is shown in Table 2:



Chainage	Name	Type	Purpose
690	Palmersville Dairy	Underpass	Replacing footpath crossing
4750	Underbridge EJM/35 – Sharnford Close	Underpass	Replacing existing Underbridge
6450	Underbridge EJM/36 – Feather Bed Lane	Underpass	Replacing existing Underbridge
11980	Underbridge EJM/42 – Lysdon Farm	Underpass	Replacing existing Underbridge
12980	Newsham A1061 Overbridge	Overbridge	Replacing Newsham level crossing
13030	Newsham Station Footbridge	Footbridge	New footbridge at Newsham Station
15675	Chase Meadows	Footbridge	Replacing footpath crossing
16350	Blyth Bebside A189 Footbridge	Footbridge	New footbridge over highway
16360	Blyth Bebside Station Footbridge	Footbridge	New footbridge at Blyth Bebside Station
22825	Hospital underpass	Underpass	Replacing existing footpath crossing

- 3.72 The earthworks are needed to widen or stabilise embankments where these have been identified as being needed for the new track works, or to strengthen areas identified as having suffered from historical degradation that may present an increased risk to passenger service operations.
- 3.73 Typical access requirements for structures include the need to have a route from the nearest public highway to the structure via a surface sufficient for the vehicles and plant that will be used for their construction. This route will be used for the movement of construction staff, materials, equipment, and plant including excavators and cranes, dependent on the works to be carried out.
- 3.74 Adjacent to each site there will normally be the need to provide an area for the lay-down of materials including bulk materials and pre-fabricated components such as beams, piles, or pre-cast elements. An area of hard-standing close to the railway will be required if the construction strategy includes lifting components in by crane or other heavy vehicles. There will also be the need for staff welfare facilities, a site office, and safe parking for vehicles, though the location of these can be more flexible. Each of these considerations has informed the identification of land for temporary use as set out in the Application documents.

## Modifications to railway crossings

### Overview

- 3.75 As part of Network Rail's licence to operate and wider Health and Safety obligations, it has a legal duty to protect passengers, the public and the workforce and reduce the risk at all level crossings so far as reasonably practicable. This is discussed further in the evidence of Darren Lord [APP-W5-1].
- 3.76 Level crossings not only present a risk to the individual user but where they facilitate vehicular access over the railway, they also increase the likelihood of potentially high-risk train accident and therefore, present one of the principal public safety risks on the railway. Each level crossing presents different arrangements and risks and therefore, each level crossing is considered individually.

- 3.77 While there is a vision to eliminate any accident at a level crossing, and closure of crossings removes the risk entirely, the question of what is reasonably practicable to do must be considered. This is in accordance with the Principles for managing level crossing safety - June 2021<sup>1</sup> produced by the Office of Rail and Road (“ORR”). At many locations, it is not reasonably practicable to close a level crossing. The effects of and recognition of the importance of the route for the community, and how our level crossings do, in some circumstances, allow communities to remain connected also require consideration.
- 3.78 In considering the options at all of the level crossings on the Northumberland Line and the resultant decisions about safety expenditure, reasonable practicability is evaluated. In so doing, the collective risk (public, passengers and staff) is considered, against the sacrifice (money, time and effort) involved in the measures necessary to avert the risk. This assessment of risk is documented in an impact assessment, produced for each level crossing affected by the scheme. If it is shown that there is a gross disproportion between these factors and that the risk is inconsequential in relation to the sacrifice, then a case may be made that the investment, or measure, is not considered to be reasonably practicable to progress.
- 3.79 This process forms one part of the risk assessment at a level crossing. Other considerations cover issues which are specific to that level crossing such as the type of user, the historic behaviour of users and how the Northumberland Line project might impact on the usage of the level crossing. On behaviour, it is recognised that local people have been used to a very low level of interaction with trains at level crossings over several decades and that the censuses and anecdotal evidence is that crossing behaviour reflects a low expectation that trains will be coming.
- 3.80 The change in use of the Northumberland Line from a freight railway used a few times a day to a predominantly passenger railway with a substantial increase in train numbers, travelling at an increased line speed, and most carrying passengers, all contribute to an increase in the risk profile at of the level crossings on the Northumberland Line.
- 3.81 Key to the step change in level crossing usage taking place is preparing a local education campaign, particularly in schools, to raise awareness of the dangers of trains and how to use crossings safely. This campaign is to be delivered in advance of operations starting with the support of Network Rail, British Transport Police, Nexus, and Northern Trains.
- 3.82 A summary of the 23 level crossings along the route of the Scheme and the proposed solution (if one is to be provided) for each is listed in Table 3. Those which are proposed to be closed are shaded grey and are included in the Order Scheme. Further details of these proposed closures are provided in the evidence of Darren Lord [APP-W5-1]. A summary of key acronyms follows the table.

*Table 3 Summary of level crossings proposals (working south to north)*

Crossing name	Existing Type (Definitions below)	Footpath / Highway	Action	Solution
Palmersville Dairy	FP	Footpath	Close	Underpass to be provided
Benton Square	FP	Footpath	Retain	Line of sight is sufficient
Earsdon	FP	Footpath	Upgrade	OMSL
Holywell ABCL	ABCL	Highway	Upgrade	Amend to AHB

<sup>1</sup> [https://www.orr.gov.uk/sites/default/files/2021-06/principles-for-managing-level-crossing-safety-june-2021\\_0.pdf](https://www.orr.gov.uk/sites/default/files/2021-06/principles-for-managing-level-crossing-safety-june-2021_0.pdf), Page 10 and following, sourced 02 Oct 21

Crossing name	Existing Type (Definitions below)	Footpath / Highway	Action	Solution
Holywell UWC	UWC	Private Highway	Close	Proposed closure to be removed from draft Order
Seghill North	AHB	Highway	Retain	
Mares Close	UWC-T	Footpath Private Highway	Upgrade / Retain	OMSL for footpath element UWC-T element to remain
Hartley	AHB	Highway	Retain	
Lysdon Farm	FP	Footpath	Close	Diversionary route available
Newsham	MCB	Highway	Close	Road overbridge to be provided
Plessey Road	MCB-CCTV	Highway	Retain	
Chase Meadows	FP	Footpath	Close	Replaced with footbridge
Bebside	AHB	Highway	Upgrade	MCB-OD
Bedlington South	MCB	Highway	Retain	
Bedlington North WG	WG	Footpath	Upgrade	Integrated MSL
Bedlington North MCB	MCB	Highway	Upgrade	MCB-CCTV
Red Row Bridge	"Sleeping Dog"	Private Footpath	Close	Rights relinquished by NCC or closed through Order
Bomarsund FP	FP	Footpath	Retain	Line of sight is sufficient
Bomarsund UWC	UWC	Private Highway	Close	Rights relinquished by NCC or closed through Order
Marcheys House	MCB	Highway	Upgrade	MCB-OD
North Seaton	MCB	Highway	Upgrade	MCB-OD
Green Lane	AHB	Highway	Upgrade	MCB-OD with Pedestrian Stop Lights

Crossing name	Existing Type (Definitions below)	Footpath / Highway	Action	Solution
Hospital	FP	Footpath	Close	Underpass to be provided

Definitions of level crossing acronyms:

- ABCL: Automatic half-Barrier Crossing Locally Monitored
- AHB: Automatic Half Barrier
- FP: Footpath crossing
- Integrated MSL: Integrated Miniature Stop Lights
- MCB: Manually-Controlled Barrier
- MCB-CCTV: Manually-Controlled Barrier monitored by CCTV
- MCB-OD: Manually-Controlled Barrier with Obstacle Detection
- OMSL: Overlay Miniature Stop Lights
- “Sleeping Dog”: A crossing that is unused but for which rights remain
- UWC: User-Worked Crossing
- UWC-T: User-Worked Crossing with Telephone
- WG: Wicket Gate

3.83 Of the 11 highway crossings, six are to be upgraded, four are to remain because they already provide sufficient safety protection, and one at Newsham is to be closed and replaced with an overbridge.

3.84 The overbridge at Newsham will require land take to the south of the existing crossing for construction of the bridge and its approach roads and embankments.

3.85 For the six highway crossings that are to be upgraded, the physical changes on site will include (in the case of MCB-ODs) obstacle detection equipment, and (in the case of the AHB and MCB-CCTV) additional monitoring equipment. This new equipment has been designed to perform its role and retain the privacy of neighbours while minimising the use of land for temporary or permanent purposes.

3.86 Of the 12 footpath crossings, three are to be upgraded, two will remain, and seven are to be closed. Where they are closed it is either because they cannot be made safe, there is very little use made of them, or because an alternate crossing means is being provided.

3.87 The upgraded footpath crossings will include miniature stop lights at each side of the crossing to assist users to see when it is safe to cross, the lights being connected to the signalling system and automatically triggered by the presence of a train approaching the crossing.

#### Hospital crossing

3.88 Hospital crossing provides a pedestrian link between Ashington Academy and the Dales School Ashdale in the west and a large residential area to the east. As a result the crossing is used regularly by school children as well as adults and the 9-day census conducted for the safety risk assessment of this crossing indicated an average of 113 children (and more on school days) and 290 adults per day using the crossing.

3.89 The detail of the census and the crossing risk assessment is covered in the evidence of Darren Lord [APP-W5-1], but I have heard anecdotal evidence from site teams and local residents via the consultation exercises that children regularly play on the track in this



- location. A colleague has observed two mothers with pushchairs meeting and chatting while standing on the crossing.
- 3.90 The justification for closure of the crossing is explained in the evidence of Darren Lord. My evidence sets out the options considered and the reasons for the selection of the proposed underpass in this location.
- 3.91 The project team considered various footbridge and underpass options in or near this location. Although each was technically viable, the common concern about the bridge structures options was the proximity of high bridge structures to local homes on both sides of the railway.
- 3.92 The height of the bridge structures was determined by the anticipated clearance beneath the bridge of 5.1m in accordance with Network Rail standards and allowing for possible future overhead line electrification.
- 3.93 A bridge structure in the near vicinity of the existing crossing would need to be accessible to Persons of Restricted Mobility (PRMs) such as those with pushchairs. Since this is a bridge away from the station, lifts were considered unsuitable, and so ramps were adopted for PRMs, along with steps for non-PRMs.
- 3.94 At maximum allowable gradients, and allowing for a further height differential between rail level and local ground level, the length of ramps was determined to be in the order of 90m to the north of the crossing on each side.
- 3.95 Although the ramps could be broadly in a single direction or doubled back, they would create a visually-dominant structure immediately adjacent to residential properties with little opportunity for screening. There would also be concern about visual intrusion from the bridge into neighbouring property. It would be possible to block this view off with higher parapets, but that would add to the visual impact of the structure. Therefore, in the light of the extent of likely visual impact in a built-up area on both sides and the probable objections resulting, bridge options at the crossing were rejected.
- 3.96 An alternate bridge option was considered, locating the bridge structure at Ashington station with steps and a lift on the west side into the station where it could fall within the range of station CCTV cameras, and a ramp on the east side which would be further away from residential property than those adjacent to the crossing.
- 3.97 In anticipation that a footbridge option might well incur significant objection, the project team also considered an underpass option in the location of the crossing, with ramped access to the north and south on each side.
- 3.98 In considering an underpass option, the team was mindful that any proposal would be likely to trigger safety and security concerns based on people's previous experiences elsewhere of narrow, poorly lit, poorly drained subways becoming a hotspot of antisocial behaviour.
- 3.99 For this reason, the team determined from the start that the underpass would adopt best practice to reduce antisocial behaviour and improve security through the following measures:
- 3.99.1 A wide underpass passage with a clear width of 5m, which is much wider than would technically be needed, making it more difficult for anyone to be trapped or forced into close-proximity with someone coming the other way;
- 3.99.2 Good lighting throughout (without creating light pollution locally) to aid visibility of anyone loitering and consideration of CCTV to provide security video footage if needed;

- 3.99.3 Chamfered corners at the edge of the underpass passage, to make it more difficult to hide behind corners;
  - 3.99.4 North and south exits from the underpass, providing an alternate means of exit from the underpass if someone should feel threatened by the presence of someone using one of the ramps; and,
  - 3.99.5 Development of interior design, possibly including an artistic installation, in consultation with local residents to develop a solution less likely to be vandalised, and increase users' confidence in the underpass.
- 3.100 Although it is recognised that such measures cannot eliminate antisocial behaviour, particularly where it already exists, the design has been developed to avoid exacerbating it. A footbridge would be likely to similarly suffer, though with greater prospect for noise (from the steel panels making up the footbridge), and vandalism.

#### Newsham Crossing

- 3.101 The reasons for determining that the crossing should be closed are covered in Darren Lord's evidence [APP-W5-1].
- 3.102 The basic choice of going over or under the railway in this location was quickly resolved as the costs of going under the railway with full traffic height clearance would be between three and ten times greater than a bridge solution, and this location was known to suffer from seasonal flooding, meaning that a highway underpass would need to be protected from flooding also – further adding to the cost.
- 3.103 It was therefore clear that the more viable solution would be to cross over the railway on a highway bridge structure. It is not possible, pragmatic or beneficial to cross the railway in the immediate location of the crossing for the following reasons:
- 3.103.1 The highway design standards limit the vertical gradient of roads in this situation, and the length required to achieve the height requires that the crossing point be brought further south so that the road can rejoin the existing alignment as soon as possible either side of the railway.
  - 3.103.2 To lessen the impact on existing railway infrastructure. Since the crossing cannot be closed until the alternative bridge arrangement is in place, the bridge must be constructed in advance and traffic diverted onto it before the crossing can close.
  - 3.103.3 Proximity to residential development. A bridge over the existing crossing location with approach embankments would sever access to the Railway Cottages to the west which gain their pedestrian and vehicular access via the north verge of the A1061. To the east, a bridge and its approaches would be immediately adjacent to houses on the Blagdon Drive group of houses to the east provoking additional objections.
  - 3.103.4 To provide sufficient car parking provision contained by the road bridge. The pockets of space either side of the railway and contained north of the diverted highway would provide sufficient space for the anticipated car park requirement and avoid further incursion into the greenbelt land to the south of the bridge for parking. Thus it presents a coherent and contained scheme boundary that is sufficient to accommodate the station and its likely parking needs.
  - 3.103.5 Prevention of urban sprawl. If it were possible to locate the bridge over the existing crossing alignment, the car park(s) would be to the south of the bridge, with risk of ongoing sprawl into the fields further south

- 3.104 The project team did briefly examine further options for bringing the bridge much further south to avoid impacting Mr and Mrs Doyle's house but these resulted in a very significant diversion away from the route direction, as well as incurring further into green belt land and the small patch of woodland to the south east of the crossing. As well as causing greater cost and environmental impact, it would have increased journey lengths and times and was not pursued further.
- 3.105 Therefore the bridge solution was adopted and positioned to the south of the existing crossing, recognising with regret that the proposal would result in the loss of the residential property of Mr and Mrs Doyle with whom I have met several times during the course of the project design development to explain the emerging project position.
- 3.106 From my earliest conversations with Mr and Mrs Doyle, accompanying Russell Mills who summarises our engagements with them in his evidence [APP-W3-1], I have been open about the developing design objectives and constraints, and the likely outcomes. I have also suggested ways in which we might enable them to remain in their house on a rental basis until the earliest of the following constraints occurred:
- 3.106.1 we need to build on the land; or,
- 3.106.2 they find other temporary accommodation; or,
- 3.106.3 if they wished to relocate on their land further south, a new property were built, subject to planning constraints.
- 3.107 It is unfortunate that such negotiations were postponed pending more detail on the implications of the flood report but these have recently resumed and I continue to be available to respond to their queries.

#### Palmersville Dairy crossing

- 3.108 Palmersville Dairy crossing is a footpath crossing over the railway with known safety issues likely to be exacerbated by the introduction of the passenger services.
- 3.109 The footpath crosses the railway where it is on a double track between Benton North junction with the East Coast Main Line to the west of the footpath, and another junction to the east, referred to as Benton East junction where the two tracks merge into one.
- 3.110 This section of the route is double-tracked to allow the freight services to be held back by the signaller, either from accessing the East Coast Main Line in the southbound direction, or from entering the single track section in the eastbound direction. This is necessary to avoid conflicting with other services and causing delays.
- 3.111 The existing operational practice frequently results in an eastbound freight train being held back from entering the single-track section for up to 30 minutes, with the freight train static over the footpath crossing. Anecdotal evidence received by the project team is that some members of the public have on occasion chosen to climb under the freight train in an attempt to cross.
- 3.112 Although this is dangerous in itself, there is at least currently no timetabled situation where a freight train crosses in the other direction so that a person crossing under the train then crosses the other track without realising a train is coming the other way. This would not be the case when passenger services are introduced to the route. In that event, visibility of a train coming would be extremely limited and pedestrians would be at high risk of being struck by the train.
- 3.113 An explanation of the various crossing proposals identified and assessed is discussed in the evidence of Darren Lord [APP-W5-1], but the conclusion is that this crossing is to be closed and the footpath diverted via an alternate route either over or under the railway.

3.114 For most railway footpath replacement crossings, a footbridge will be cheaper than an underpass, mainly because of the extent of earthworks involved in constructing an underpass. However, in this location there were two key factors that led the project team to select an underpass instead of a footbridge:

3.114.1 The first is that immediately north of the Northumberland Line footpath crossing, the footpath passes under the Nexus Metro line in an underpass. A footbridge over the Northumberland Line would therefore mean pedestrians crossing high over one bridge, only to then have a greater vertical distance to drop (or climb, if going the other way) than they would if an underpass were used. It therefore requires much more effort on behalf of the user and would be likely to face criticism from the public.

3.114.2 The second is that the local authority, North Tyneside Council made it clear in stakeholder engagement that it required an integrated cycleway, which would enforce the need for long and expensive ramps. It also advised that a footbridge proposal would be unlikely to receive planning permission.

3.115 On this basis an underpass proposal was adopted as the preferred solution. The current design proposal is located to the east of the proposals in the original Application, following discussions with Nexus and responding to their concerns about placing a retaining wall in the support zone of the Nexus infrastructure. This is illustrated further in my response to their objection as described on page 37.

### **Summary of operations**

3.116 The railway operations consist of the existing freight services and the new passenger services.

#### **Freight operations**

3.117 There are three existing freight services:

3.117.1 Biomass from Port of Tyne in the south, to Lynemouth Power Station to the north beyond Ashington. Depending on the need and the timing of ships providing the biomass material to the port, these trains use up to four return paths per day.

3.117.2 Alumina from Fort William to North Blyth via the ECML at Morpeth, and Bedlington. The existing service runs up to three round trips per week, drawing south to Newsham where the hauling locomotive detaches, 'runs round' the wagons, reconnects and takes them to North Blyth via Sleekburn junction.

3.117.3 Coal from North Blyth to Wales via the Northumberland Line. The existing service may run once per week dependent on demand.

3.118 There are existing rights for up to 17 freight train paths per weekday throughout the operational day, and these rights are assumed to continue to be required at the point the passenger service commences operation.

3.119 With the introduction of passenger services, there is insufficient line capacity between passenger trains to reverse the Alumina trains at Newsham. This functionality is to be provided by reopening the Bedlington Furnace Way sidings, which allow this operation to take place largely off the main running line and so avoid service disruption.

#### **Passenger operations**

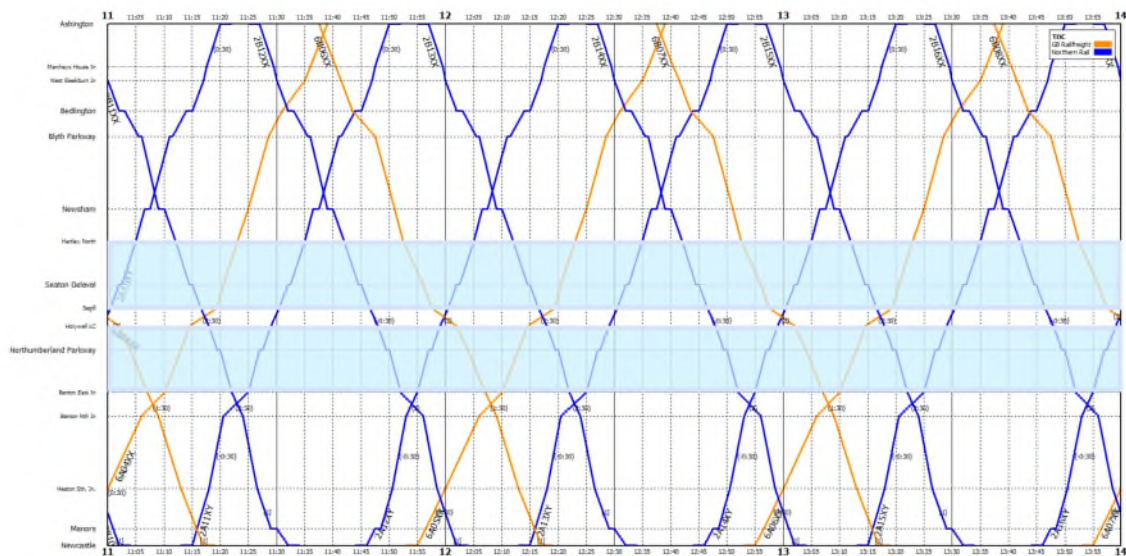
3.120 The Scheme will deliver two passenger trains per hour in each direction through the day. This is important to maximise the project benefits by creating a regular and frequent service that operates on a 'clock face' timetable i.e. at the same minutes past each hour



from the same location, which simplifies the times that passengers need to remember to catch a train.

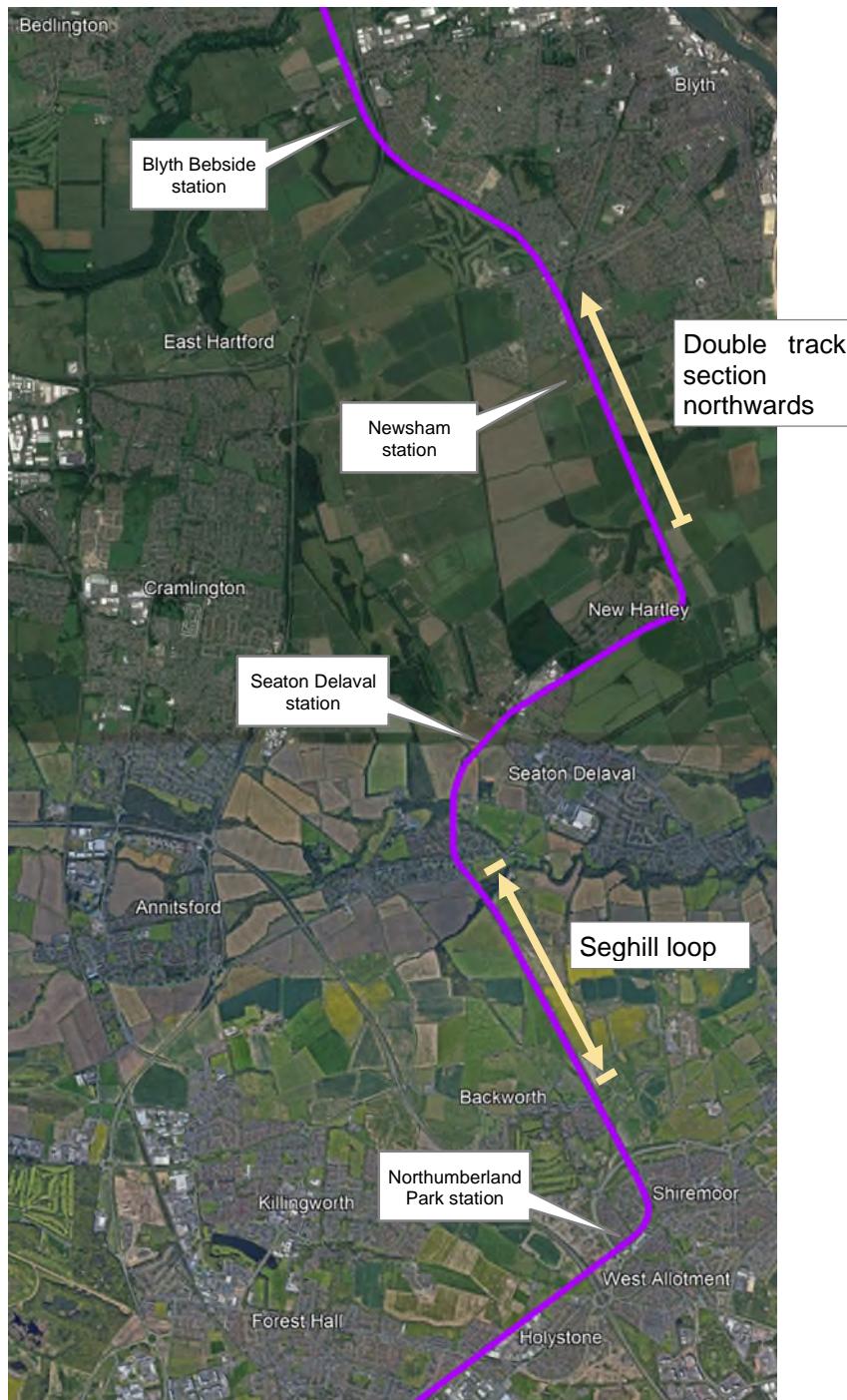
- 3.121 Figure 3 (replicated at larger scale in Appendix C.2) shows a three hour time period along the horizontal axis, and location along the vertical axis from Newcastle Central at the bottom to Ashington at the top. The semi-transparent blue stripes indicate the remaining length of single-track section which can only be occupied by one train at any point in time. Other parts of the graph are double-tracked and so trains can pass in opposite directions in these areas.

*Figure 3: Train graph diagram illustrating a typical three-hour period [see also Appendix C.2]*



- 3.122 The two passenger service paths each hour, shown in blue in the train graph diagram in are interspersed with the freight path, shown in yellow. The passenger trains are timetabled to pass each other north of Newsham and between Benton North and Benton East junctions just east of the junction with the ECML.
- 3.123 The graph illustrates that the Seghill passing loop is necessary to provide sufficient track capacity to run up to three trains per hour in each direction. The timetable structure proposes that passenger trains pass each other at Newsham and between Benton north Junction and Benton East with freight services passing passenger services at the proposed Seghill loop. This is shown as the yellow and blue train paths cross each other where there is a clear horizontal section on the graph between the two blue bands depicting double track. Without the Seghill loop there would only be sufficient track capacity to run two trains per hour in each direction and hence either the freight or the second passenger service could not be retained – neither of which achieves the project objectives.

Figure 4: Location of Seghill Loop (image source: Google Earth Pro)



- 3.124 The provision of the loop between Seghill and Holywell level crossings and extended double track section north of New Hartley (see Figure 4) are both required to enable the introduction of a half-hourly passenger service over and above the current and proposed freight operations. The infrastructure supports a timetable that is designed to be resilient to delays and aid recovery from disruption, which is important to be acceptable to train operating companies working on the ECML where disruption from the Northumberland Line could quickly cascade across the national network.

## 4. CONSTRUCTION

- 4.1 Construction of the works is being delivered under two different mechanisms. The 'on-track' works are being delivered by Network Rail and its contractors under its Permitted Development Rights (PDRs). Network Rail is delivering these works under a 'no regrets' principle such that if the Order were not made, it would not regret having made the changes since they largely advance renewals activities that would be required at some point in any case. The station infrastructure works are being delivered by NCC's stations contractor.
- 4.2 In each location, contractors will be responsible for producing a Construction Environmental Management Plan (CEMP) in accordance with the requirements set out in the Outline CEMP that accompanies the relevant planning application. The CEMP must be submitted to and approved by Local Planning Authority before works commence. The Outline CEMP covers such details as:
- 4.2.1 Normal hours of work to avoid antisocial hours where practicable
  - 4.2.2 Management and measurement of noise and vibration
  - 4.2.3 Community liaison for information and emergency
  - 4.2.4 Communication with affected neighbours
  - 4.2.5 Use and management of materials
  - 4.2.6 Vehicle washing facilities
  - 4.2.7 Traffic management measures
  - 4.2.8 Protection of watercourses and other environmental receptors

### Construction of on-track works

- 4.3 This section is provided for context as to typical railway construction and maintenance activities and methods, though these are primarily for the on-track works delivered by Network Rail without need of the powers to be granted under the Order.
- 4.4 The 'on-track' works are to be delivered by Network Rail and its contractors. Most of these works will be undertaken 'on or near the line' meaning within three metres of the rails that train run on. Without specific safety measures this is a dangerous area therefore standard railway protection measures need to be implemented to ensure the safety of both construction and railway operational staff.
- 4.5 The main protection measure to be implemented will be a railway 'possession'. A possession is where the construction team takes ownership from the signaller of one or more railway lines for a stretch of the route that has defined start and end points known as possession limits.
- 4.6 During a possession the railway line is closed to passenger and freight trains to ensure collisions with construction staff and plant are not possible. Inside the possession limits the construction organisation can run engineering trains and move other construction plant under standard control procedures.
- 4.7 Possessions are disruptive to the operation of the railway and therefore have time limits that are often through the night or continuous throughout a weekend to avoid the typically busier railway operational times of daytime in the working week.
- 4.8 Modifications to the track fall under a series of different methods depending on the existing condition of the track components (e.g. rails and sleepers) and the trackbed (ballast and soil layers beneath the tracks). Typical works undertaken are:

- 4.8.1 Tamping: This is the least intrusive track work where the existing track components are lifted and slued by a specialist 'tamper' engineering train in small increments.
- 4.8.2 Re-railing: The next level of work on the track is 're-railing' where the existing rails are removed from the sleepers and replaced with new steel rails. To do this the rails are cut out using a diesel-powered rail saw with the new rails pulled into place by a re-railing machine then welded in place. Tamping often follows a re-rail.
- 4.8.3 Ballast cleaning: Where the ballast has become contaminated and clogged up by materials (such as coal dust) often from the freight using the route, there may be need to clean it so that it can allow water to freely drain through and for the ballast to fully support the track. A specialist ballast cleaning machine is used which passes a specialist conveyor chain under the sleepers to collect the ballast, which is passed up to the machine, vibrated, cleaned, and then returned under the track.
- 4.8.4 Renewals: The most intrusive track work is a 'renewal' where all the track components are removed and the trackbed below is excavated. This is followed by reforming the trackbed with imported fill using excavators and bulldozers, then new track components are laid using track laying machines.
- 4.9 There is a level of noise associated with most of these activities, but it is usually highly localised as the machine moves along the track, so most railway neighbours will be exposed only for a few minutes at a time.
- 4.10 Some other localised maintenance activities such as earthworks, use Road/Rail Vehicles (RRV). RRVs are machines that can drive both on the road using rubber tyres, and on railway tracks by switching to steel wheels. These machines access the railway via special access points called Road/Rail Access Points (RRAP). Often when there is no local RRAP for bring plant onto the railway a temporary RRAP is constructed for the duration of the works.

#### **Construction of station infrastructure works**

- 4.11 The 'station' works are to be delivered by Northumberland County Council and its contractors. This section describes generic station construction processes, though more specialised activities may be necessary at individual locations.
- 4.12 The construction of the stations can be categorised into two separate construction areas: 'on-track' works; and 'off-track' works. The on-track works are any construction that happens within three metres of the running rails. The off-track works are all other works at the station sites.
- 4.13 Infrastructure typically constructed as part of the on-track works includes: station platforms; station footbridges; and equipment on station platforms. These works will occur within railway possessions as described above.
- 4.14 RRVs will be used to lift the station platform units into place, with access from RRAPs.
- 4.15 Station footbridge foundations will be drilled from off-track piling rigs and their superstructures will be lifted into place by off-track cranes situated within the proposed station car park areas. Platform equipment will be constructed using off-track plant utilising the car park areas as access points.
- 4.16 Infrastructure typically constructed as part of the off-track works in stations includes: station forecourt areas; station car parks; car park ancillary equipment including cycle storage facilities and lighting columns; and access roads including cycle and pedestrian access facilities.

- 4.17 Due to the distance away from track railway possessions are not required to construct this infrastructure and therefore night time and continuous weekend working is usually not required.
- 4.18 Both North Tyneside Council and Northumberland County Council have construction hours enforcement whereby without prior approval construction is restricted to 8am-6pm Monday to Friday, 8am to 2pm Saturday, with no working on Sundays and Bank Holidays except where unavoidable, in accordance with the Outline CEMP.
- 4.19 To build the car parks and access roads the first activity to take place will be ground levelling during which soils will be moved around the car park sites by bulldozers and other plant to create a solid foundation for the road. Usually at this stage underground drainage will be installed.
- 4.20 The next activity is to add gravel in graded layers using the same equipment to form the sub-base and base of the car park. Then asphalt is heated up before being spread and compacted onto the base by construction crews. Finally painted white-lining is applied to mark out roadways and parking spaces. At various stages through this work, ancillary equipment such as lighting columns and CCTV cameras is lifted onto foundations using mobile cranes around the site.
- 4.21 Deliveries to and removal from the car parks will usually be made by road transport using existing roads where possible, or by temporary haulage routes where required.
- 4.22 The works to construct the stations require planning permission and suitable measures to manage construction impacts are (or will be) included as planning conditions to any permission granted. Mark Russell's proof [APP-W4-1] provides information about the status of the planning application for each station.

## 5. **STATEMENT OF MATTERS**

5.1 In this section, I address the following matters listed in the Statement of Matters (SoM) summarised as 'SoM 3d' for numbered reference 3d of the SoM. Some responses are covered in part by other witnesses, and this is identified in the text. The headings below are truncated for ease of reference.

- 5.1.1 SoM 2: The main alternative options considered by Northumberland County Council (NCC) and the reasons for choosing the preferred option set out in the Order.
- 5.1.2 SoM 3b: impacts of the scheme and its construction on the local road networks, parking, and communal gardens.
- 5.1.3 SoM 3c: location of the proposed underpass at Ashington and its impact on any anti-social behaviour.
- 5.1.4 SoM 3d: impact of the scheme on sheltered accommodation for the elderly.
- 5.1.5 SoM 4: The effects of the scheme on statutory undertakers, statutory utilities and other utility providers, and their ability to carry out their undertakings effectively, safely and in compliance with any statutory or contractual obligations and the protective provisions afforded to them.

### **Matter 2: Alternative options and reasons for choosing the preferred option**

5.2 Stuart McNaughton's proof [APP-W1-1] outlines the reasons for the Scheme and the general location of the stations. My proof of evidence sets out the evolution of the project design and the most influential reasons for adopting the preferred options making up the Scheme are as generally set out in this document in section 3 (Summary of proposed works) and where specifically responding to objections in section 6 (Objections).

### **Matter 3b: Impact of the scheme on local roads, parking and communal gardens**

5.3 The project team has been aware of residents' concern at the potential for the stations to generate on-street parking on local roads. I have personally heard those concerns raised at public consultation events, at Bedlington in particular.

5.4 The project team has sought to mitigate this risk and other potential impacts on the local road network through several measures:

- 5.4.1 Provision of sufficient car parking based on the expected demand (see the Statement of Andy Coates - Appendix B of this proof)
- 5.4.2 Free parking at all station car parks, in common with a standard policy across Northumberland not to charge for parking. If parking charges were to be introduced at some point in the future (as has been the case at the car park at Morpeth station, which is on the East Coast Main Line), then we would anticipate local residents would be able to request a local residents' parking scheme.
- 5.4.3 Identifying land parcels close to each station so that side roads would be less convenient for users.
- 5.4.4 The proposed Order would authorise some limited works within the highway itself (e.g. creating new means of access). The potential impacts of any such works on the local road network will be mitigated by designing and implementing any such works in close liaison with the local planning and



highway authority. The proposed planning condition 2 included in the Applicant's request for a direction for deemed planning permission [APP-14] provides that the Applicant must obtain the prior approval of the local planning authority to the design of any works within the highway.

- 5.4.5 The impacts of construction traffic on the local road network will be mitigated through the proposed planning condition 4 which provides that a Construction Traffic Management Plan (CTMP) must be submitted to and approved by the local planning authority before works commence

- 5.5 The scheme will have impacts on local parking and communal gardens at Sleekburn House nursing home at Bedlington, and Fenwick Close near Northumberland Park station. My responses to the objections which raise these impacts are set out under the headings 'Plot 269: Sleekburn House' on page 32 under section 6, and 'Construction of Northumberland Park station' on page 34 under section 6 respectively.

**Matter 3c: Location of the proposed underpass at Ashington and impacts**

- 5.6 The reasons for the location of the proposed underpass are as set out under the title 'Hospital crossing' on page 17 under section 6. The measures adopted to mitigate any increase in anti-social behaviour are described under the heading 'Objections in relation to Hospital crossing' on page 30 in section 6.

**Matter 3d: Impact of the scheme on sheltered accommodation for the elderly**

- 5.7 The impact on sheltered accommodation at Sleekburn House nursing home at Bedlington and my response to the objection of Bernicia Group (OBJ-25) is set out under the heading 'Plot 269: Sleekburn House' on page 32 under section 6.
- 5.8 The impact on the Cheviots raised in Bernicia's objection (OBJ-25) related to the location of the proposed Hospital Underpass relative to the existing fence lines of the property. My response is set out under the heading 'Hospital underpass: other objections' on page 31 under section 6.

**Matter 4: Effects of the scheme on utility providers**

- 5.9 My response to the National Grid objection (OBJ-27) is set out under the heading 'Objections in relation to utility company interests' on page 38 under section 6.
- 5.10 In a more general response to impacts on utility providers, the mitigations for adverse effects are through the use of professional designers and contractors by the Promoter who engage with the utility companies to identify and protect utilities as standard practice, and the protective provisions included in Part 1 of Schedule 11 to the draft Order [APP-01].

## 6. **OBJECTIONS**

6.1 The objections requiring engineering and design responses are grouped by location together in the following section. The section proceed from north to south along the route of the Scheme with objections relating to multiple locations included at the end of the section.

6.2 Within each location grouping I have responded to points raised in the objections insofar as they relate to engineering and design matters. Any matters raised in the objections which are unrelated to engineering or design aspects of the Scheme are covered elsewhere in the Applicant's other proofs of evidence. I have addressed common objection themes before moving onto specific matters raised by individual objectors.

### **Objections in relation to Ashington station**

6.3 The following objection have been received in relation to the car park at Ashington station:

6.3.1 OBJ-22 (Malhotra Commercial Property) objects to the proposed acquisition of plots 323 and 324 for the station car park. The objector raises a number of concerns including the proposed configuration of Ashington Station car park resulting in the loss of the proposed care home development; lack of communication and insufficient information provided to enable proper understanding; and, the absence of any demonstration of alternatives considered. The objector queries whether additional car parking is required in context of change in work patterns as a result of Covid and questions whether there is sufficient funding for land acquisition included in the scheme

6.4 As a station car park, it is appropriate that the car park is adjacent to the station and that it complies with the relevant Network Rail standards and NCC requirements for accessible parking, drop off, cycling, and maintenance access provision. These are described further in Appendix A. The car park sizing is developed from the demand forecast work that is described in the Statement of Andy Coates as included in Appendix B of my Proof.

6.5 The new car park needs to accommodate the existing 113 spaces in what is known as the Station Yard car park, which will be replaced by the new Ashington station car park. The latest Ashington car park survey in 2016 recorded 100% occupation of this car park at peak, though this demand for high street parking may be artificially reduced at the moment due to Covid impacts.

6.6 The technical justification for making use of the Malhotra land is that, without it, a new car park at grade is likely to be full within the first four years of operations even assuming a pessimistic Covid pandemic impact on both the existing provision for high street parking, and on Northumberland Line demand.

6.7 As well as supressing demand and hence the benefits of a project designed to enhance the local economy and Ashington in particular, NCC would then be faced with considerable additional disruption and cost associated with retrofitting a second level to a congested car park.

6.8 One option would be to build the second deck of the car park as part of the initial car park delivery. This would be expensive at a total car park cost of more than £5m, and require a new planning application in place of the one already granted by NCC.

6.9 By contrast, the acquisition of the Malhotra land to use for the car park is likely to be in the order of £3m cheaper and already has planning permission from NCC. It would be more accessible to users because it is all at grade, and provide sufficient capacity to accommodate all of the present-day high street parking demand, and 84% of the high forecast demand for the Northumberland Line. In short, an at grade car park expanding

into the Malhotra land would enable the economic development of Ashington and the wider area at least cost to the taxpayer.

- 6.10 See Appendix A for more details of the assessment of these options.

### **Objections in relation to Hospital crossing**

- 6.11 The following objections have been received in relation to the proposed underpass at Hospital crossing just south of Ashington:

- 6.11.1 OBJ-1 (Mr Gibb and Ms Harding) object to the underpass in place of the Hospital crossing and raise concerns about the underpass causing an increase in anti-social behaviour, particularly in inclement weather and the loss of footpath access to cut their hedging. The objector proposes the underpass be moved 50 yards further north, closer to the station. The objector queries whether the new path will be moved closer to the rail tracks or if path 600/100 will be used.
- 6.11.2 OBJ-03 (Ms Gibb) objects to the proposed underpass in place of Hospital crossing beside her property. The objector expresses concerns regarding the following: additional increase in anti-social behaviour; devaluation of their property; lack of communication with local residents; the close proximity of the other entrance to bungalows whereby elderly and vulnerable people live and hence those individuals feeling of personal safety; noise pollution; and, subsidence and vibrations caused by increased number of trains. The objector queries whether the underpass could be relocated, proposing the site of the current crossing, the previously proposed site at the top of Rutland Street or where the garages were, on the left facing Green Lane. They have reiterated that they do not want a bridge overlooking.
- 6.11.3 OBJ-04 (Ms Symons) objects to the underpass and raises concerns regarding the increase in anti-social behaviour this underpass would bring to the area. The objector queries why the crossing cannot be relocated to either, where the current crossing is, or further up where the garages have been knocked down near Green Lane. The objector complains about the lack of communication with local residents.
- 6.11.4 OBJ-05 (Mr Barker) objects to the underpass in place of Hospital crossing and raises concerns including: ongoing issues of anti-social behaviour; and, rail users parking in the surrounding residential areas to avoid parking charges at the station car park. The objector proposes the underpass be relocated to the car park, away from residents and better covered by CCTV.
- 6.11.5 OBJ-06 (Ms Priest) objects to the highway exit route, P89. The objector expresses concerns about the noise level and traffic that this would bring to the housing estate, stating that space in these back lanes is already limited. She also raised concerns regarding the impact this would have on young families in the area.
- 6.11.6 OBJ-07 (Ms Humble) objects to the proposed underpass in place of the Hospital Level Crossing near her property and complains about the lack of communication with residents. The objector's concerns include an increase in anti-social behaviour and property devaluation. They propose that the underpass be moved to the wasteland further up from the houses at Rutland Street
- 6.11.7 OBJ-09 (Mr Tanney) complains about the lack of consultation with residents and objects to the underpass at Ashington. The objector raises concerns that the underpass would invite crime and anti-social behaviour.

- 6.11.8 OBJ-10 (Ms Perkins) objects to the underpass at Ashington. The objector's concerns include: increase in anti-social behaviour caused by groups congregating in the underpass; lack of communication of plans; concerns regarding personal safety walking along 'the back path'.
- 6.11.9 OBJ-25 (Bernicia Group) objects to the acquisition of land at Ashington (Plots 314- 319a inclusive). The objector raises concerns with regards to the uncertainty around design detail, compromising their ability to understand impact. The objector proposes the TWAO process be delayed allowing the planning process to catch-up.

#### Hospital underpass: Anti-social behaviour

- 6.12 A recurring theme in these objections is concern about an increase in anti-social behaviour stimulated by the presence of the underpass. The design team has been mindful of this concern from the earliest underpass design proposal and has adopted best practice to mitigate this risk.
- 6.13 In particular, the design features ensure that it is wide to create a sense of space, well-lit to improve visibility, with no right-angle corners to provide hiding places, four access points to give alternate departure options, and the inclusion of CCTV to cover each angle for security purposes. Further consideration of design finishes in coordination with the local community will also focus on providing a welcoming environment that discourages graffiti and damage.
- 6.14 Although it is not possible to prevent every potential instance of antisocial behaviour, particularly given the existing experience of local residents, I consider that we have taken all reasonable measures to mitigate the risk of greater anti-social behaviour with this design.

#### Hospital underpass: alternate locations

- 6.15 Some objectors have proposed that the underpass is relocated either to the north or south.
- 6.15.1 The location of the underpass is influenced by the aim to minimise the diversion from the existing route. The design team had identified that there would be an important link between the new station to the north-west and Roseneath Court to the south-east. Similarly the new crossing would likely need to connect with the public footpath cut-through into Chillingham Crescent to the south west and the Cheviots to the north-east. Therefore the approach ramps toward each of the four corners provide access for all users, and minimising the diversion from the existing footpath.
- 6.15.2 Relocation in either direction would not have any impact on the design features outlined above, but would have resulted in users making an east-west crossing from Chillingham Crescent to Roseneath Close having to walk further.

#### Hospital underpass: alternate crossing proposals

- 6.16 Some objectors have proposed that the underpass be replaced with a footbridge. A footbridge design has been considered at the location of the hospital crossing and further north at Ashington station. These were considered during options development and are discussed in section 3 on page 17, but in summary were considered by the project team to be more visually intrusive and thus have the potential to trigger more objections.

#### Hospital underpass: other objections

- 6.17 OBJ25 raises uncertainty around the design detail and hence the impact on land take. The underpass is currently at an early stage of design, and it may be that a more

detailed understanding of ground conditions may result in slightly less permanent acquisition of land than the current engineering drawings suggest. In the context of this uncertainty the extent of Bernicia's land which has been included in the Order has been identified on a conservative basis and we continue to work to minimise permanent land take as far as is practicable.

### **Objections in relation to Bedlington station**

6.18 The following objections have been received in relation to Bedlington station:

6.18.1 OBJ-14 and OBJ-17 (Watsons Haulage Ltd) objected to the temporary use of plot 295. The objector stated there is not space on the site for any rail contractors as the premises are now running at maximum capacity, and expresses concern that losing the right to operate at these premises would result in permanent business closure. The contractor has now confirmed that they are able to carry out construction of the works without plot 295, and the Applicant has agreed to remove it from the Order. The objection has now been withdrawn.

6.18.2 OBJ-25 (Bernicia Group) objects to the acquisition of the land at Bedlington (Plots 269-273 inclusive). The objector complains about the extent of proposed land acquisition which they consider reflects uncertainty about design detail. The objector raises concern regarding the impact on flats, potentially rendering them, and hence the business, unviable. The objector proposes the Order process be delayed allowing the planning process to catch-up

### **Plot 269: Sleekburn House**

6.19 The boundary of plot 269 runs along the east face of the Sleekburn House sheltered accommodation approximately parallel with the railway. It includes almost all of the garden area between Sleekburn House and the boundary fence.

6.20 The inclusion of this area in the Application documents reflected the full extent of land that was considered necessary at the time to construct and maintain the platforms. Since the Application was submitted, the project team has refined the design and has confirmed that the actual extent of land to be permanently acquired can be significantly reduced.

6.21 The revised land to be acquired for permanent use now only affects the northern half of the garden, taking a triangular strip of land encroaching a maximum of 1.7m width into the northern end of the Sleekburn House garden where it is currently 6m wide.

6.22 The land to be permanently acquired is to allow construction of a relocated boundary fence. The position of the boundary fence is the culmination of the position of the existing track, plus standard platform width, plus drainage and inspection access behind the platform and then the fence.

6.23 There is in addition a 2m maintenance access strip along the full length of the Sleekburn House / railway boundary for which powers of temporary access are sought. This is primarily to enable inspection and repair of the railway fence line.

6.24 Discussions with Bernicia are ongoing regarding the mitigation of impacts on residents, particularly in relation to noise. The latest position is summarised in the Applicant's Update to Inquiry No. 1 [APP-INQ-1].

### **Objections in relation to Newsham overbridge**

6.25 The following objections have been received in relation to Newsham overbridge:

6.25.1 OBJ-26 (Mr and Mrs Doyle) objects to the proposed permanent acquisition of the land owned by Mr & Mrs Doyle, identified as Plot 184. The objector

complains about the extent of land indicated for acquisition without clear justification and the impact on proposed development of land owned. The objector proposes the Order process be delayed allowing the planning process to catch-up.

- 6.25.2 OBJ-13 (Blagdon Estate) objects to the significant land identified for Permanent acquisition as unjustified. Other objections relate to procedural issues not responded to in my Proof.
- 6.26 The primary purpose of the permanent acquisition of land from Mr and Mrs Doyle is for the construction of the new overbridge to replace the level crossing as described on page 19. In this matter I and others in the project team have spoken directly with Mr and Mrs Doyle over a period of several months and confirmed the expected impact on their property.
- 6.27 Similarly, the neighbouring land owned by Blagdon Estates, particularly on the west side of the railway, has also been identified for permanent acquisition.
- 6.28 At the time of the submission of the Application it was recognised there was the potential for the land to be exposed to flooding over a wide area and that mitigation of such flooding could therefore be required over a wide extent of land. Work has been ongoing to assess the scale of the potential issue.
- 6.29 Now that the study has been completed the project team has been able to better determine the likely impacts and mitigations. As a result, the proposed boundaries of the land to be permanently acquired or used under the Order on both sides of the railway have been much reduced compared to the boundaries as originally submitted in the Application.
- 6.30 Discussions with Mr and Mrs Doyle and the Blagdon Estate are ongoing and the latest position is summarised in the Applicant's Update to Inquiry No. 1 [APP-INQ-1].

### **Objections in relation to Red House Farm**

- 6.31 The following objections have been received in relation to Red House Farm:
- 6.31.1 OBJ-19 (BDW Trading Ltd) objects to the temporary possession of part of the Church Fields residential development in New Hartley for use as a worksite (parcel 145). The objector's concerns are: the intersection of the worksite with the reconstruction of a section of the public right of way, required under the development's planning condition; the intrusion of some parts of plot 145 on proposals for a swale for the proposed development of 285 dwellings which, depending on timing, could result in restrictions on the occupations of the site; and, the potential that works may interfere with and create health and safety issues in relation to the construction and use of the estate road and have an adverse structural impact on the road.
- 6.32 The primary purpose for the use of plot 145 was access for the modification of earthworks north of Hartley Curve associated with the dual-tracking of the railway in this location for a passing loop which is necessary for efficient and resilient railway operations.
- 6.33 As part of its work to refine the design and reduce impacts, the project team has optimised the railway alignment to make more efficient use of the embankment and strengthen the embankment without need to occupy plot 145. The Applicant has confirmed this to the objector's solicitors and we therefore expect that the objection will be withdrawn.



### **Objections in relation to Northumberland Park station**

- 6.34 The following objections have been received in relation to the proposed construction works at Northumberland Park:
- 6.34.1 OBJ-002 (Mrs McKinney) objects to the use of land including the shared garden [plots 050/051], removal of trees within the garden, and location of the platform. The objector's concerns are the noise of the construction and trains resulting in loss of property value and a long-term tenant handing in their notice leading to loss of rent. The objector proposes the works are moved to a neighbouring empty field instead [understood to be to the west of the A186].
  - 6.34.2 OBJ-08 (Ms Hopkins) objects to use of the communal gardens and parking spaces included in plot 050. The objector's concern is that they do not know how long the work is likely to take, and consider it an intrusive use of the land.
  - 6.34.3 OBJ-16 (Mr Clough, Mrs Cook, and Mr Saunders) complains about the service of notices and raises objections with regards to construction issues including: lack of clarity about land use and duration of construction activities; noise, dust and mud generated from construction vehicles and activities; loss of trees and the screening they provide, as well as the consequential negative impact on wildlife; temporary loss of car parking and bin store amenities; negative impact on property value during construction and upon completion; increased anti-social behaviour.
  - 6.34.4 OBJ-18 (Mr Scorer) complains about the service of notices and raises objections with regards to construction issues including: impact of the use of the car park on rental or holiday let viability; impact of construction works on the viability of letting the property and structural integrity of the building; impact of the completed works and operation on the value of the property as a result of increase of people in close proximity creating noise, vandalism and anti-social behaviour; impact on wildlife and green environment also leading to loss of value.
  - 6.34.5 OBJ-23 (Mr Watson) objects to a range of issues including: the impact of the construction work on the property value due to noise and disruption, particularly at night; loss of trees for screening and consequential impact on wildlife; anti-social behaviour and loss of privacy; loss of parking space provision. The objector also wishes to understand why it is necessary to construct a new platform rather than just using the existing station facilities with an adjustment to the timetable.
- 6.35 Concerns about impact on property valuation are addressed in Russell Mills' evidence [APP-W3-1]. Environmental impacts are addressed in Mark Russell's evidence [APP-W4-1].

### **Construction of Northumberland Park station**

- 6.36 The works to Northumberland Park station will involve limited excavation, contiguous wall piling, and construction of station infrastructure including a lift shaft and stairs at the east of the platform, the platform itself and associated shelters, seats etc.
- 6.37 The design team has been mindful of the close proximity of this station to local residents and has considered how to design the works in such a way as to minimise the need for activities that generate significant noise. The contractor has recently been appointed and is attending site meetings with residents to understand their concerns and develop methodologies to minimise impacts. The relevant conditions (5, 8, 29) of the Northumberland Park planning application decision notice provide constraint on the contractor and hence further comfort to residents in this regard.

- 6.38 At a recent meeting with Mr Clough, Mrs Cook, and Mr Saunders on 30 Sept on site, it was made clear that they would resist attempts to carry out ground investigation works adjacent to their properties, preferring to wait until such access were obtained under legal powers.
- 6.39 Unfortunately, it is not possible for design to progress without this vital data, and from the design to determine with surety the nature and extent of foundation works and hence the method of construction. Nevertheless, we will continue to work with the residents to try to find alternative means of determining ground conditions while reducing impacts to their satisfaction.
- 6.40 Therefore, it is not possible at the current time to say whether the existing trees between the station and the properties can be retained or not, but once the earthworks have been completed, the bank will be replanted appropriately to provide screening. The project will only remove what is absolutely necessary to enable construction and use of the station. The project is committed to working with the council and their arboriculturist and landscape officers to agree those trees which are to be removed, and the appropriate methods for such removal.
- 6.41 At the meeting with the residents they raised their concern about retaining trees between the emergency egress access path and the properties. The construction of the egress path has been adapted to safeguard the adjacent root systems of any adjacent trees. Self-seeded trees within the line of the path will not be safeguarded, however those adjacent to the path have the potential to be capable of being safeguarded. This construction specification is being deployed in recognition of the screening role of the row of trees separating the residential properties on Fenwick Close and the A186. While some vegetation will need to be removed to construct the required path and hardstanding, this will be minimal and will seek to retain the treeline to minimise the impact on visual amenity'.
- 6.42 The stations contractor will develop the CEMP governing their working practices, limiting their work to weekday daytime hours wherever possible and requiring advanced notification of any antisocial hours working wherever necessary.

#### Use of the Northumberland Park Metro station platform

- 6.43 Mr Watson suggests (OBJ23) that it would be better to make use of the existing Northumberland Park platform rather than create a new one for the Northumberland Line.
- 6.44 Mr Watson is correct that it would certainly result in minimal construction work adjacent to the Fenwick Close properties. It would also allow direct cross-platform or same-platform interchange with the Metro services, which would be good for onward journeys. However, the works involved in achieving this would be highly complex, costly, risky, and detrimental to the operational performance and resilience of both railway networks, as described further below.
- 6.45 From the start of the project, the Northumberland Line Railway has been deliberately kept functionally separate from the Nexus Metro system because they are two very different railway systems operating under different regulatory environments, operational practices, signalling systems, and traction power.
- 6.46 The Northumberland Line is classed as a 'heavy rail' railway, allowing both freight and passenger trains to run on the same tracks, with the passenger trains subject to crashworthiness standards that consider the possibility of an impact with freight vehicles. The Nexus Metro system is classed as a 'light rail' railway, with lower crashworthiness standards leading to a more lightweight train design because there would be no interface with freight.
- 6.47 Connecting these two railways either side of the platform or for a more extended distance towards the ECML would require regulatory acceptance contingent on the

creation and acceptance of formal operational and management procedures to ensure safety of all vehicles and passengers using the routes.

- 6.48 Although the passenger trains could be diverted onto the Metro lines with the freight continuing to use the same track as it does currently, the mere fact of a track connection creates a risk of a freight train being accidentally diverted onto the wrong track. A Metro train is simply not designed to mitigate the effects of a collision with a freight train.
- 6.49 There are very few instances in the UK where freight or heavy rail services interface with light rail systems. However, the Metro service is one of those, and Metro trains share the network with heavy rail and freight trains between Pelaw and South Hylton. Trains are kept safe by 'double-blocking' them. Double-blocking means that where a heavy rail train follows a light rail train, or vice-versa, the trains are further separated by an extra signalling block section to provide additional safety protection. That extra distance, which varies around the network, amounts to additional journey time, and would extend the time gap between trains calling at the station. The introduction of Metro trains on the heavy rail network described above took eight years to deliver<sup>2</sup> because of the extent of infrastructure, systems and regulatory changes that needed to take place.
- 6.50 This is further complicated by the fact that all Nexus trains calling at the north platform (where it is assumed all Northumberland Line services would stop) are all Eastbound, whereas an interface with bidirectional Northumberland Line trains presenting a risk of a head-on collision and even more onerous operational protection likely to extend the protective time separating trains from one another.
- 6.51 By running the Northumberland Line service into the Metro station, it is very likely that delays from one service would propagate to the other. Where delay from the Metro leads to delay onto the Northumberland Line service, it is likely that this would not be recoverable before services joined the East Coast Main Line, thus transmitting the effect of delay onto a national railway route. This is unlikely to be acceptable to the various passenger and freight operators using the East Coast Main Line.
- 6.52 Joining the two services together at Northumberland Park would require the blending of two different signalling systems, which includes the signals (which are different), the track circuit detection, and signal controls (which are in two different locations). To achieve this, the Northumberland Line drivers would need to be trained in the Nexus signalling system and related safety operational practices (such as reporting an emergency while on the Nexus network). The train control systems for both railways would need to be linked with each other, and clear protocols developed to manage the handover and hand back of a Northumberland Line train to the Metro system.
- 6.53 The regulatory, operational, and signalling costs of the changes needed to support the use of the existing Northumberland Park station platform, plus the costs of track alterations, would be likely to cost more than the new platform. The complexity of amending the signalling and seeking regulatory approval would add programme delivery risk, and the final outcome would be likely to create operational resilience problems that would be rejected by the railway industry through the Network Change process. For these reasons, the solution proposed by Mr Watson has not been pursued.

### **Objections in relation to Nexus interfaces**

- 6.54 The following objection has been received in relation to Nexus interfaces:
- 6.54.1 OBJ-20 (Nexus) this objection identifies a number of implementation and maintenance measures which are requested to avoid negative impact on Nexus operations at Palmersville Dairy crossing. Nexus states that they require notification of planned works and their timings, assurance that

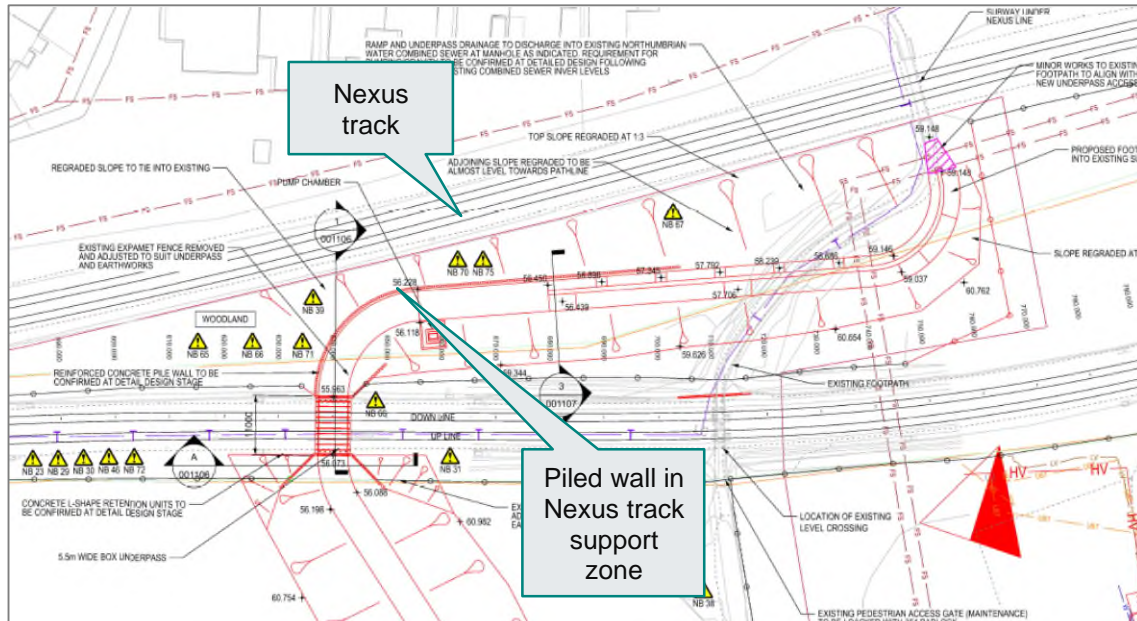
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<sup>2</sup> Paragraph 1.3.6 of the 2016 Nexus Metro and Light Rail Strategy available at [https://www.nexus.org.uk/sites/default/files/metro\\_and\\_local\\_rail\\_strategy\\_0.pdf](https://www.nexus.org.uk/sites/default/files/metro_and_local_rail_strategy_0.pdf) (accessed 11 Sep 2021)

Holystone Farm access will be maintained at all times and note of bridge loading capacity restrictions; The objector also provided clarification as to land ownership and rights concerning various parcels of land at Northumberland Park station.

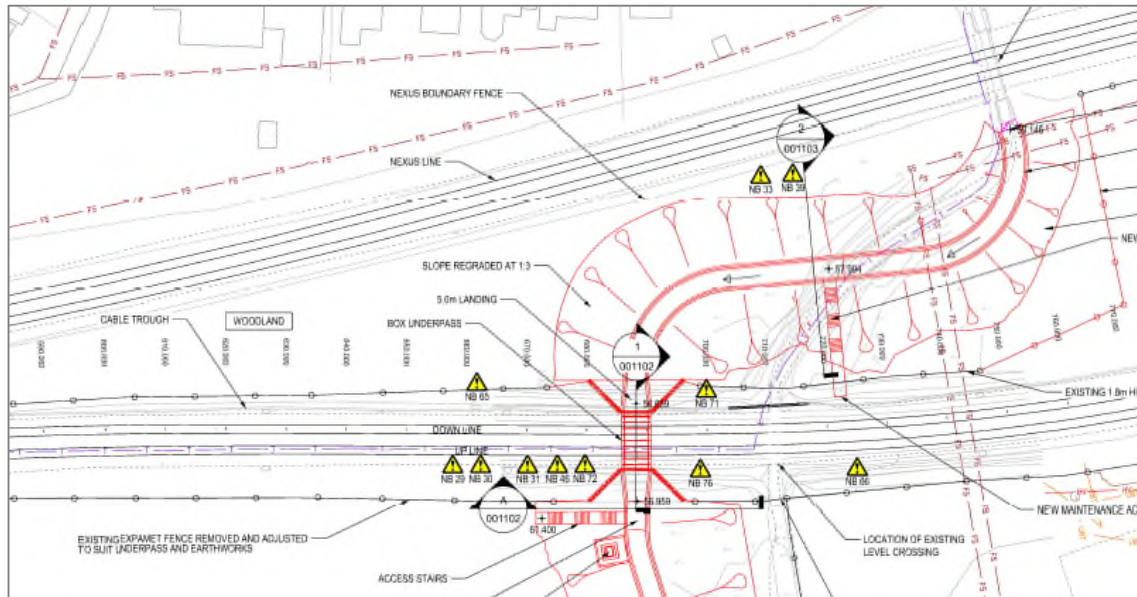
- 6.55 The proposals at Palmersville Dairy crossing underwent significant change as a result of emerging stakeholder requirements and site-based assessments. The initial proposed solution had been defined relatively recently in response to concerns from the local authority as described in section 3 on page 20 and hence some of the details identified by Nexus and referenced in their objection had not been concluded.

*Figure 5: Extract from original underpass design general arrangement at Palmersville Dairy*



- 6.56 An early design for the underpass was much larger, and featured a retaining wall that came close to the Nexus operating lines, causing them concern because of the interface with the track support zone (Figure 5). The current proposal (Figure 6) shows a graded slope with the crest well away from the support zone of the Nexus lines and is therefore now not expected to cause Nexus undue concern. The project team has remained in close discussion with the Nexus engineering team to address this and the other matters raised in the Nexus objection and is submitting documents through Nexus' formal approvals process. An interface agreement with Nexus is currently being negotiated which, once completed, will enable Nexus to withdraw its objection.

Figure 6: Extract from refined design general arrangement for Palmersville Dairy



### Objections in relation to utility company interests

- 6.57 The following objections have been received in relation to utility company interests:
- 6.57.1 OBJ-27 (National Grid) objects based on concerns about possible interfaces with High Voltage power routes. They have requested a discussion with the project team.
  - 6.57.2 OBJ-11 (Northern Power Grid) objects to protect the company's assets and apparatus, and in respect of the distribution substation at Ashington Station.
- 6.58 The project designers are aware of this concern that relates to overhead high voltage power lines near Underbridge 36. The contractor (AMCO) is aware of this hazard and will construct the bridge accordingly. The design moves the bridge slightly further away from the power lines and the current construction proposal is to drive the bridge in using specialist multi-wheel lifting equipment, rather than craning the bridge in. This technique is regularly used in situations where high-risk cables are in the vicinity. Information about the construction proposals has been provided to National Grid.
- 6.59 The protective provisions for the benefit of statutory undertakers in Part 1 of Schedule 11 to the draft Order [APP-01] would apply to Northern Power Grid's apparatus and provide appropriate protection in terms of the performance of their obligations as a statutory undertaker.

## **7. WITNESS DECLARATION**

7.1 I hereby declare as follows:

- 7.1.1 This proof of evidence includes all facts which I regard as being relevant to the opinions that I have expressed and that the Inquiry's attention has been drawn to any matter which would affect the validity of that opinion.
- 7.1.2 I believe the facts that I have stated in this proof of evidence are correct and the opinions expressed are truthful.
- 7.1.3 I understand my duty to the Inquiry to help it with matters within my expertise and I have complied with that duty.