



**The Network Rail (Leeds to Micklefield Enhancements) Order**  
CD 7.26 - Engineering & Design Level Crossing Proof of Evidence

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**TRANSPORT AND WORKS ACT 1992**  
**TRANSPORT AND WORKS (INQUIRIES PROCEDURES)**  
**RULES 2004**  
**NETWORK RAIL (LEEDS TO MICKLEFIELD**  
**ENHANCEMENTS) ORDER**

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**ENGINEERING AND DESIGN**  
**PROOF OF EVIDENCE - LEVEL CROSSINGS**  
***MICHAEL WESTWOOD***

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Author	Michael Westwood
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**The Network Rail (Leeds to Micklefield Enhancements) Order**

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## **The Network Rail (Leeds to Micklefield Enhancements) Order**

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## **1. INTRODUCTION**

### **1.1 The Order**

1.1.1 My name is Michael Westwood, Principal Engineer (Level Crossings) at SYSTRA. I have a BSc Hons degree in Industrial Product Design from Coventry University. I have been involved in the design of level crossing schemes for 22 years. I lead the SYSTRA Level Crossings team to produce level crossing scheme deliverables. I am the SYSTRA Professional Head in Level Crossings and I am responsible for staff development from a professional and technical perspective.

1.1.2 I have been appointed as Contractors Responsible Engineer (CRE) for 'Level Crossing Design' on the Scheme since 2016. As such, I have been extensively involved in the option selection, design development and the consultation process for the proposed works at the level crossings in question.

1.1.3 The Network Rail (Leeds to Micklefield Enhancements) Order ("the Order") seeks the powers to close five level crossings (Barrowby Lane, Barrowby Foot, Garforth Moor, Peckfield and Highroyds Wood Level Crossings) and to provide alternative means of crossing the railway.

1.1.4 The new access to replace the level crossings takes the form of:

- Barrowby Lane Level Crossing – a new bridleway bridge (including the connecting paths). The new ramped and stepped bridge is located approximately 100m to the west of the existing Barrowby Lane Level Crossing.
- Barrowby Foot Level Crossing – diversion of the existing Public Right of Way (PRoW) to the same new bridge at Barrowby Lane Level Crossing.
- Garforth Moor Level Crossing – this level crossing was temporarily closed by Network Rail on safety grounds in 2018. At that time, pedestrian traffic was diverted to a new temporary car park that was constructed to the north of the railway, which itself was accessed via a new temporary track along the edge of the field. The Order is required to permanently construct the temporary arrangements.
- Peckfield Level Crossing – highway improvements to Lower Peckfield Lane (north of the railway) via provision of passing places and a parking/turning area for residents of the railway properties to the north of the railway will be provided. In addition, either a new footway or bridleway (on the same alignment) will be provided, which will create a new right of way along the southern boundary of the Micklefield Recreation Ground.

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- Highroyds Wood Level Crossing – this level crossing was temporarily closed by Network Rail on safety grounds in 2021. The Order is required to divert the PRow via an existing underpass. This will involve the creation of footpaths to the north and south of the railway and access improvements to the existing underpass itself.

1.1.5 I have not included an overall summary of the Order within this Proof of Evidence although most aspects are naturally discussed where relevant. This Proof of Evidence documents the Scheme (the wider programme of works and the land uses which would be facilitated or enabled by the Order, which are authorised either pursuant to the Order and request for deemed planning permission or under permitted development rights including prior approvals and/or separate planning permissions) from a level crossing orientated engineering and construction perspective.

1.1.6 Strategic and specific level crossing considerations are undertaken within the Proofs of Evidence produced by David Vernon (Needs Case Proof of Evidence) (CD 7.02), Jerry Greenwood (Level Crossings Policy and Strategy Proof of Evidence) (CD 7.20) and Andrew Cunningham (Level Crossings Safety Proof of Evidence) (CD 7.23).

## **1.2 Option Selection/Alternatives Considered**

1.2.1 The Governance for Railway Investment Projects (GRIP) is a Network Rail management and control process for delivering projects on the operational railway. The TRU Programme has followed this process during the Scheme development.

1.2.2 GRIP divides a project into eight distinct stages and the overall approach is product rather than process driven. Within each stage an agreed set of deliverables are produced. The eight GRIP stages are:

- GRIP 1 – Output Definition
- GRIP 2 – Pre-Feasibility
- GRIP 3 – Option Selection
- GRIP 4 – Single Option Development
- GRIP 5 – Detailed Design
- GRIP 6 – Construction, Test and Commissioning
- GRIP 7 – Scheme Hand Back
- GRIP 8 – Project Close Out

1.2.3 The Project itself is, at the time of submission of this Proof of Evidence (February 2024), progressing through the Detailed Design stage (GRIP 5) which is expected to conclude in November 2024.

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- 1.2.4 Projects on Network Rail infrastructure work to a defined suite of Standards that prescribe how railway infrastructure, and the railway itself, are designed and operated. These Standards ensure safety, efficiency, consistency across the rail network and maintain compliance to applicable legislation.
- 1.2.5 Of the 5 level crossings included in the Order application, the optioneering and design development of 3 sites (Barrowby Lane, Barrowby Foot and Peckfield Level Crossings) were undertaken by the TRU Project. For the remaining 2 sites (Garforth Moor and Highroyds Wood Level Crossings), the optioneering and design development were conducted by Network Rail at route level.
- 1.2.6 For the 3 sites where the optioneering was undertaken by TRU, a series of viable options were proposed ranging from closure schemes, level crossing enhancements and 'do nothing'. As well as understanding the change in level crossing risk, each option was subjected to a multi-criteria analysis covering the following topics:
- Environment, Sustainability and Consent Risk – addressing environmental concerns, planning risks and consents risk;
  - Land & Property – addressing land access and availability concerns;
  - Cost – addressing capital and maintenance cost constraints;
  - Design / engineering feasibility – to address varying levels of design complexity;
  - Construction – to address varying levels of construction complexity;
  - Maintenance – to address varying levels of maintenance burdens; and
  - Deliverability – to address the impact on wider project programme timescales.
- 1.2.7 The option selection process for Garforth Moor and Highroyds Wood Level Crossings is not covered in this document.

## **1.3 Statement of Matters**

- 1.3.1 The following matters will be dealt with by this document read in conjunction with Andrew Cunningham's Proof of Evidence (CD 7.23), Jerry Greenwood's Proof of Evidence (CD 7.20) and Suzanne Bedford's Proof of Evidence (CD 7.29):
- Matter 3 – The main alternative options considered and the reasons for choosing the preferred options set out in the Order.
  - Matter 4 – The impact of the closures of each level crossing.

## **2. SCOPE OF EVIDENCE**

### **2.1 Introduction**

2.1.1 My evidence will be structured in two parts:

- Engineering and Design Response to the Statement of Matters
- Engineering and Design response to submitted Objections and Representations

2.1.2 Within my evidence I have not described the generalities of the Scheme, Option Selection, or the full detail of the proposed works. These items are extensively documented in the Network Rail Statement of Case (CD 5.01). Specifically, the reader is referred to the following sections of the Statement of Case (SoC):

- SoC Section 5 – Level Crossing Risks
- SoC Section 6 – The Case for the Scheme
- SoC Section 9 – Scheme Development
- SoC Section 10 – Scheme Description and Construction

2.1.3 The application is based on the emerging design maturity available at the time of initial submission i.e. Approval in Principle (AIP) level of detail. It should be noted that a number of outstanding design decisions and details will only be known when the next stage, Detailed Design, concludes for the Project around November 2024.

2.1.4 The structure of my response is as follows:

- The existing arrangements at each level crossing;
- The amendments to the railway which the Order is sought to facilitate at each level crossing;
- The engineering works for which powers/deemed Planning Permission are sought under the Order at each level crossing;
- Construction sequence;
- Option selection process.

### **2.2 Response to Statement of Matters**

2.2.1 My evidence, given in Section 3, is primarily in response to Matters 3 and 4 of the Statement of Matters as described above.

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### **2.3 Response to Objections and Representations**

2.3.1 My evidence given in Section 4 is in response to the submitted Objections and Representations.

**3. ENGINEERING AND DESIGN RESPONSE TO STATEMENT OF MATTERS**

**3.1 Existing Arrangements**

3.1.1 As set out above, through this application Network Rail seeks powers to formally close five level crossings (replacing each with alternative means to cross the railway). The area within which the Order Scheme falls comprises an approximate 16km section of the railway between Leeds Station and the Micklefield area.

3.1.2 The locations of the five level crossings are shown below.



Figure 1: Existing map for Barrowby Lane, Barrowby Foot and Garforth Moor Level Crossings

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Figure 2: Existing map for Peckfield and Highroyds Wood Level Crossings

#### Barrowby Lane Level Crossing

3.1.3 Barrowby Lane Level Crossing is located at Engineers Line Reference (ELR): HUL4 14 miles 04 chains, approximately 1.2 miles to the west of Garforth Railway Station. The crossing carries a public bridleway over the railway and on each side of the railway there is a Miniature Stop Light (MSL), telephone and self-closing bridleway gate. Horse riders and cyclists are instructed to dismount by signage. The MSL signage contains the crossing instructions for pedestrian users (and horse riders). The existing permitted line speed over the crossing is 90mph in both directions.



Figure 3: Viewpoint looking towards the south west, showing the MSL and approach path alignment of existing Barrowby Lane Level Crossing

*Barrowby Foot Level Crossing*

3.1.4 Barrowby Foot Level Crossing is located at ELR: HUL4 13 miles 61 chains, approximately 430m to the east of Barrowby Lane Level Crossing. The crossing carries a public footpath over the railway. On each side of the railway there is an existing steel pedestrian gate at the bottom of the railway embankment. Within the railway boundary, there are steps leading to each area – ‘Stop Look Listen’ signage is located at the decision point on each side of the railway. The existing permitted line speed over the crossing is 90mph in both directions.



Figure 4: Viewpoint looking towards the east, showing the existing Barrowby Foot Level Crossing

Garforth Moor Level Crossing

3.1.5 Garforth Moor Level Crossing is located at ELR: HUL4 13m 0891yds. The crossing carries a public footpath over the railway. The level crossing was temporarily closed in 2017 by Network Rail on safety grounds. Pedestrian traffic from the south of the railway was diverted via Barwick Road to a new car park to the north of the allotments, accessed via a new track.



Figure 5: Viewpoint looking towards the east, showing the previous location of Garforth Moor Level Crossing

*Peckfield Level Crossing*

3.1.6 Peckfield Level Crossing is located at ELR: HUL4 11 miles 12 chains, approximately 0.3km west of Micklefield Railway Station. The crossing carries a public bridleway over the railway. On each side of the railway there is a telephone, horse dismount block, manually operated steel gate and crossing instruction signage for both pedestrian users and persons in charge of animals. The existing permitted line speed over the crossing is 90mph in both directions.

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Figure 6: Viewpoint looking towards the west, showing the existing Peckfield Level Crossing



Figure 7: View of Peckfield Level Crossing from outside the railway boundary (looking north)

### Highroyds Wood Level Crossing

- 3.1.7 Highroyds Wood Level Crossing is located at ELR: HUL3 10 miles 29 chains, approximately 800 metres east of Micklefield Station. The crossing carries a public footpath over the railway. The level crossing was temporarily closed in 2021 by Network Rail due to trains stopping on the crossing and a serious rise in incidents of misuse resulting in multiple near misses being reported by train drivers.

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Figure 8: An image of the temporarily closed Highroyds Wood Level Crossing showing how the temporary fencing had itself been vandalised

### 3.2 The Improvement Works to this Section of NTPR

- 3.2.1 The existing Leeds to Micklefield section of the NTPR is a two-track railway that is currently not electrified.
- 3.2.2 As part of the TRU programme, Network Rail intends to electrify this section of NTPR which requires the renewal of various bridge structures on the route (discussed more fully in Paul Harrison's Proof of Evidence (CD 7.05)) to make sure the electric wires are at the appropriate height, to re-signal the railway to modern standards (to enable more frequent train services) and to renew sections of the railway track itself using existing permitted development rights, although land is included in the Order to facilitate these works.
- 3.2.3 The works to this section of the NTPR are discussed more generally in Paul Harrison's Proof of Evidence. They include, for example, works to improve the stability of the railway embankments, including the treatment of shallow mine workings where appropriate. The railway will benefit from an extensive programme of track renewals to replace life-expired rails and sleepers, as well as the replacement of the track formation and ballast itself in specific

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areas, to improve the ride comfort and reliability of the service. My evidence is particularly directed at the works which directly interface with the level crossings in the Order, in particular by reference to electrification and re-signalling works.

- 3.2.4 The electrification of the railway requires the installation of steel masts/structures at a maximum spacing of 74m (dependant on track curvature, limiting structures such as bridges and the constraints of the overhead line electrical 'system') to carry the electrification wires. To power a train, the standard height that these wires are suspended above each railway track is 4.7m above rail although this height can be varied (within a defined allowance) via location specific risk assessment.
- 3.2.5 In operational railway terms, the presence of certain types of level crossings materially affect the overhead electrification design as they determine the heights of the wires in the vicinity of that level crossing. The minimum height of these wires above rail is 5.2m at bridleway level crossings.
- 3.2.6 The closure of the level crossings on the route mean that the wire heights do not have to be raised to account for any of the level crossings. Although change in wire heights can be accommodated by the overhead wire design, this however should be minimised for high-quality, high speed current collection between the train pantograph and the contact wire by minimising the loss of contact between the pantograph and the contact wire (which can increase the wear on the contact wire material). Therefore, a consistent wire height increases the reliability of the railway.
- 3.2.7 With regards to the signalling improvements, the railway will benefit from new lineside signals to enhance maintainability and reliability of the railway as well as facilitating additional trains. The existing signalling circuits within the Neville Hill Route Relay Interlocking (RRI) and Peckfield RRI will be recovered and replaced by new, more reliable Computer Based Interlocking (CBI) systems.
- 3.2.8 In general terms the presence of a level crossing on the railway network not only permits an interaction between members of the general public and trains, but it also introduces a potential break-point in the railway 'system' itself. If there is a safety related incident at a level crossing, or if the technology provided to protect the user (such as Miniature Stop Lights and telephones at Barrowby Lane Level Crossing) cease to work properly, train delay and/or train cancellations can be experienced. Therefore, the removal of level crossings from the rail network will greatly improve the reliability and resilience of the train service provided as well as enhancing safety.

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3.2.9 The TRU Project will play an important role on the removal of possible constraints on future service upgrades and enhancements of the railway network. Although not part of the current scope of the TRU Project, there is also a possible future sub-Project to construct an additional two railway lines between Cross gates and Garforth. The scope of the current TRU Project is not to 'obstruct' this possible future expansion of the railway. Whilst Network Rail's decision to seek the powers to close the level crossings in the Order has not been driven by the potential for that Project to be implemented in the future, the closure of level crossings within this area would be beneficial by removing this potential future constraint, noting in particular that Network Rail Standard NR/L2/SIG/11201 module X01 clause 13.1.4 states "There shall not normally be more than two lines over the crossing."

## 3.3 Barrowby Lane and Barrowby Foot Level Crossings

### Scheme Description

3.3.1 There is one Work to be authorised under the Order that is connected with a level crossing on the route; the new brideway bridge at Barrowby Lane Level Crossing (Scheduled Work No. 4) as shown on Figure 9.

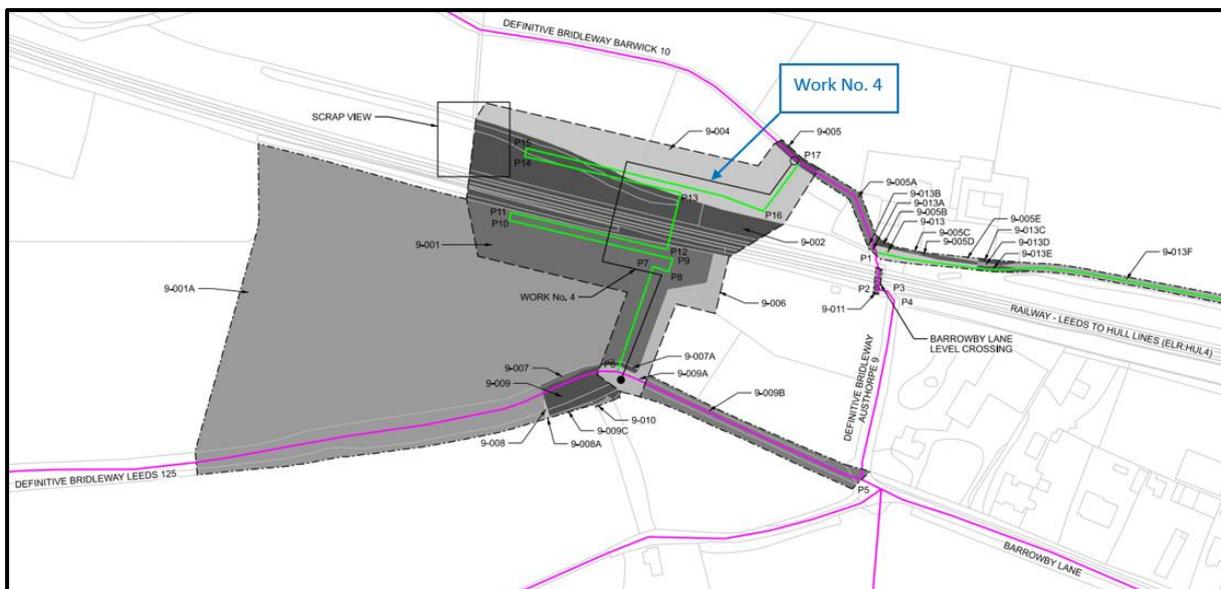


Figure 9: Extract of Works and Land Plan Order Sheet 6 (NR09)

3.3.2 The new Barrowby Lane Bridge scheme consists of the following:

- Permanent acquisition of land to install the new Barrowby Lane Bridge (including land for landscape and ecological mitigation planting);
- Construction of the new Barrowby Lane Bridge – a ramped and stepped structure to replace the existing Barrowby Lane brideway crossing and

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the existing Barrowby Foot footpath crossing – located approximately 100m to the west of the existing bridleway crossing;

- Creation of a new PRoW from the existing bridleway network to the south of the railway, over the bridge to join the existing bridleway network to the north of the railway;
- Closure of Barrowby Foot Level Crossing and the extinguishment of the Public Right of Way (Definitive Footpath Garforth 6);
- Closure of Barrowby Lane Level Crossing and the extinguishment of the Public Right of Way (Definitive Bridleway Austhorpe 9);
- Temporary acquisition of land to set up the Barrowby Lane Bridge construction compound, located to the southwest of the new Barrowby Lane Bridge, and construction access for bridge installation to the north and south of the railway;
- Temporary access requirements from Barwick Road to the new Barrowby Lane Bridge;
- Creation of a new bridleway PRoW on Nanny Goat Lane between the access points to the Barrowby Lane Level Crossing and the Barrowby Foot Level Crossing, and the new bridge;
- Replacement of two field gates on Nanny Goat Lane.

3.3.3 The additional land sought by the Order, which Network Rail seeks powers to acquire, which is shown on plots 9-001, 9-002, 9-003, 9-004, 9-005, 9-006, 9-007A and 9-009A on Figure 9, is needed to deliver the bridge arrangement described above.

3.3.4 The additional land sought by the Order, which is shown on plots 9-001A, 9-007, 9-008, 9-008A, 9-009, 9-009C and 9-010 on Figure 9, is needed for the associated construction compound and access.

3.3.5 Figure 10 shows the proposed location of the new bridleway bridge and the proposed construction compound located in land to the south west of the new structure.

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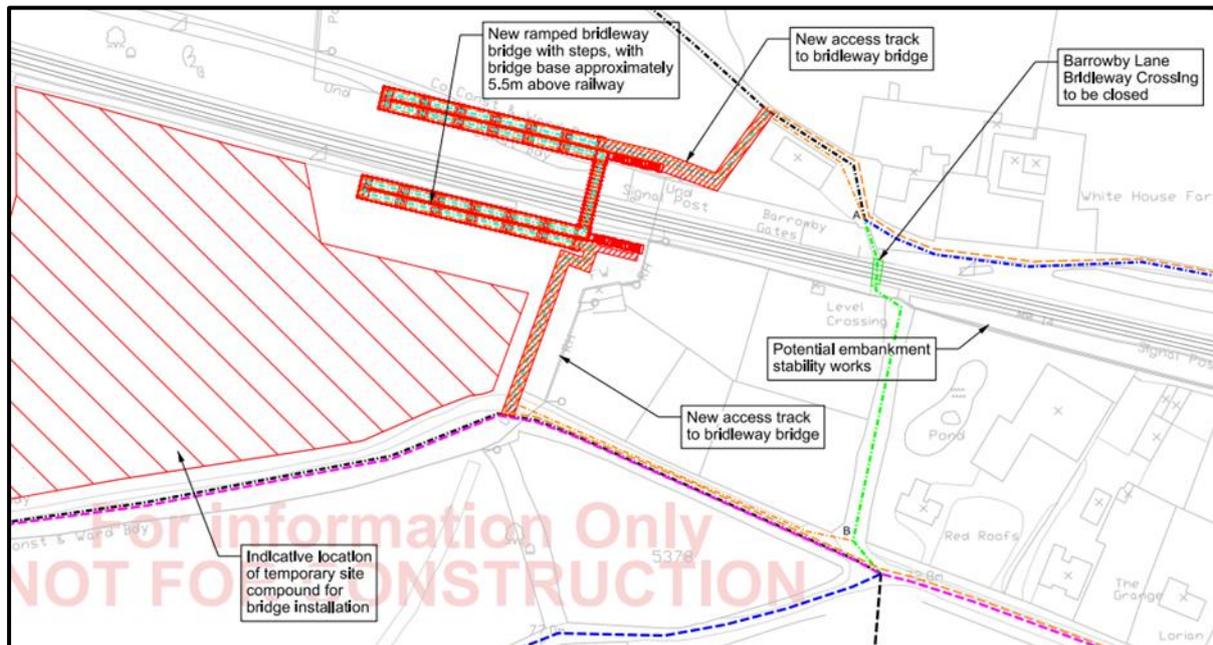


Figure 10: Proposed ramped and stepped brideway bridge structure, construction compound and existing level crossing locations

- 3.3.6 At the time of the Leeds to Micklefield Improvements Order application, the new ramped and stepped brideway bridge was intended to be a Fibre Reinforced Plastic (FRP) structure. As the Project commenced the detailed design phase, which is still ongoing, the proposed material of the bridge has been amended to a more conventional steel material for this type of bridge over the railway.
- 3.3.7 Therefore, the new ramped and stepped brideway bridge shall comprise a steel structure to accommodate the existing railway (with sufficient span for an additional two railway lines for possible future expansion of the railway). There is sufficient headroom clearance for the proposed OLE with the bridge substructure positioned outside of the Hazard Zone (4.5m minimum to the nearest rail). The current geological assessment for the new bridge suggests the use of steel pile foundations.
- 3.3.8 Each element of the brideway bridge structure (stairs, ramps and deck) has been designed in accordance with the DfT “Design Standards for Accessible Railway Stations v4”. All design parameters were established based on standards CD 143 (Designing for walking, cycling and horse-riding), CD 353 (Design criteria for footbridges) and NR-CIV-SD-TUM-400 (Eurocode Design Technical User Manual for Non-Station Footbridges). Considerations for equestrian traffic were taken from “Advice on Bridges, gradients and steps in England and Wales” of The British Horse Society. As the new bridge will be owned and maintained by Network Rail, the design of the bridge will be accepted by Network Rail. The details of the new brideway connections to

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the new bridge will be agreed with Leeds City Council using the established TRU Project/Leeds City Council Highways Working Group to aid discussion.

3.3.9 The new bridleway bridge is currently proposed with:

- a single span approximately 23.5m in length.
- a bridge deck approximately 3.5m wide to allow sufficient space for equestrian users and pedestrians.
- solid bridge parapets a minimum of 1.8m high to allow for equestrian use.
- gradients on the approach ramps no greater than 1 in 20 to comply with Network Rail and British Standards for accessibility.
- sufficient headroom clearance for the proposed OLE underneath. The proposed soffit height (from rail to underside of the bridge) is currently proposed as 6.1m for free-running electrical clearance although this dimension is subject to confirmation as the proposals are developed throughout the detailed design phase.
- a staircase on each side of the railway approximately 2m wide with solid parapets approximately 1.15m in height.
- ground reprofiling on both sides of the railway to ensure the ramps and stairs are the same length on both sides.

3.3.10 Figure 11 shows an example of a similar steel bridleway bridge that has been installed elsewhere on the rail network.



Figure 11: Example of steel ramped and stepped bridleway bridge

### Planning, Construction Sequence and Timescales

3.3.11 The Barrowby Lane Bridge construction compound will accommodate staff welfare facilities, parking as well as plant and material storage space.

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- 3.3.12 While no direct road closures are anticipated to undertake the proposed works, additional traffic management may be required for delivery/transportation of large bridge elements under abnormal load conditions. These will be coordinated with the local Highway Authority to minimise disruption to the community and surrounding road network.
- 3.3.13 The planning and delivery of these abnormal loads will be managed by the logistics team who will ensure that any disruption is discussed through the Traffic Liaison Group (TLG) in which the local authorities, emergency services and local communities will be made aware.
- 3.3.14 All abnormal loads will be applied for via the standard Electronic Service Delivery for Abnormal Loads (ESDAL) to notify authorities of the intentions. Site visits with the highway authority may need to be carried out along with the local police for safety reasons.
- 3.3.15 The construction compound itself will be accessed via Barrowby Lane – the compound will provide access to the south side of the railway to construct the bridge. The north bridge construction will be accessed via Nanny Goat Lane.
- 3.3.16 Road Rail Vehicle (RRV) plant will access the railway via a temporary Road Rail Access Point (RRAP) which is to be installed at the compound location.
- 3.3.17 As the new structure is located in an area of shallow mine working, ground treatment will be required under the footprint of the new concrete bridge foundations/steel piles to ensure stability of the new structure. These works can be summarised as:
- Before the bridge works can commence, a cement/grout will be injected beneath and adjacent to the proposed works area via a grid of vertical and inclined grout holes (nominally a 3m or 6m grid of boreholes to an approximate depth of 28m).
  - Works will be undertaken in accordance with the Coal Authority permit obtained for the works.
- 3.3.18 In order to facilitate the construction of the new bridleway bridge, the following works will be required:
- Upgrade existing site access road on Barrowby Lane and Nanny Goat Lane as required – this may include localised pruning of trees and any widening of verges to allow haulage to move freely;
  - Install compound and new temporary track access RRAP to both sides of the footbridge site;
  - Undertake mine working groundworks and drainage required for the bridge;

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- Install the foundations and ground beams;
  - Install the bridge columns and ramps;
  - Install stairs and landings;
  - Install the bridge deck;
  - Remove any temporary works including temporary fencing and RRAP;
  - Complete new footpaths and groundworks around the new bridge;
  - Remove main compound and hard standing areas on both sides and make good the ground to suit the landowner;
  - Following completion and commissioning of the new bridge and access tracks, the bridge will be opened to allow the 2no. level crossings to be physically closed and the existing crossing surfaces/signage removed.
- 3.3.19 The Barrowby Lane Bridge compound is expected to be required from October 2024 to July 2025.
- 3.3.20 The duration of construction activity for the new Barrowby Lane Bridge is anticipated to be from November 2024 to June 2025.
- 3.3.21 Works will be carried out during daylight hours, however night shift working will be required to lift in the bridge columns, ramps, landings, steps and deck as these activities involve lifting operations close to/over the railway and will need to be undertaken in non-operational periods of the railway i.e. night time closures.

#### Optioneering Process

- 3.3.22 Four options (Options 1 to 4 inclusive – illustrated in Figures 12, 13 and 14) which met the functional and operational requirements of the TRU Scheme were developed. This option selection process focussed on the level crossings.
- 3.3.23 Due to the close geographical location of the two level crossings, as well as the limited usage of Barrowby Foot Level Crossing, the closure options identified aimed to close both level crossings with one closure solution if appropriate.
- Option 1: New ramped bridleway bridge to the west of Barrowby Lane Level Crossing to close both Barrowby Lane and Barrowby Foot Level Crossings.

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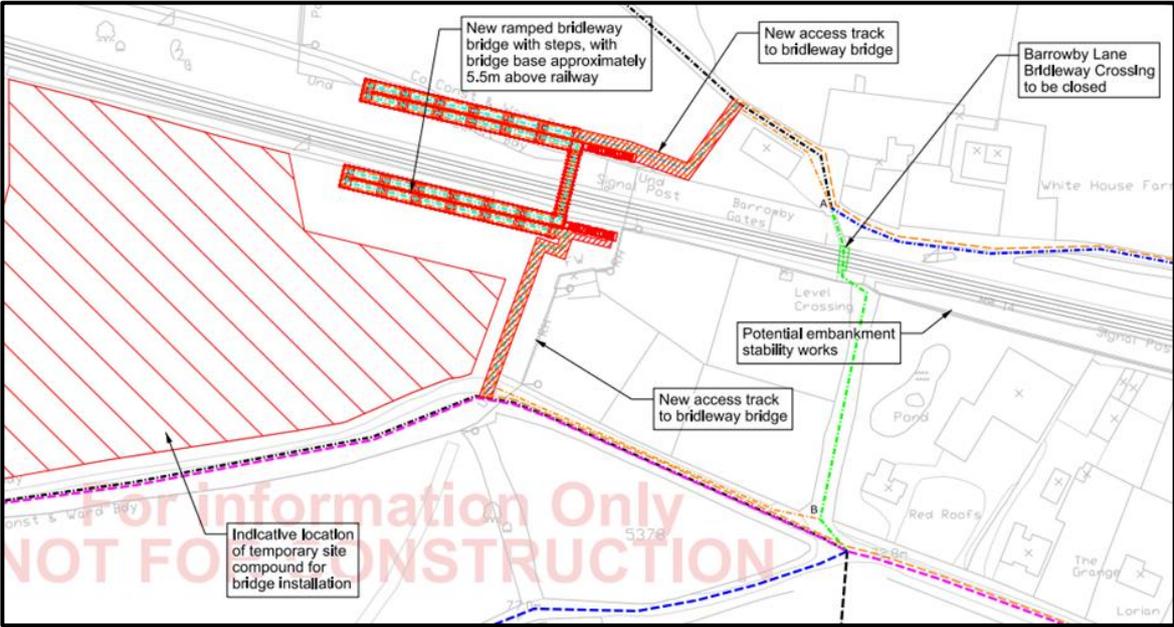


Figure 12: Option 1 – New ramped brideway bridge at Barrowby Lane Level Crossing

- Option 2: New subway at Barrowby Foot Footpath Crossing to close both Barrowby Lane and Barrowby Foot Level Crossings.

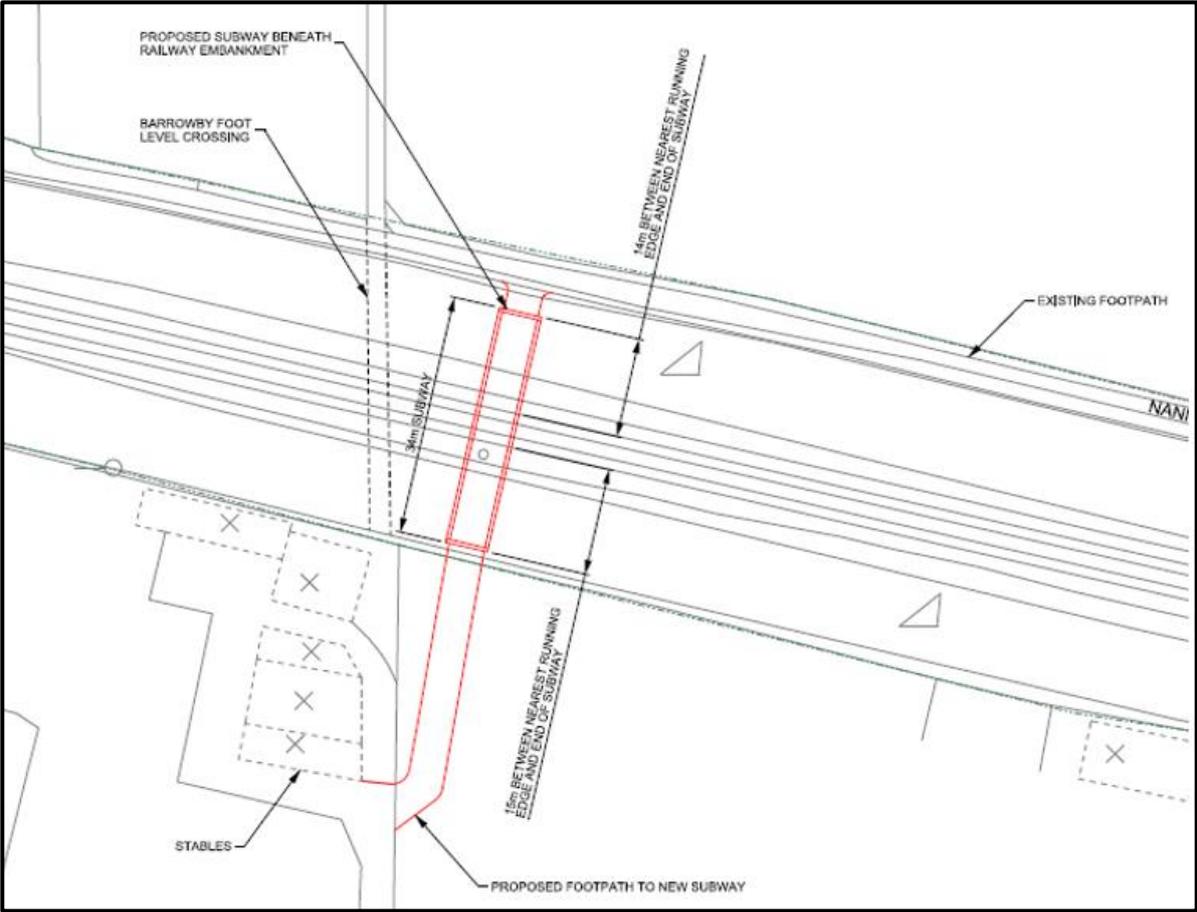


Figure 13: Option 2 – New subway at Barrowby Foot Level Crossing



it included the benefits of Option 1 compared to other options considered and has a better connection to the wider PRow network to the north.

Option 1 Assessment

- 3.3.28 Following the identification and evaluation of feasible options outlined in the previous section, the new ramped bridleway bridge shown in Option 1 was selected as the solution preferred by the TRU Project for further development.
- 3.3.29 From an 'Environment, Sustainability and Consent Risk' perspective, the large-scale structure will affect the landscape and visually impact the surrounding area as the bridge will be in the green belt. For users of Barrowby Lane Level Crossing, the new bridleway bridge involves a diversion of approximately 640 metres via the new ramped bridleway bridge. For users of Barrowby Foot Level Crossing, the diversion is approximately 1530 metres (although the alternative route via Barwick Road is approximately 780 metres).
- 3.3.30 The two level crossing user surveys undertaken in 2016 and 2021 reveal that most of the Barrowby Lane Level Crossing use was by pedestrians and the total pedestrian usage numbers across the two surveys range from 35 to 105 per day, with an average use of 62 pedestrians per day. Within the 9-day survey period in 2021, a total of 34 cyclists were recorded using the level crossing, with an average of 4 cyclists per day. A total of 1 equestrian user was recorded on a Saturday. Barrowby Foot Level Crossing was unused within each of the survey periods.
- 3.3.31 From a 'Land and Property' perspective, Option 1 requires the permanent acquisition of several third-party land plots and the permanent loss of Grade 2 Best and Most Valuable (BMV) agricultural land. Option 1 provides an accessible, safe alternative route for all users.
- 3.3.32 At Barrowby Lane Level Crossing, user surveys have recorded very low usage of the level crossing by persons of reduced mobility and only one instance of usage by equestrians. No usage was recorded at Barrowby Foot Level Crossing. From a 'Cost' perspective, Option 1 has significant construction costs – approximately £4.0m - £6.0m (estimated by the TRU Project team in 2020).
- 3.3.33 Where 'Design and Engineering Feasibility' is concerned, Option 1 is a simple, standard design solution.
- 3.3.34 It is a standard build complexity when considering the 'Construction' criteria for the design although it is a discreet new asset for the railway with a high

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### *CD 7.26 Engineering and Design Level Crossing Proof of Evidence*

degree of programme certainty. Disruptive railway access will be required to construct it.

- 3.3.35 There are limited 'Maintenance' requirements associated with Option 1 due to the standard nature of the design and the experience of the railway in delivering this type of structure. This aids the 'Deliverability' of this option although railway engineering access is required to construct the new bridge as well as to decommission the level crossings.
- 3.3.36 Although the landscape and visual impacts are greater than the other options considered, Option 1 is the solution preferred by the TRU Project. Overall, it improves the safety of both the railway and the general public by closing the level crossings and it retains the existing PRow connectivity with accessible, modest diversions comparable with the usage of each level crossing.

#### Option 2 Assessment

- 3.3.37 Option 2 was the construction of a new subway at Barrowby Foot Footpath Crossing to close both level crossings.
- 3.3.38 From an 'Environment, Sustainability and Consent Risk' perspective, Option 2 would have less visual impact on the greenbelt than the new bridleway bridge of Option 1. Although this is largely offset by the risks associated with existing mine workings and the instability of the existing embankment. There would also be the risk of surface water flooding of the new subway and the interface with the future enhancements of the railway in this area. Barrowby Lane Level Crossing is the most regularly used of the two level crossings, so the majority of users would have a greater diversion to use the new subway.
- 3.3.39 From a 'Land and Property' perspective, Option 2 would require the permanent acquisition of several third-party land plots and the permanent loss of Grade 3 agricultural land. Option 2 would provide an accessible, safe alternative route for all users.
- 3.3.40 From a 'Cost' perspective, Option 2 would have significant construction costs – approximately £7.0m - £10.0m (estimated by the TRU Project team in 2020).
- 3.3.41 Where 'Design and Engineering Feasibility' is concerned, Option 2 would be a high complexity design solution. The potential risks include security (CCTV may be required), flooding and the future enhancements to the railway in this location. As the subway would be constructed using the 'open cut' there would be extensive disruption to the railway to construct it and embankment stabilisation works would also be needed.

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- 3.3.42 When considering the 'Construction' criteria for the design, Option 2 would be a high build complexity with challenging site constraints. The new subway would have to cater for the possible future enhancements in this area so a large structure would be required. The quality of the existing embankment, as well as the presence of existing mine workings, means that the 'open cut' construction method would have to be utilised resulting in significant disruptive railway access.
- 3.3.43 There are limited 'Maintenance' requirements associated with Option 2 although the potential drainage and security obligations may be prohibitive.
- 3.3.44 From a 'Deliverability' perspective, Option 2 would require extensive railway access to deliver the scheme. This option would be likely to require the railway to close for a minimum of 10 days to export and import approximately 6000 tonnes of materials to build the subway.
- 3.3.45 Although the landscape and visual impacts are less than those in Option 1, and despite delivering an alternative access route whilst removing the safety risk associated with keeping the level crossings open, Option 2 was discounted by the TRU Project. This was based on the considerable engineering and environmental constraints I have described.

### Option 3 Assessment

- 3.3.46 Option 3 was the localised enhancement of Barrowby Lane Level Crossing with the closure of Barrowby Foot Level Crossing.
- 3.3.47 From an 'Environment, Sustainability and Consent Risk' perspective, Option 3 would not impact the greenbelt and it would maintain the existing PRow connectivity for users of Barrowby Lane Level Crossing (the minimal users of Barrowby Foot Level Crossing would be diverted to Barrowby Lane Level Crossing). However, the safety of the railway would decrease due to the effects of the railway improvements delivered by the TRU Project and Barrowby Lane Level Crossing remaining open (meaning that the interface between trains and members of the public would remain on the railway network, rail traffic would increase and the trains would be quieter due to the electrification of the railway).
- 3.3.48 From a 'Land and Property' perspective, Option 3 would require no permanent acquisition of third-party land and no permanent loss of Grade 3 agricultural land.
- 3.3.49 From a 'Cost' perspective, Option 3 had a low construction cost – approximately £160k - £290k (estimated by the TRU Project team in 2020). Note that these costs could be more in the region of £2.06m - £3.09m if the

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existing MSL system had to be replaced in entirety due to the existing Predictor-based technology (refer to paragraph 3.3.61 for a summary of the issue) and the presence of the new Thorpe Park Station (refer to paragraph 3.3.60).

- 3.3.50 Where ‘Design and Engineering Feasibility’ is concerned, Option 3 would be a medium complexity design solution due to the interface with the existing Predictor-based technology and the presence of the new Thorpe Park Station. The safety of the railway would decrease because of the railway improvements delivered by the TRU Project and Barrowby Lane Level Crossing remaining open. This option would also impede the possible future expansion of the railway (as described in paragraph 3.2.9) in this area as Network Rail Standard NR/L2/SIG/11201 module X01 clause 13.1.4 states “There shall not normally be more than two lines over the crossing.”
- 3.3.51 There would be similar ‘Maintenance’ requirements associated with Option 3 when compared to the existing regime.
- 3.3.52 When considering ‘Construction’ and ‘Deliverability’ criteria, Barrowby Lane Level Crossing remaining open does not meet the TRU Project requirements and the safety of the railway would decrease due to the effects of the railway improvements delivered by the TRU Project and the level crossing remaining open. For these reasons, as well as the potential cost of replacing the MSL system due to the existing Predictor-based technology and the interface with the new Thorpe Park Station, Option 3 was discounted by the TRU Project.

#### Option 4 Assessment

- 3.3.53 Option 4 was the localised enhancement of Barrowby Lane Level Crossing and the renewal of Barrowby Foot Level Crossing with Miniature Stop Lights and Telephones.
- 3.3.54 From an ‘Environment, Sustainability and Consent Risk’ perspective, Option 4 would not impact the greenbelt and it would maintain the existing PRow connectivity for users of both level crossings. However, the safety of the railway would decrease due to the effects of the railway improvements delivered by the TRU Project and both level crossings remaining open as per Option 3.
- 3.3.55 From a ‘Land and Property’ perspective, Option 4 would require no permanent acquisition of third-party land and no permanent loss of Grade 3 agricultural land.
- 3.3.56 From a ‘Cost’ perspective, Option 4 would have a medium construction cost – approximately £2.1m - £3.2m (estimated by the TRU Project team in 2020).

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Note that these costs could be more in the region of £4.0m - £6.0m if the existing MSL system had to be replaced in entirety at Barrowby Lane Level Crossing due to the existing Predictor-based technology and the presence of the new Thorpe Park Station.

- 3.3.57 Where 'Design and Engineering Feasibility' is concerned, Option 4 would be a medium complexity design solution due to the interface with the existing Predictor-based technology at Barrowby Lane Level Crossing and the presence of the new Thorpe Park Station. The safety of the railway would decrease because of the railway improvements delivered by the TRU Project and both level crossings remaining open. This option would also impede the possible future expansion of the railway (as per Option 3) in this area as Network Rail Standard NR/L2/SIG/11201 module X01 clause 13.1.4 states "There shall not normally be more than two lines over the crossing."
- 3.3.58 There would be slightly higher 'Maintenance' requirements associated with Option 4 when compared to the existing regime due to the upgrade of Barrowby Foot Level Crossing with MSL's and telephones.
- 3.3.59 When considering 'Construction' and 'Deliverability' criteria, both level crossings remaining open does not meet the TRU Project requirements and the safety of the railway would decrease because of the effects of the railway improvements delivered by the TRU Project and both level crossings remaining open. For these reasons, as well as the potential cost of replacing the MSL system at Barrowby Lane Level Crossing because of the existing Predictor-based technology and the interface with the new Thorpe Park Station, Option 4 was discounted by the TRU Project.

### Operational Railway Benefits

- 3.3.60 The closure of Barrowby Lane and Barrowby Foot Level Crossings simplify the Signalling layout and assist the provision of the planned new Thorpe Park Station (a new station within the Thorpe Park shopping and leisure facility to the east of Leeds), the provision of which is not part of the TRU Project. Should Barrowby Lane Level Crossing remain open, the planned location of this new station would add complexity to the Signalling design as the Station would be within the 'strike-in' for an approaching train which may actually be stopping at the station. The control circuitry would have to account for this variable approach speed, which may itself lead to misuse of the level crossing and a 'lack of willingness to wait'.
- 3.3.61 The existing Miniature Stop Light protection at Barrowby Lane Level Crossing is operated by obsolete 'Predictor' equipment. This is an outdated operation system – there are maybe only 4 or 5 left in operation on the UK rail network – and there are now very few railway staff competent to amend or maintain

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them. As part of the Signalling scheme, which includes the adoption of 'axle counters' for train detection (from 'track circuits'), the existing level crossing could not just remain in the current guise. It would be renewed with modern technology.

- 3.3.62 The closure of the level crossings increase the reliability and resilience of the railway, for more information refer to the Proof of Evidence produced by Jerry Greenwood. For details of level crossing risk and reliability data for Barrowby Lane and Barrowby Foot Level Crossings, refer to the Proof of Evidence produced by Andrew Cunningham.
- 3.3.63 The existing rails on the Up line only are to be replaced at Barrowby Lane Level Crossing and the existing rails on the Down line only are to be replaced at Barrowby Foot Level Crossing, both of which are currently scheduled in 2026/27. The existing level crossing surfaces at each crossing (the proprietary rubber deck panels) will be removed prior to the Signalling commissioning in December 2025/January 2026 which will facilitate the planned rail works.
- 3.3.64 The closure of Barrowby Lane and Barrowby Foot Level Crossings would also facilitate the future provision of an additional 2 railway lines in this area (making 4 in total) as previously described. Note that these additional railway lines are not part of the current scope of the Project but the presence of an existing level crossing, should the railway be further enhanced to 4 tracks in the future, would not be compliant to Network Rail Standard NR/L2/SIG/11201 module X01 clause 13.1.4 which states "There shall not normally be more than two lines over the crossing." Given the structure and resources of the existing Project, the time to remove this constraint on development and growth is now.

## **3.4 Garforth Moor Level Crossing**

### *Scheme Description*

- 3.4.1 At Garforth Moor Level Crossing, the Order would extinguish any existing rights at the level crossing as well as formalising the current diversion which is in use today following the temporary closure of the crossing under a Temporary Traffic Regulation Order (TTRO) in 2017.

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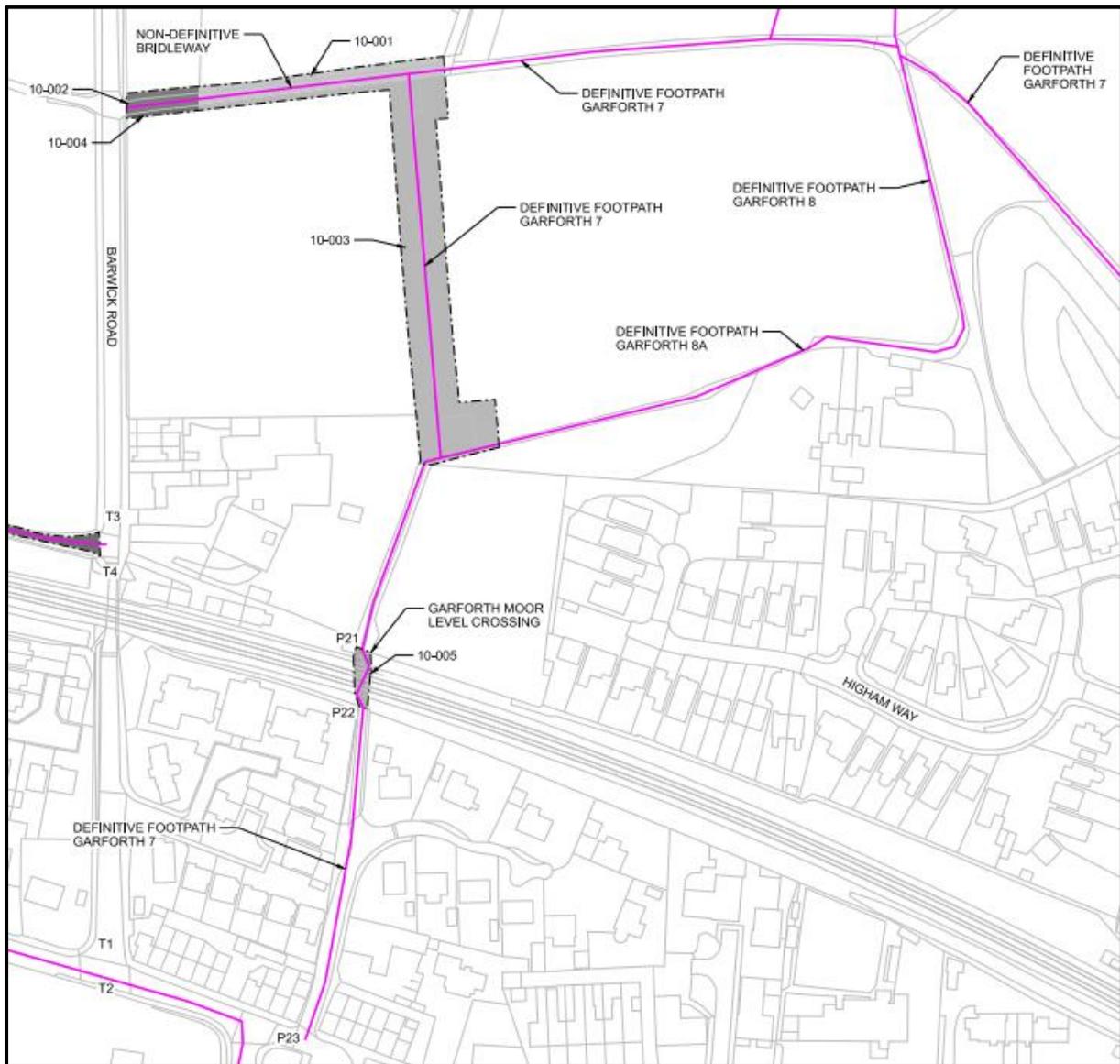


Figure 15: Extract of Works and Land Plan Order Sheet 7 (NR09)

- 3.4.2 When the level crossing was temporarily closed in 2017, a temporary access track and parking area for the allotments on the north of the railway was created. The Order seeks to make these temporary arrangements – which are in use today – permanent (with more robust construction materials) and to extinguish any public and private rights at the existing level crossing.
- 3.4.3 The additional land sought under the Order, which is shown on plot 10-003 on Figure 15, is needed to deliver the arrangement described in paragraph 3.4.6.
- 3.4.4 The additional land sought under the Order, which is shown on plots 10-001, 10-002, 10-003 and 10-004 on Figure 15, is needed for permanent access.

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Figure 16: Photograph showing the condition of the existing access track (looking south towards the railway)

- 3.4.5 Network Rail has applied for (retrospective) planning permission to Leeds City Council (22/03144/FU/E) (Appendix A) for a permanent access track and parking area/turning head to service the adjacent allotments. No other infrastructure changes are proposed.

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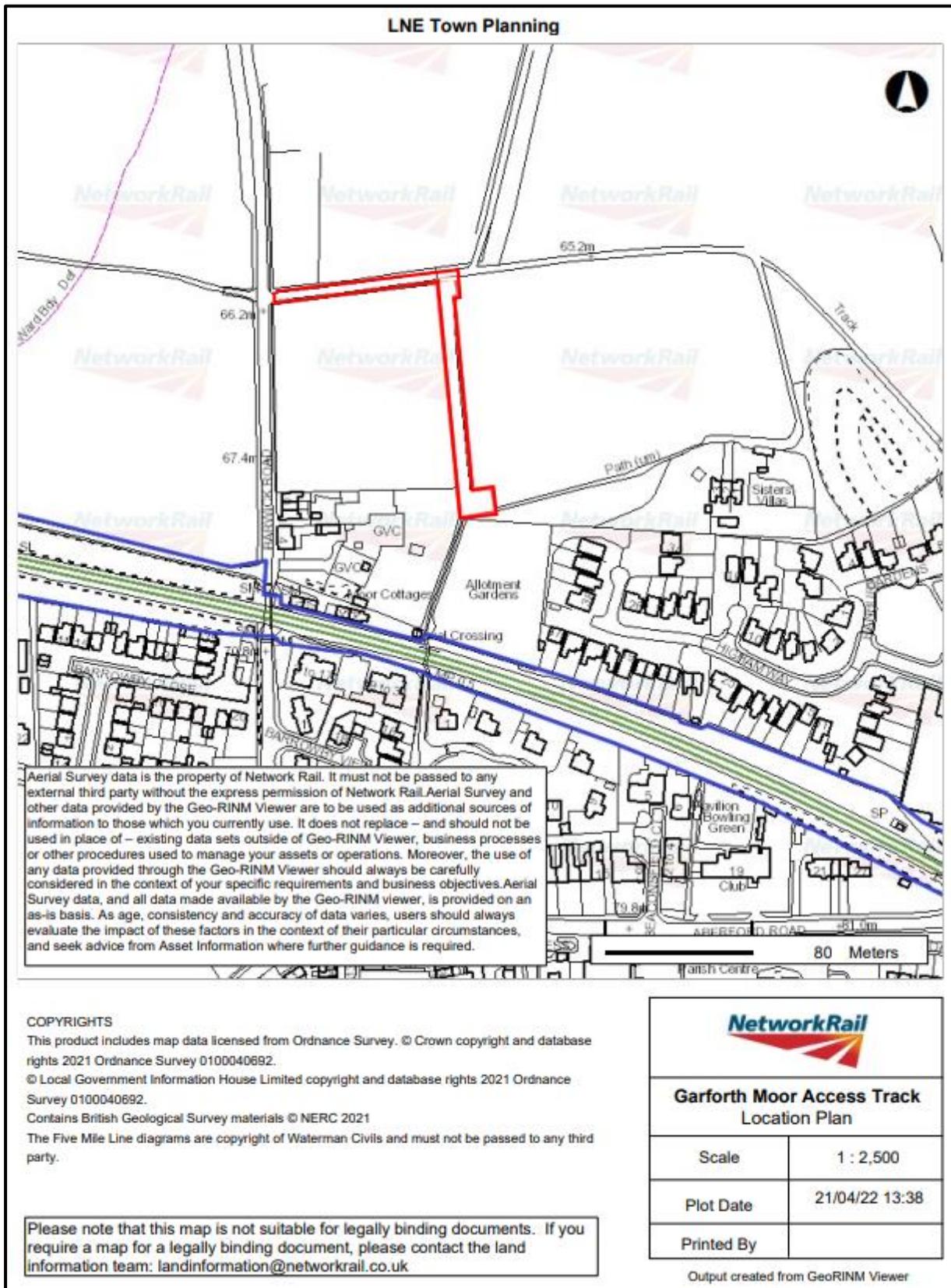


Figure 17: Drawing from the Network Rail (retrospective) planning permission application (22/03144/FU/E)

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- 3.4.6 The access track is 3m wide and typical of a farm track in construction, with a geotextile membrane beneath a minimum of 325mm Type 1 granular aggregate fill. A new turning head of 10m x 10m is located adjacent to the allotments. The track is fenced with a simple 1.4m high stockproof post and rail fence along the track, with a five-bar metal gate at the end of the access track where it intersects with the unadopted road (although there is also a side entrance for footpath users). The gate has a combination lock and is only accessible for vehicles used by accredited allotment holders.
- 3.4.7 The access point onto the unadopted road is shown in the photograph below. Traffic along this road is very light – it only serves three residential properties – with occasional agricultural vehicle use. As such, it is not considered necessary or appropriate for visibility splays to be incorporated into the entrance.



Figure 18: Photograph from the Network Rail (retrospective) planning permission application (22/03144/FU/E) showing the existing access gate – note that the access track beyond the gate has now grown over with vegetation (as shown in Figure 16)

Planning, Construction Sequence and Timescales

3.4.8 The proposals at Garforth Moor level Crossing can be summarised with the schematic below.



Figure 19: Schematic of the Garforth Moor Level Crossing proposals

- 3.4.9 The construction work at this location is more discrete than that associated with Barrowby Lane bridge; there is no major replacement structure and all construction is away from the operational railway corridor.
- 3.4.10 To construct the access track and parking area, the top of the existing surface will be excavated and removed from site. A suitable geotextile membrane will be laid to suppress weed growth before new granular aggregate fill is compacted to provide a suitable new surface for the access track and parking area.
- 3.4.11 The timescales of the access track and parking area construction, which are to be confirmed, are likely to be dependent on the timescales of this Order being made (if that is the recommendation). It is likely to be in the region of 4 to 8 weeks to construct.

Optioneering Process

3.4.12 For details of the optioneering process, refer to the Proof of Evidence produced by Suzanne Bedford.

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#### Operational Railway Benefits

- 3.4.13 At the location of Garforth Moor Level Crossing, the existing rails on the Down line are to be replaced and the existing track formation, ballast, sleepers and rails are to be replaced on the Up line, both of which are currently scheduled in 2026/27. The existing level crossing surfaces at each crossing (the proprietary rubber deck panels) will be removed prior to the Signalling commissioning in December 2025/January 2026 which will facilitate the planned rail works.
- 3.4.14 The closure of the level crossing increases the reliability and resilience of the railway, for more information refer to the Proof of Evidence produced by Jerry Greenwood (CD 7.20). For details of level crossing risk and reliability data for Garforth Moor Level Crossing, refer to the Proof of Evidence produced by Andrew Cunningham (CD 7.23).

### **3.5 Peckfield Level Crossing**

#### Scheme Description

- 3.5.1 At Peckfield Level Crossing, the Order would extinguish any existing rights at the level crossing as well as facilitating the land required to provide the proposals.

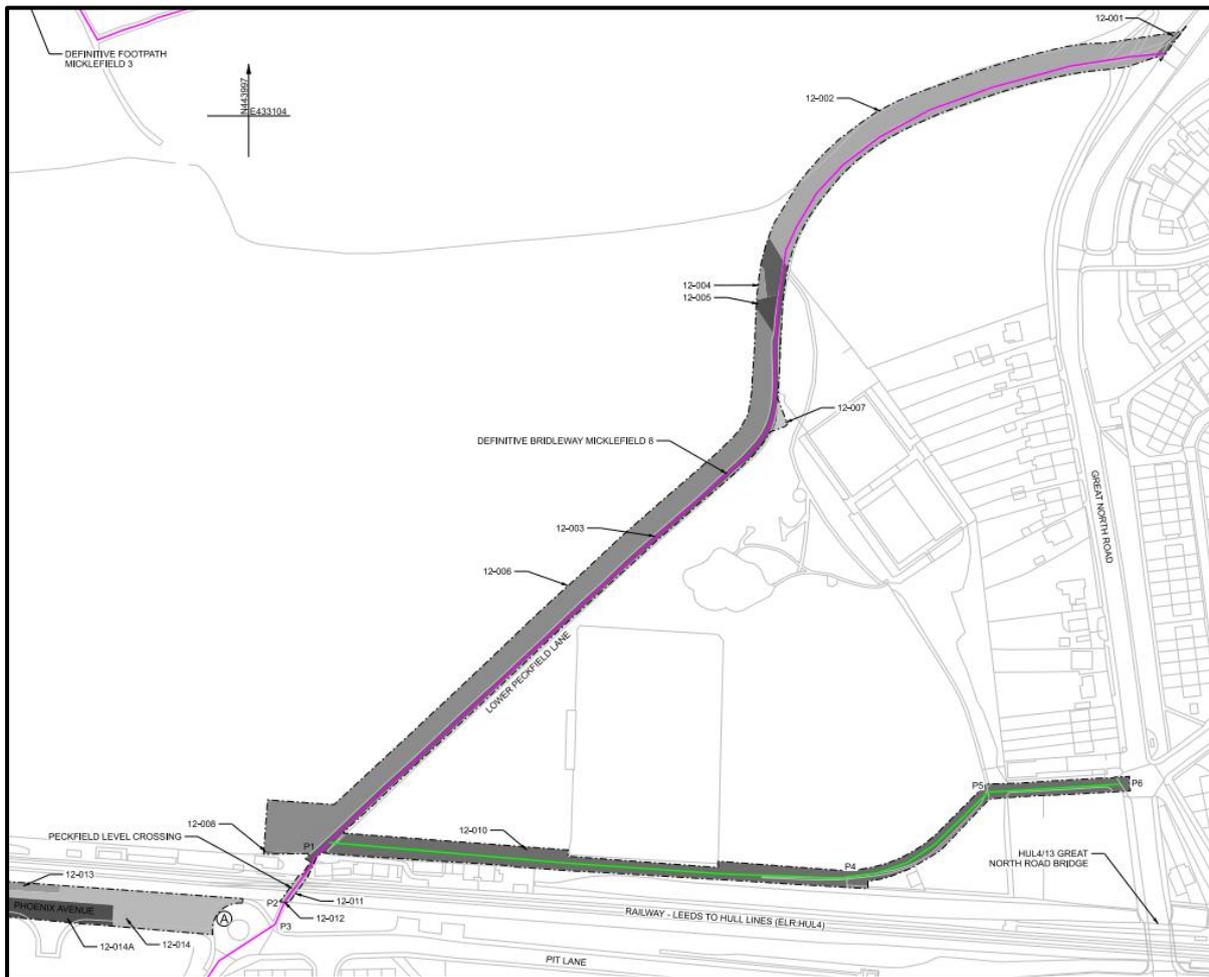


Figure 20: Extract of Works and Land Plan Order Sheet 12 (NR09)

### 3.5.2 The Peckfield Level Crossing closure scheme would consist of the following:

- The closure of Peckfield Level Crossing and extinguishment of the existing PRoW over the crossing;
- The creation of a new footpath or bridleway to the north of the railway between Lower Peckfield Lane and Great North Road to provide a footpath or bridleway link from the PRoW (Definitive Bridleway Micklefield 8) on Lower Peckfield Lane. It would also provide pedestrian access from the residential properties north of Peckfield Level Crossing to Micklefield itself;
- Highway works to Lower Peckfield Lane to the north of the railway to upgrade (including three passing points) and to provide a small car parking area/turning area for residents of the railway properties;
- The existing section of bridleway between the level crossing and Great North Road to the north of the railway, on Lower Peckfield Lane, will remain and is not to be downgraded to a Footpath on either option;

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- The existing section of bridleway between the level crossing and the A63 to the south of the railway, on Pit Lane, will remain and is not to be downgraded to a Footpath on either option.
- 3.5.3 The existing public rights over the railway will be extinguished although the existing bridleway PRow to the north and south of the railway will remain unchanged. The new footpath or bridleway through the Recreation Ground will be designated as a new footpath or bridleway PRow as appropriate.
- 3.5.4 The additional land sought by the Order, which is shown on plots 12-001, 12-002, 12-003, 12-004, 12-005, 12-006, 12-007 and 12-008 on Figure 20, are needed to deliver the proposed highway upgrade and parking/turning area described.
- 3.5.5 The additional land sought by the Order, which is shown on plot 12-010 on Figure 20, is needed to deliver the proposed footpath (or bridleway) described.
- 3.5.6 The additional land sought by the Order, which is shown on plot 12-014A on Figure 21, is needed for the associated construction compound and access.

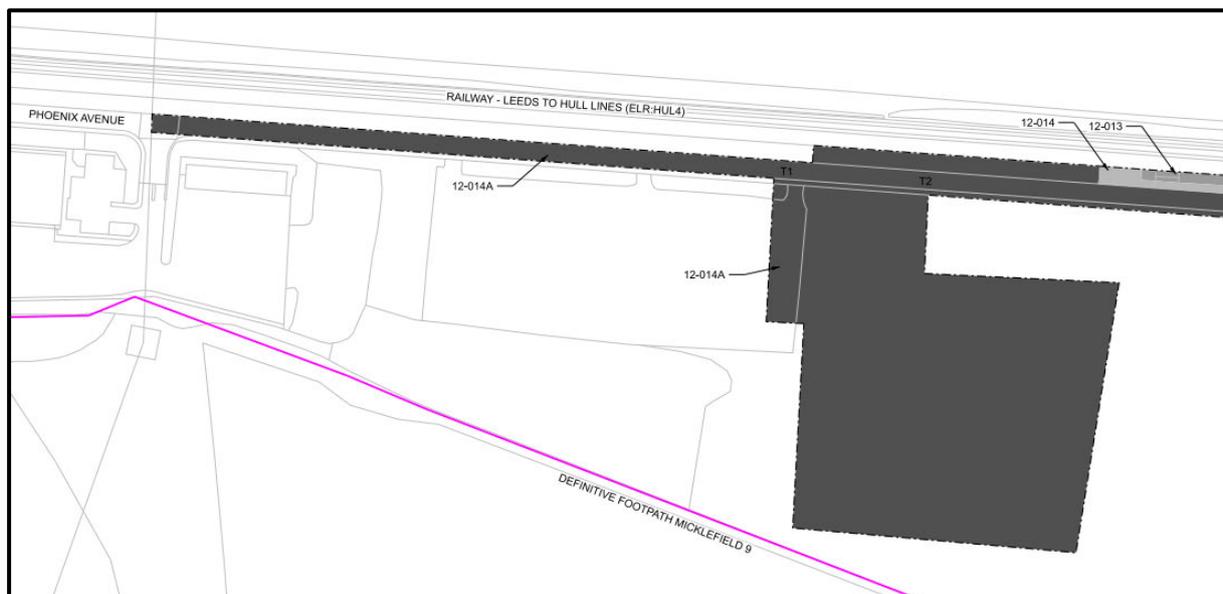


Figure 21: Extract of Works and Land Plan (NR09)

- 3.5.7 Dependant on the final option constructed, the surface of the new footpath or bridleway will be agreed with Leeds City Council using the established TRU Project/Leeds City Council Highways Working Group to aid discussion.
- 3.5.8 Any existing potholes on Lower Peckfield Lane will be filled with a similar material to existing.

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- 3.5.9 The layout of the passing places on Lower Peckfield Lane is likely to follow schemes of similar magnitude. Each passing place is likely to be free-draining hardcore and positioned at a maximum of 200m to maintain intervisibility. The passing places are likely to result in a track width of 5.5m over a length of 5.0m (with a 5.0m taper at either end). Appropriate traffic signs will be erected at either end of Lower Peckfield Lane and at each passing place.
- 3.5.10 The new surface of the parking area is likely to be free-draining hardcore and will be of a suitable size to serve the residents of the railway cottages and to facilitate the turning of a refuse vehicle.
- 3.5.11 There is an existing telecoms overhead line post that will directly conflict with the entrance to the new parking area. However, this service will be diverted to facilitate the electrification of the railway.

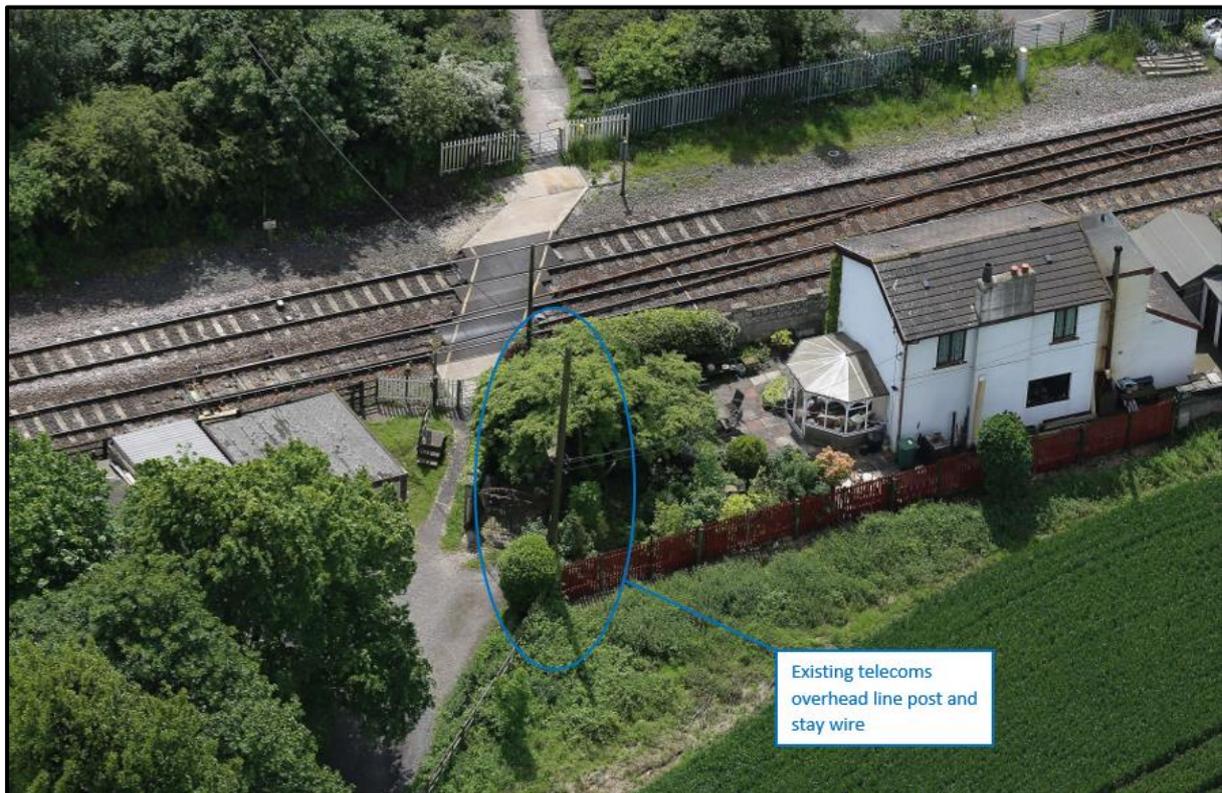


Figure 22: Location of existing telecoms overhead line post and stay wire that require diversion

### Planning, Construction Sequence and Timescales

- 3.5.12 Figure 23 shows the proposed location of the new footpath/bridleway heading east/west across the Recreation Ground, the land required to provide the improvements to Lower Peckfield Lane heading north east/south west and the parking/turning area to the south west.

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Figure 23: Proposed footpath (or bridleway) between Lower Peckfield Lane and Great North Road, upgrade to Lower Peckfield Lane, parking/turning area and existing level crossing locations

- 3.5.13 The works associated with the Peckfield Level Crossing closure would be carried out from the Phoenix Avenue temporary compound, situated to the west of the existing level crossing.
- 3.5.14 While no direct road closures are anticipated to undertake the proposed works associated with Peckfield Level Crossing, additional traffic management may be required for highway improvements on Lower Peckfield Lane. These will be coordinated with the local Highway Authority to minimise disruption to the community and surrounding road network.
- 3.5.15 RRV plant will access the railway via the existing RRAP which is adjacent to the compound location.

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3.5.16 To facilitate the construction of the scheme, the following works will be required:

- Upgrade existing access road on Lower Peckfield Lane, including provision of passing places and temporary works hard standing area that will eventually become a new parking area/turning area for residents;
- Construct the new footpath (or bridleway) through the Recreation Ground;
- Remove any temporary hard standing areas and make good ground to suit land owner;
- Completion works to car parking area for the Peckfield Cottage residents on the north side;
- The completion of the above works will allow the level crossing to be physically closed and the existing level crossing deck/telephones/signage removed.

3.5.17 The Phoenix Avenue construction compound is expected to be required (for the wider TRU works as well as those associated with the closure of Peckfield Level Crossing) from January 2025 to 2028.

3.5.18 The duration of construction activity for the highway works to Lower Peckfield Lane, the parking area/turning area for residents and the new footpath (or bridleway) through the Recreation Ground is anticipated to be from March 2025 to June 2025.

3.5.19 Works are expected to be carried out during daylight hours. However, the removal of the existing level crossing surface will need to be undertaken in non-operational periods of the railway i.e. night shift working.

### Optioneering Process

3.5.20 Five alternative options were subjected to the multi-criteria analysis previously described.

- Option 1: New footpath (or bridleway) through Recreation Ground and Lower Peckfield Lane north of railway improvements

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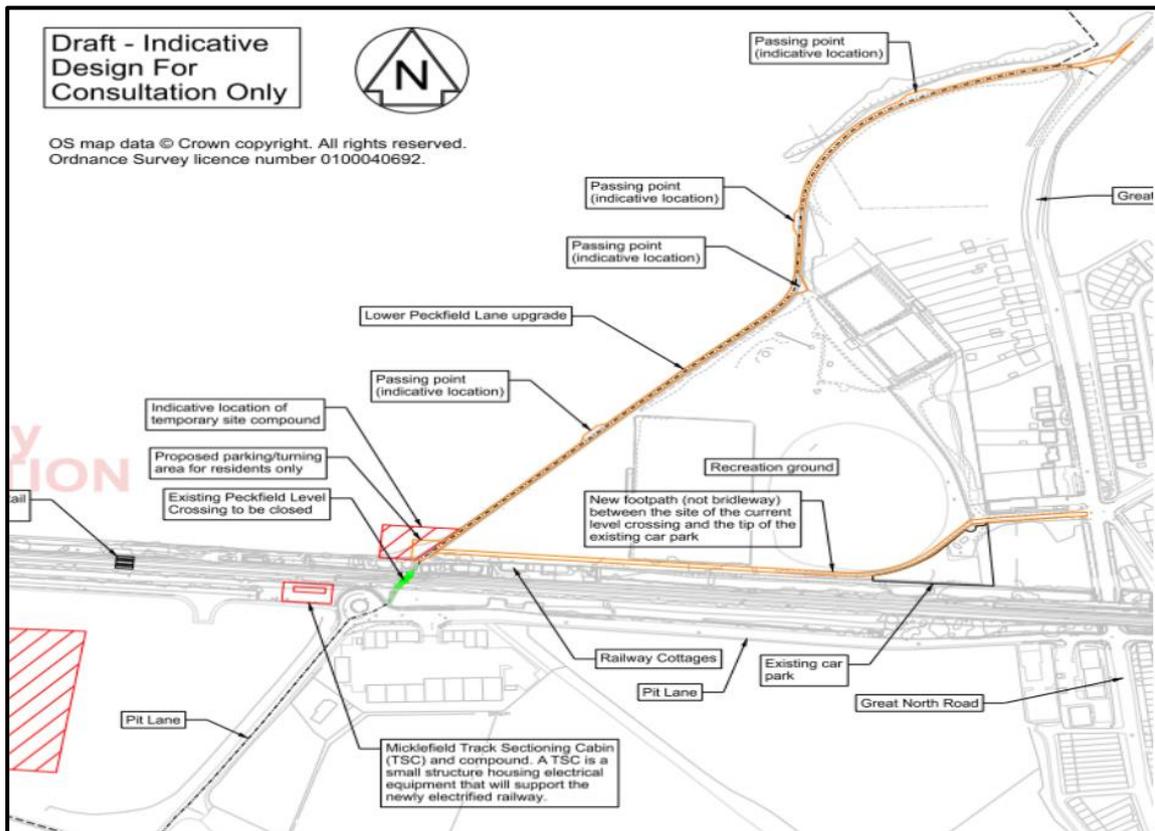


Figure 24: Option 1 – New footpath (or bridleway) through Recreation Ground and Lower Peckfield Lane north of railway improvements

- Option 2: As Option 1 plus new bridleway to East Garforth

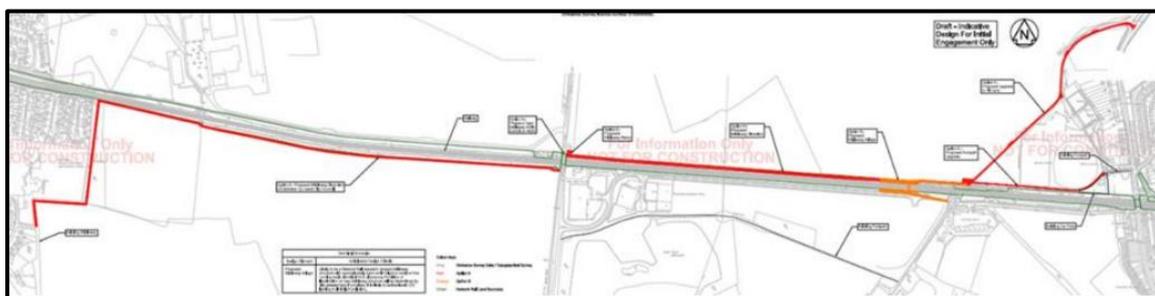


Figure 25: Option 2 – As Option 1 plus new bridleway to East Garforth

- Option 3: As Option 1 plus new bridleway through Recreation Ground

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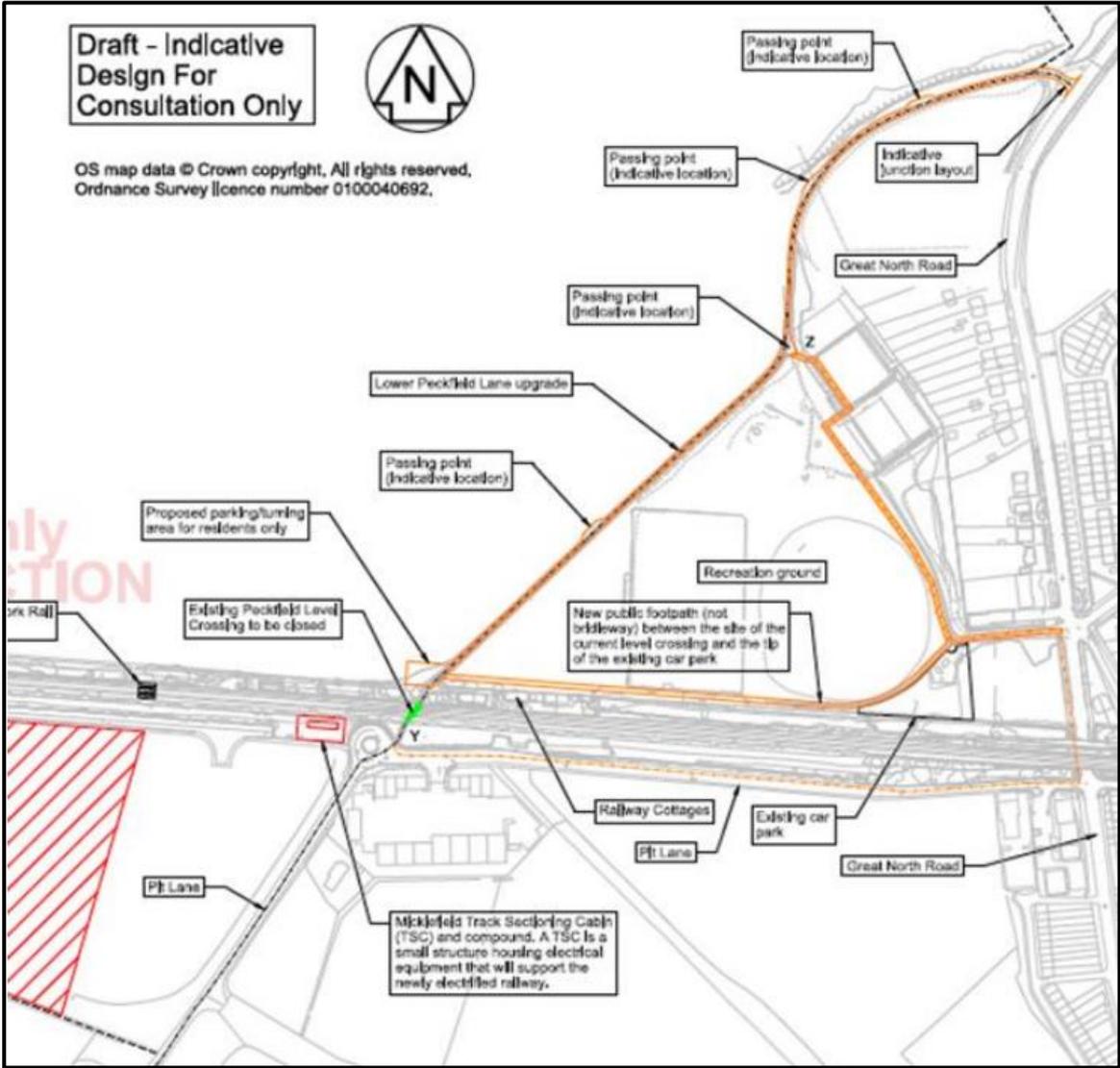


Figure 26: Option 3 – As Option 1 plus new bridleway through Recreation Ground (south to north alignment)

- Option 4: New ramped bridleway bridge

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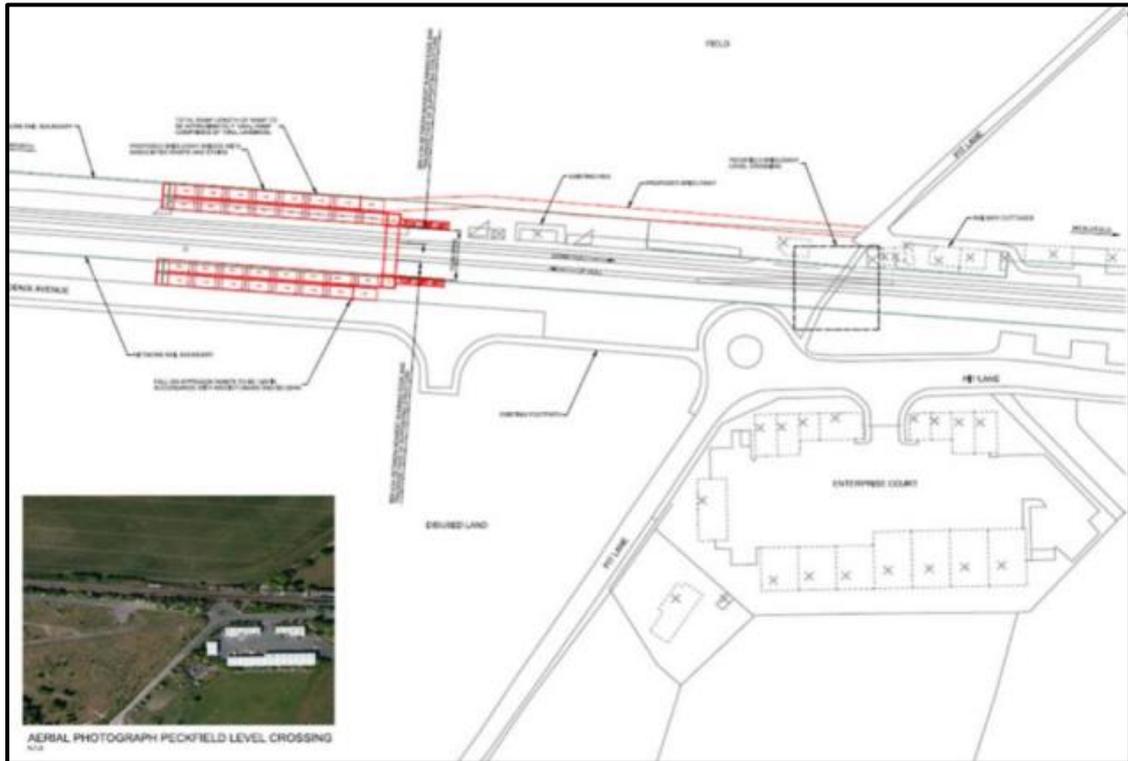


Figure 27: Option 4 – New ramped brideway bridge to west of existing buildings

- Option 5: New stepped footbridge

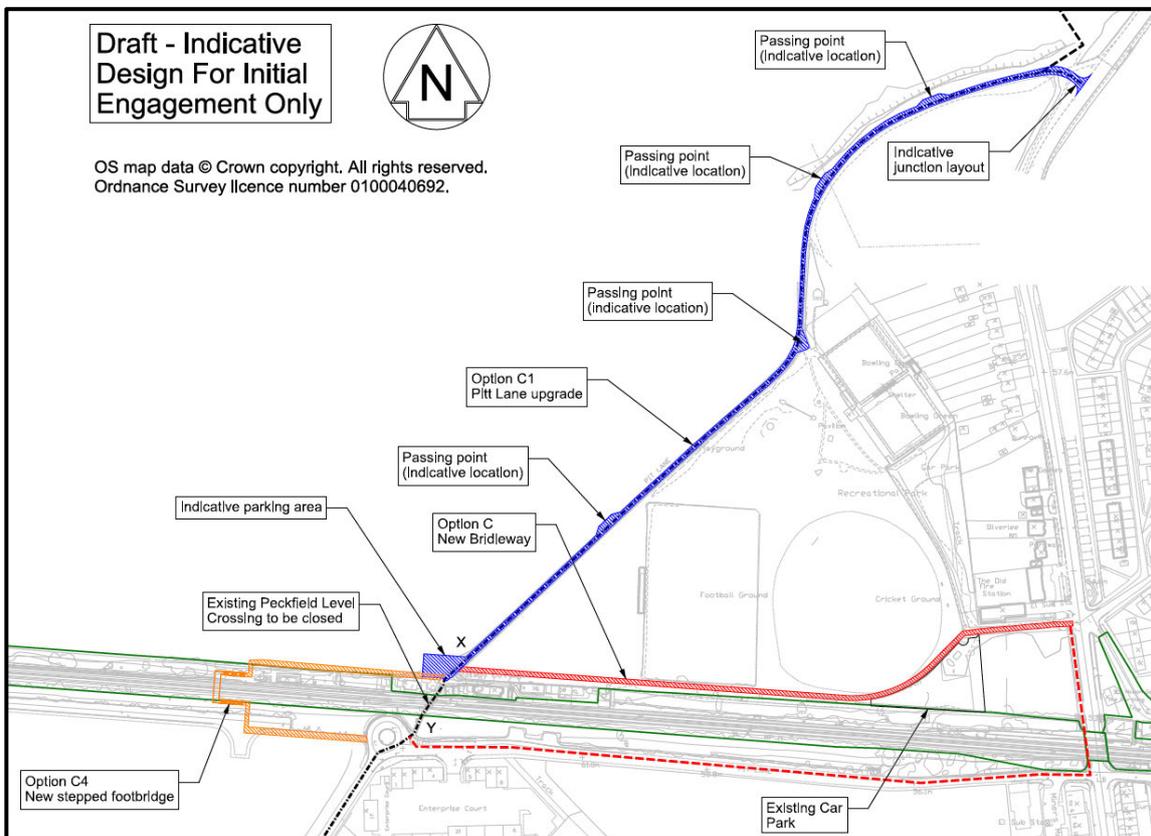


Figure 28: Option 5 – New stepped footbridge shown in orange

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#### Option 1 Assessment

- 3.5.21 Following the identification and evaluation of feasible options outlined in the previous section, Option 1 was selected as the solution preferred by the TRU Project.
- 3.5.22 From an 'Environment, Sustainability and Consent Risk' perspective, the alternative route in Option 1 involves an approximate diversion of between 100m to 900m via level ground on existing footways and a new footpath (or bridleway) through the recreation ground. The 'level footpath' connectivity between the railway properties and Micklefield is improved. Connectivity for longer distance journeys, or cyclists, is maintained via an alternative route which involves a short distance (approximately 300m) detour in the context of longer journeys.
- 3.5.23 The level crossing user data gathered over a 10 year period confirms that the proposed scheme in Option 1 provides an acceptable alternative access route. This extensive survey information shows that weekday pedestrian user levels are limited to an average of between 22 and 45 traverses of the railway, increasing at weekends to a peak daily usage of between 59 and 126. Usage by cyclists is very low, with a maximum of 3 crossings per day recorded. Usage by persons of restricted mobility is very low and there are no survey records of equestrian use.
- 3.5.24 The most recent level crossing user survey was undertaken in February/March 2023 (more details of which are provided in Andrew Cunningham's Proof of Evidence (CD 7.23)), confirming that the level crossing is used mostly by pedestrians, with only five cycle crossings in the one-week survey period and no equestrian or other crossings. An origin-destination survey was undertaken in parallel with the February/March 2023 user survey. The findings of this origin-destination survey were that the main use purpose was dog walking and almost all crossings were made by people from the local area, rather than long-distance walkers.
- 3.5.25 In comparison to the other options, there is a limited amount of construction work involved which minimises the environmental impact.
- 3.5.26 From a 'Land and Property' perspective, Option 1 requires a very small amount of permanent land acquisition to implement the proposed solution and it has a very small impact on the recreation ground, businesses and agricultural land.
- 3.5.27 A positive aspect of this option is the accessibility improvements provided for the railway properties adjacent to the railway. It provides a pleasant, accessible (level) alternative route via existing footways on Pit Lane and

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Great North Road and a new footpath (or bridleway) through the Recreation Ground. User surveys have recorded very low usage of the level crossing by persons of reduced mobility and zero usage by equestrians.

- 3.5.28 From a 'Cost' perspective, Option 1 is a comparatively low-cost solution which minimises the use of public funds.
- 3.5.29 Where 'Design and Engineering Feasibility' is concerned, Option 1 is a simple design solution.
- 3.5.30 It is therefore a low build complexity when considering the 'Construction' criteria for the design; it has limited railway access requirements and a negligible impact on public or railway operations and maintenance during construction.
- 3.5.31 There are limited 'Maintenance' requirements associated with Option 1 due to the simplicity of the design and the limited interaction with the operational railway.
- 3.5.32 This also aids the 'Deliverability' of Option 1 i.e. the required railway access is limited to the level crossing decommissioning itself.
- 3.5.33 Overall, Option 1 delivers a simple, accessible alternative access route with minimal cost and environmental impact. The impact of the level crossing closure on the residents of the railway properties is mitigated by the provision of a new footpath (or bridleway) to Great North Road and improvements to the Lower Peckfield Lane access route. It is the solution preferred by the TRU Project.

### Option 2 Assessment

- 3.5.34 Option 2 is similar to Option 1 but it also involves a proposed bridleway extension to the west (towards East Garforth). This was developed based on historical discussions with Leeds City Council to improve the connectivity in the local area. Option 2 would require third party land and the crossing of the unrestricted A656 public highway across a railway overbridge.
- 3.5.35 From an 'Environment, Sustainability and Consent Risk' perspective, the alternative route in Option 2 would involve an approximate diversion of between 300m to 900m via level ground on existing footways and a new footpath through the Recreation Ground. As per Option 1, the 'level footpath' connectivity between the railway properties and Micklefield would be improved in Option 2 when compared to existing. Connectivity for longer distance journeys, or cyclists, would be maintained via an alternative route which involves a short distance (approximately 300m) detour in the context of longer journeys. The added benefit of Option 2 when compared to Option 1

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would be the provision of the new public bridleway connection between Micklefield and Garforth, as well as the promotion of active transport.

- 3.5.36 From a 'Land and Property' perspective, Option 2 would involve the permanent acquisition of several third-party land plots and the permanent loss of Grade 2 BMV agricultural land, although it does have a limited impact on the Recreation Ground and businesses.
- 3.5.37 Option 2 provides the same pleasant, accessible (level) alternative route via existing footways on Pit Lane and Great North Road and a new footpath through the Recreation Ground as per Option 1. User surveys have recorded very low usage of the level crossing by persons of reduced mobility and zero usage by equestrians.
- 3.5.38 For Option 2, the diversion route would involve users crossing the A656 (following closure of the level crossing). A Road Safety Review was undertaken to investigate and assess layouts for the 'Pegasus' crossing on the A656 (a traffic-light system specifically for bridleway users). The only viable option to ensure bridleway users were safe involved single carriageway working for vehicular traffic over the bridge. This method of traffic control was deemed unsuitable by Leeds City Council due to the existing traffic flow data on the A656 and the fact that the A656 is a diversionary route during M1 closure.
- 3.5.39 From a 'Cost' perspective, Option 2 would involve significant construction costs associated with building a new bridleway route to East Garforth and the crossing point over the A656 – approximately £2.0m - £3.0m (estimated by the TRU Project team in 2020).
- 3.5.40 Where 'Design and Engineering Feasibility' is concerned, Option 2 would be a medium complexity solution, which is greater than Option 1, due to the additional highway interface to cross the A656.
- 3.5.41 Option 2 would still be defined as a low build complexity when considering the 'Construction' criteria for the design. It is a simple construction that can be constructed outside of the railway itself. It therefore has limited railway access requirements and a negligible impact on public or railway operations and maintenance during construction.
- 3.5.42 There are moderate 'Maintenance' requirements associated with Option 2, mainly to do with the additional maintenance burden associated with the length of the new bridleway and the A656 crossing point.
- 3.5.43 When assessing the 'Deliverability' of Option 2, the railway access would be limited to the decommissioning of the level crossing itself. Any works for the

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A656 crossing point would be delivered in conjunction with bridge demolition and re-construction required by the TRU project.

- 3.5.44 Overall, Option 2 would provide connectivity benefits for the local community but it would give rise to the safety issue of needing to cross the A656. The proposed safe method of crossing the A656 was unacceptable to Leeds City Council based on the operational impact to the highway. There is also the additional cost and increased land impacts when compared to Option 1, hence why this option was ultimately discounted.

#### Option 3 Assessment

- 3.5.45 Option 3 was developed following consultation with Micklefield Parish Council; discussions identified an alternative north/south alignment for the bridleway diversion through the Recreation Ground. A drawing was produced so that the Parish Council could consider the option appropriately (see Figure 26 above).
- 3.5.46 From an 'Environment, Sustainability and Consent Risk' perspective, the alternative route in Option 3 would involve an approximate diversion of between 300m to 900m via level ground on existing footways, a new footpath to the railway properties and a new bridleway through the Recreation Ground heading north/south. As per Options 1 and 2, the 'level footpath' connectivity between the railway properties and Micklefield would be improved in Option 3. Connectivity for longer distance journeys, or cyclists, would be maintained via an alternative route which involves a short distance (approximately 300m) detour in the context of longer journeys.
- 3.5.47 From a 'Land and Property' perspective, Option 3 would include the increased acquisition of land and access rights through the Recreation Ground when compared to Option 1. Option 3 would also have an increased negative impact on the Recreation Ground itself when compared to the other options, mainly due to the revised bridleway route being in close proximity to a young children's play area to the north of the Recreation Ground. There is the same limited impact on businesses and agricultural land, and the accessibility improvements would be provided for the railway properties as per Options 1 and 2.
- 3.5.48 Option 3 would provide a similar pleasant, accessible (level) alternative route via existing footways on Pit Lane and Great North Road and a new footpath/bridleway through the Recreation Ground as per Options 1 and 2. User surveys have recorded very low level crossing usage by persons of reduced mobility and zero usage by equestrians.

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- 3.5.49 From a 'Cost' perspective, Option 3 is similar to Option 1 in that it is a comparatively low-cost solution and minimises the use of public funds.
- 3.5.50 Where 'Design and Engineering Feasibility' is concerned, Option 3 is a simple design solution.
- 3.5.51 It is therefore a low build complexity when considering the 'Construction' criteria for the design; it would have limited railway access requirements and a negligible impact on public or railway operations and maintenance during construction.
- 3.5.52 There are limited 'Maintenance' requirements associated with Option 3 due to the simplicity of the design and the limited interaction with the operational railway.
- 3.5.53 This also aids the 'Deliverability' of Option 3 i.e. the required railway access is limited to the level crossing decommissioning itself.
- 3.5.54 Overall, Option 3 delivers a simple, accessible alternative access route with minimal cost and environmental impact. The impact of the level crossing closure on the residents of the railway properties would be mitigated by the provision of a new footpath to Great North Road and improvements to the Lower Peckfield Lane access route. Bridleway users would gain a north/south section but this has safety implications due to the close proximity of an existing young children's play area within the Recreation Ground, hence why this option was ultimately discounted.

### Option 4 Assessment

- 3.5.55 Option 4 was the provision of a new ramped bridleway bridge to the west of the existing properties adjacent to the north of the railway.
- 3.5.56 From an 'Environment, Sustainability and Consent Risk' perspective, the alternative route in Option 4 would involve an approximate diversion of 500m via the new ramped bridleway bridge and associated footpaths. Connectivity between the Railway properties and Micklefield would be reduced when compared to Options 1, 2 and 3 due to the longer walking route into Micklefield (via the ramped bridleway bridge rather than a footpath through the recreation ground). The connectivity for longer distance journeys for cyclists and horse riders would be the same 500m detour over the new bridleway bridge.
- 3.5.57 The large-scale bridleway bridge structure would result in adverse landscape and visual impact on the surrounding area, including close views from the railway properties and from land allocated in the Local Plan for travelling show people (to the south of the railway).

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- 3.5.58 From a 'Land and Property' perspective, Option 4 would include the permanent acquisition of third-party land and the permanent loss of Grade 2 BMV agricultural land which would be an adverse impact on agricultural business. This option would provide an accessible, safe alternative route for all users but it would not deliver the same accessibility improvements to Lower Peckfield Lane or the new footpath to Micklefield provided under Options 1, 2 or 3. Option 4 would provide a pleasant, accessible (albeit ramped) alternative route to the existing level crossing.
- 3.5.59 User surveys have recorded very low usage of the level crossing by persons of reduced mobility and zero usage by equestrians. From a 'Cost' perspective, Option 4 would have significant construction costs – approximately £4.0m - £6.0m (estimated by the TRU Project team in 2020).
- 3.5.60 Where 'Design and Engineering Feasibility' is concerned, Option 4 would be a simple, standard design solution.
- 3.5.61 It is a standard build complexity when considering the 'Construction' criteria for the design although it is a discreet new asset for the railway with a high degree of programme certainty. Disruptive railway access would be required to construct it.
- 3.5.62 There are limited 'Maintenance' requirements associated with Option 4 due to the standard nature of the design and the experience of the railway in delivering this type of structure. This aids the 'Deliverability' of this option although railway engineering access is required to construct the new bridge as well as to decommission the level crossing itself.
- 3.5.63 Overall, Option 4 would deliver an accessible alternative access route to the existing level crossing but the diversion would be approximately 500m. The landscape and visual impacts would be greater than those associated with Options 1, 2 and 3 due to the scale of the new structure. Option 4 would involve a greater amount of permanent land acquisition as well as a loss of some Grade 2 BMV agricultural land to accommodate the new bridleway bridge and the associated access to it. There would be a significant build cost and additional disruptive railway access would be required to construct it when compared to Options 1, 2 and 3. The cost and the level crossing usage profile do not justify the provision of a replacement ramped bridleway bridge. This option was ultimately discounted for these reasons.

### Option 5 Assessment

- 3.5.64 Option 5 would be the provision of a new stepped footbridge (not bridleway bridge) to the west of the existing properties adjacent to the north of the railway.

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- 3.5.65 From an 'Environment, Sustainability and Consent Risk' perspective, the alternative route in Option 5 would involve an approximate diversion of 300m via the new stepped footbridge and associated footpaths. Connectivity between the railway properties and Micklefield would be reduced when compared to Options 1, 2 and 3 due to the longer walking route into Micklefield (via the stepped footbridge).
- 3.5.66 The connectivity for longer distance journeys on foot would be maintained via the alternative route which would involve a short distance (approximately 300m) detour in the context of longer journeys. The connectivity for longer distance journeys for cyclists and horse riders would be a detour of approximately 300m which is more than Options 1, 2 and 3.
- 3.5.67 Option 5 would be a medium scale structure, although the ramps associated with Option 4 are absent, that would result in adverse landscape and visual impact on the surrounding area, including close views from the railway properties and from land allocated in the Local Plan for travelling show people (to the south of the railway).
- 3.5.68 From a 'Land and Property' perspective, Option 5 would include the permanent acquisition of third-party land and the permanent loss of Grade 2 BMV agricultural land which would be an adverse impact on agricultural business, albeit slightly less than Option 4 due to the omission of the ramps. This option would provide an accessible, safe alternative route for all users but it would not deliver the same accessibility improvements to Lower Peckfield Lane or the new footpath to Micklefield provided under Option 1. Option 5 would provide a pleasant (stepped) alternative route to the existing level crossing.
- 3.5.69 From a 'Cost' perspective, Option 5 would have significant construction costs although it would be slightly less than the £4.0m - £6.0m approximate cost of the ramped bridleway bridge in Option 4.
- 3.5.70 Option 5 would be a standard build complexity when considering the 'Construction' criteria for the design and it is a discreet new asset for the railway with a high degree of programme certainty. Disruptive railway access would be required to construct it.
- 3.5.71 There are limited 'Maintenance' requirements associated with Option 5 due to the standard nature of the design and the experience of the railway in delivering this type of structure. This aids the 'Deliverability' of this option although railway engineering access would be required to construct the new bridge as well as to decommission the level crossing itself.

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3.5.72 Overall, Option 5 would deliver an alternative access route, but the diversion route would be approximately 300m. The landscape and visual impacts would be greater than Options 1,2 and 3 due to the scale of the structure, although slightly less than Option 4. Option 5 would involve the permanent acquisition of land and the loss of some Grade 2 BMV agricultural land (again slightly less than Option 4). It would have a significant build cost, which is more than Options 1,2 and 3 although less than Option 4, and disruptive railway access would be required for construction. This option was ultimately discounted for these reasons.

### Operational Railway Benefits

3.5.73 The closure of Peckfield Level Crossing simplifies the Signalling layout. Should the level crossing remain open, Miniature Stop Lights would be required. The location of the existing Micklefield Station to the east and the existing track cross-over to the west would add complexity to the Signalling design. Both of these features fall within the 'strike-in' for a train approaching the level crossing which may actually be slowing to stop at the station or to use the cross-over. The level crossing control circuitry would have to account for this variable approach speed, which may lead to misuse of the level crossing and a 'lack of willingness to wait'.

3.5.74 There are no planned track renewal works at Peckfield Level Crossing.

3.5.75 The closure of the level crossings increase the reliability and resilience of the railway, for more information refer to the Proof of Evidence produced by Jerry Greenwood. For details of level crossing risk and reliability data for Peckfield Level Crossing, refer to the Proof of Evidence produced by Andrew Cunningham (CD 7.23).

## **3.6 Highroyds Wood Level Crossing**

### Scheme Description

3.6.1 At Highroyds Wood Level Crossing, the Order would extinguish any existing rights at the level crossing as well as formalising the proposed diversion (which is informally in use today).

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Figure 29: Extract of Works and Land Plan Order Sheet 13 (NR09)

- 3.6.2 The Order, if made, would authorise the permanent closure of Highroyds Wood Level Crossing, which has been temporarily closed by Network Rail on safety grounds, and to divert the PRow to the east via a new path to an existing railway underpass.
- 3.6.3 This will involve the construction of footpaths to the south and north of the railway and enhancements to the underfoot conditions of the existing underpass.
- 3.6.4 The additional land sought by the Order, which is shown on plots 13-007, 13-008 and 13-011 on Figure 29, is needed to deliver the proposed footpath arrangement as described.
- 3.6.5 The additional land sought by the Order, which is shown on plots 13-001, 13-002, 13-003, 13-004, 13-005, 13-006, 13-007, 13-011, 13-012 and 13-013 on Figures 29 and 30, is needed for the associated construction compounds and access.

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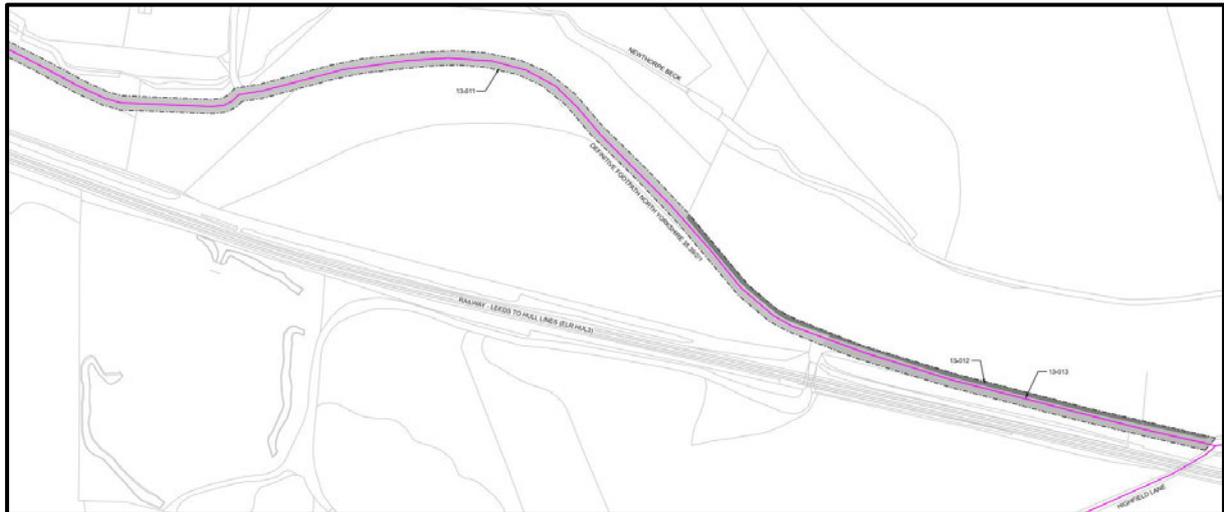


Figure 30: Extract of Works and Land Plan Order Sheet 14 (NR09)

- 3.6.6 The surface specification of the 2.5m wide footpath construction will be agreed with the PRow Officer at North Yorkshire Council (NYC).
- 3.6.7 A crushed stone surface will be provided within the underpass and approximately 5 steps (with handrails) will be constructed on each side of the railway.
- 3.6.8 There may be a preference by the landowner for two 'kissing gates' to be installed to the north of the railway, as well as barbed wire fencing, to deter misuse.

#### Planning, Construction Sequence and Timescales

- 3.6.9 The proposals at Highroyds Wood Level Crossing can be summarised by the schematic shown in Figure 31.

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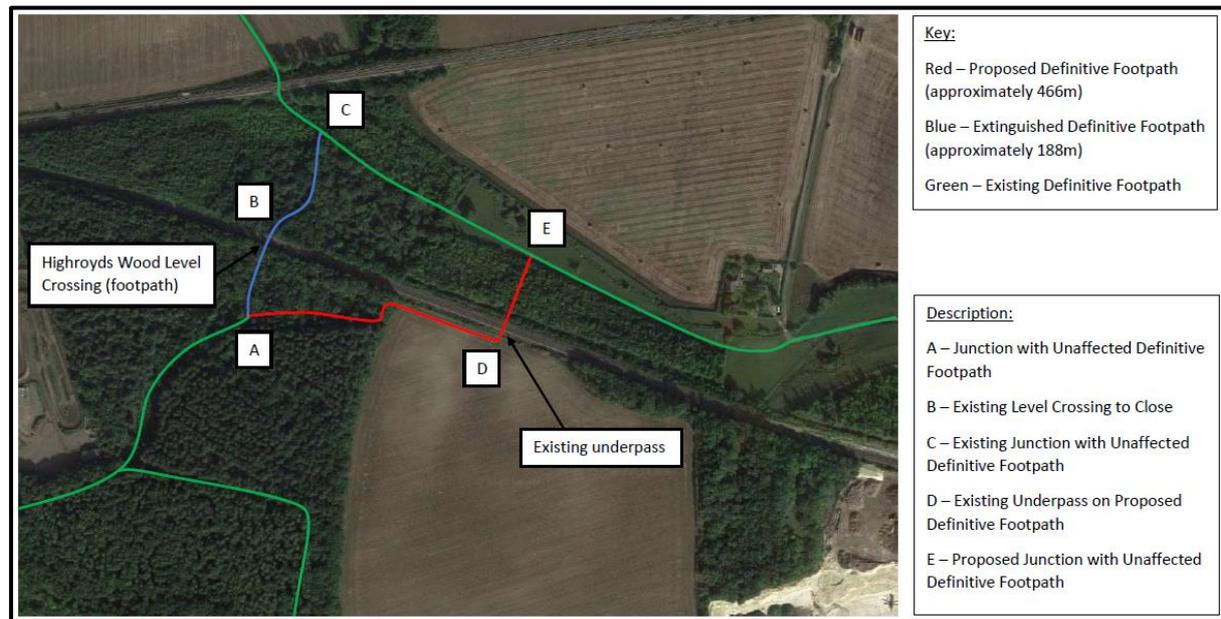


Figure 31: Schematic of the Highroyds Wood Level Crossing proposals

- 3.6.10 The construction work at this location is more discrete than that associated with some of the other proposed infrastructure (such as Barrowby Lane bridge) i.e. there is no major replacement structure and all construction is minor or away from the operational railway corridor.
- 3.6.11 To construct the footpath on each side of the railway, appropriate vegetation clearance will be undertaken to provide a suitable footpath surface to the agreement of the PRoW Officer at NYC. The ground within the existing underpass will be cleared to facilitate the construction of the access steps and to provide the crushed stone walking surface.
- 3.6.12 The timescales of the footpath construction and the enhancements to the underpass, which are to be confirmed, are likely to be dependent on the timescales of this Order being made (if that is the recommendation). The proposals are likely to be in the region of 4 to 8 weeks to construct.

#### Optioneering Process

- 3.6.13 For details of the optioneering process, refer to the Proof of Evidence of Suzanne Bedford (CD 7.29).

#### Operational Railway Benefits

- 3.6.14 There are no planned track renewal works at Highroyds Wood Level Crossing.
- 3.6.15 The closure of the level crossing not only increases the reliability and resilience of the railway, but also the safety as trains, if held at the nearby

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signal for the junction, currently stand over the level crossing itself. The formal closure will also remove the known misuse/trespass risk from the railway at this location. For more details, please refer to the Proof of Evidence produced by Andrew Cunningham.

## **4. ENGINEERING AND DESIGN RESPONSE TO OBJECTIONS**

4.1.1 This section covers the relevant Engineering-based objections to the Order at the sites of the existing level crossings.

### **4.2 In response to OBJ 07 (Barrowby Lane and Barrowby Foot Level Crossings) submitted by Leeds City Council**

4.2.1 Leeds City Council have submitted a number of comments relating to the new bridleway bridge to replace Barrowby Lane and Barrowby Foot Level Crossings. From an engineering perspective, the comments are concerned with the suitability (designed to relevant standards) of the replacement structure and the ability for Leeds City Council to agree aspects of the bridge design.

4.2.2 As stated in paragraphs 3.3.8, the design of the new bridleway bridge will be in accordance with the appropriate design standards and the specification of the bridleway connections will be progressed in consultation with Leeds City Council.

### **4.3 In response to multiple Objections and Representations to the Peckfield Level Crossing proposals submitted by various consultees**

4.3.1 Objections and representations (whole or part) addressed within this section include:

- **(OBJ 02 – Peckfield Level Crossing)** Christine Boothroyd (Micklefield Parish Council)
- **(OBJ 05 – Peckfield Level Crossing)** E. Gledhill
- **(OBJ 07 – Peckfield Level Crossing)** Leeds City Council
- **(OBJ 10 – Peckfield Level Crossing)** D. Brown
- **(OBJ 12 – Peckfield Level Crossing)** E. Todd
- **(OBJ 13 – Peckfield Level Crossing)** Councillor J. Lewis
- **(OBJ 14 – Peckfield Level Crossing)** K. Hickman
- **(OBJ 15 – Peckfield Level Crossing)** J. Walton
- **(OBJ 16 – Peckfield Level Crossing)** E. Galley
- **(OBJ 17 – Peckfield Level Crossing)** L. Donoghue
- **(OBJ 18 – Peckfield Level Crossing)** D. Lee
- **(OBJ 20 – Peckfield Level Crossing)** John Harker (Peak and Northern Footpath Society)
- **(OBJ 24 – Peckfield Level Crossing)** P. Maude (Leeds Local Access Forum)

- **(OBJ 28 – Peckfield Level Crossing)** Mr and Mrs Backhouse
- **(REP 03 – Peckfield Level Crossing)** J. Hebden (Micklefield Parish Council)
- **(REP 04 – Peckfield Level Crossing)** Mr and Mrs Mann

**4.4 In response to (OBJ 07 – Peckfield Level Crossing); Leeds City Council**

- 4.4.1 Leeds City Council have concerns regarding the ability to agree aspects of the footpath (or bridleway) construction.
- 4.4.2 As stated in paragraph 3.5.7, the construction of the new footpath (or bridleway) will be progressed in consultation with Leeds City Council.
- 4.4.3 Leeds City Council also advised that Ward members do not support the closure of Peckfield Level Crossing without a replacement bridge.
- 4.4.4 As stated in paragraph 3.5.20, the provision of a bridleway bridge (Option 4 – ramped and stepped) and a footbridge (Option 5 – stepped only) have been considered by the TRU Project but both options have been discounted for the reasons described in paragraphs 3.5.55 to 3.5.72 inclusive.

**4.5 In response to the Objections and Representations listed in paragraph**

**4.3.1 (Peckfield Level Crossing)**

- 4.5.1 The Objections and Representations that are listed in paragraph 4.3.1 all contain a shared concern with the compensatory measures for the formal closure of the level crossing and are of the view that an overbridge (either stepped and ramped or stepped only or the (originally preferred) bridleway extension to East Garforth would be the best option to close Peckfield Level Crossing.
- 4.5.2 As stated in paragraph 3.5.20, the provision of a bridleway connection to East Garforth (Option 2), a bridleway bridge (Option 4 – ramped and stepped) or a footbridge (Option 5 – stepped only) have been considered by the TRU Project but each option has been discounted for the reasons described in paragraphs 3.5.21 to 3.5.72 inclusive.
- 4.5.3 Regarding the query by Micklefield Parish Council as to whether a subway option had been considered as a solution to facilitate the closure of Peckfield Level Crossing, a Project workshop held early in GRIP 2 (Pre-Feasibility stage circa 2016) did not recommend that a subway solution should be investigated. A Level Crossing Risk Assessment produced by Sotera Risk Solutions in 2018 states that a new underpass would be more difficult than a bridge in this location so a subway option was not progressed further. From a construction risk (embankment stability), cost and vegetation/habitat

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preservation perspective (there are mature trees on both sides of the railway), there is already an underbridge for the Great North Road close by, so the benefits of constructing a new subway adjacent to that structure appear limited.

**5. WITNESS DECLARATION**

**5.1 Statement of declaration**

- 5.1.1 This Proof of Evidence includes the facts which I regard as being relevant to the opinions which I have expressed, and the Inquiry's attention has been drawn to any matter which would affect the validity of that opinion.
- 5.1.2 I believe the facts which I have stated in this PoE are true and that the opinions expressed are correct, and,
- 5.1.3 I understand my duty to the Inquiry to help it with the matters within my expertise and I believe I have complied with that duty.



**Michael Westwood**

**05 February 2024**