



TRANSPORT AND WORKS ACT 1992

**TRANSPORT AND WORKS (INQUIRIES
PROCEDURE) RULES 2004**

**THE NETWORK RAIL
(ESSEX AND OTHERS LEVEL CROSSING
REDUCTION)
ORDER**

PROOF OF EVIDENCE

-OF-

ELIANE ALGAARD

Document Reference	NR28/1
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1. INTRODUCTION

- 1.1** My name is Eliane Algaard. I am employed by Network Rail as the Director Route Safety and Asset Management (DRSAM) on the Anglia Route ¹, responsible for overseeing all safety and asset management activities throughout the region. I am a Chartered Civil Engineer with over 20 years' experience in strategic planning and infrastructure asset management in the Water and the Rail sectors.
- 1.2** Since March 2014 I have been accountable for Anglia Route's long-term asset management strategy and its five-year route asset management plans to deliver sustainable levels of asset condition and performance, and to meet customer requirements. Under the Construction (Design and Management) Regulations 2015, I am the client for whom a construction project is carried out. I oversee all route project delivery in the provision of asset management support to maintenance, renewal and enhancement projects and I lead a multidisciplinary team of 140 engineers, technical specialists, sponsors and project managers with an annual budget of £250m. In March 2017, my portfolio was expanded to include safety, health and environmental (SHE) leadership in the Route.
- 1.3** I am the Client for the Network Rail (Essex and Others Level Crossing Reduction) Order. This means that I agree the scope of works to be progressed and make key decisions throughout the course of the project's development. It is my role to actively drive the project to deliver the safety, maintenance and efficiency savings that the project set out to deliver.
- 1.4** The Network Rail national strategy for risk reduction is set out in the evidence of national strategic evidence of Mark Brunnen.
- 1.5** I will focus on the Anglia region and provide evidence on the following topics:
- Level crossings in Anglia
 - Management of level crossings in Anglia
 - Safety impacts
 - Operational impacts
 - Capacity and network development
 - Anglia level crossing strategy
 - Approach to selection of level crossings for closure
 - GRIP process and consultation
 - Address "in principle" objections

¹ Network Rail has devolved day-to-day responsibility for railway businesses to eight strategic geographical routes. Anglia Route covers five main corridors through Greater London, Cambridgeshire, Essex, Norfolk and Suffolk

- Statement of Truth

- 1.6 Separate witnesses will provide more detail behind the site specific considerations for each level crossing and the diversion routes proposed.

2. EVIDENCE

2.1 Level crossings in Anglia

- 2.1.1 Anglia Route currently has 771 level crossings,² where the public, landowners, contractors, passengers and/or statutory undertakers cross, or could cross, the railway on the level. There are 203 level crossings in the highway authority areas covered by this Order, being Essex, Havering, Thurrock, Hertfordshire, and Southend.³
- 2.1.2 Level crossings are complex systems developed over nearly two centuries. There are many combinations of public and private rights of way crossing the railway, as well as a wide range of level crossing furniture and technology associated with them. Private vehicular crossings (occupation or accommodation crossings, depending on whether a road pre-existed the railway's construction) will tend to comprise latched vehicular gates and a deck to enable passage across the railway. There may also be telephones to contact the signaller and/or miniature stop lights to warn of an approaching train. Signage at the crossing provides basic instructions. The user is expected to use reasonable vigilance to satisfy themselves that no trains are approaching before they start to cross the railway. There are 287 User Worked Crossings or UWCs (of all types) on the Anglia route and 6 UWCs included in this Order.⁴
- 2.1.3 Public footpath and bridleway level crossings tend to have stiles, kissing gates, or self-closing gates in the railway boundary. All bridleway crossings have decks, as do most, but not all, footpaths. Some footpath and bridleway crossings are protected by whistle boards: train drivers are instructed to sound their horn at a set distance from the crossing to warn potential crossing users of their train's approach. 11 level crossings in this Order are protected by whistle boards. Steps or ramps may be provided on railway land if there is a cutting or embankment to ascend or descend. Signage at the crossing provides instructions to users relevant to the type of crossing. Users must observe the available information at the decision point before deciding whether to cross the railway. These types of crossings are generally known as FPS (footpath with stile), FPK (footpath with kissing gate) or FPG/FPW (footpath or bridleway with gate/wicket gate). There are 292 public footpath and bridleway crossings on the Anglia route and 54 are included in this Order.

² As at 02/08/2017. This includes the following recent amendments: reclassification of Tip Sidings (MAH) as Internal Railway, recognition of Haltermann Carless as a level crossing, and closure of Northumberland Park.

³ The figure for Hertfordshire includes level crossings on Anglia route only.

⁴ E07 Ugley Lane, E15 Parsonage Lane, E28 Whipps Farm, E57 Wivenhoe Park, H03 Slipe Lane, H09 Fowlers

- 2.1.4 The majority of public road crossings have road traffic lights and barriers. There are 57 crossings on Anglia Route which are proved clear by a signaller via CCTV and 8 which are proved clear by object detection technology. There are also 93 automatic half barrier crossings, which do not include such proving. A few crossings have traditional gates across the road and are operated by a crossing keeper. Some public road crossings are UWCs. There is 1 public road level crossing included in this Order.⁵
- 2.1.5 51 level crossings included in this Order are passive crossings, at which users decide for themselves whether it is safe to cross the railway. Such crossings require sufficient warning of an approaching train to allow users to cross the railway and reach a position of safety on the other side. The type of user has a bearing on the calculation of what constitutes sufficient sighting. ORR Guidance contained in their December 2011 the Level Crossings: A guide for managers, designers and operators publication⁶ indicates that for the safe use of public footpath and bridleway level crossings a walking speed of 1.2m/s should be used where the surface is at or near to rail level and 1m/s where the surface is at the standard profile of the ballast. The calculated time in traversing the crossing should be increased to take account of foreseeable circumstances such as impaired mobility of users, numbers of prams and bicycles or where there is a slope or step up from the decision point. A longer crossing time means that the minimum sighting of trains must be greater.
- 2.1.6 Crossings that rely on the sighting of approaching trains by the user can be affected by vegetation, track curvature, earthworks, mist and fog, and sun glare. They are also not suitable for those with sight loss. Additionally, for pedestrians more attuned to cars travelling at 30–40MPH in residential areas, which are able to brake easily, it is possible to misjudge the arrival time of a train travelling at up to 100MPH which would take half a mile to come to a stand. Where sighting of approaching trains is insufficient, warning of their approach may be given by trains sounding their horns.
- 2.1.7 Further information can be found at paragraphs 17 to 23 in the Statement of Case for the Network Rail (Essex and Others Level Crossing Reduction) Order (NR26).

2.2 Management of Level Crossings

- 2.2.1 The management of level crossings represents a significant staffing cost. Anglia route is divided into 14 Level Crossing Manager (LCM) zones. Each Level Crossing Manager is based at the appropriate maintenance delivery unit and is responsible for the assessment, inspection, and basic maintenance of the level crossings in their zone. Their duties include maintaining a relationship with the authorised users of private crossings to ensure they understand

⁵ The public road is H01 Trinity Marsh Lane. There are 2 other crossings, E15 Parsonage Lane, and H02 Cadmore Lane, which the highway authorities consider to be public roads, but with which Network Rail's historical surveys do not agree.

⁶ Level Crossings: A guide for managers, designers and operators, Railway Safety Publication 7, (RSP7) (December 2011): http://orr.gov.uk/data/assets/pdf_file/0016/2158/level_crossings_guidance.pdf

safe operation. They also have a role in raising public awareness of level crossing risk. Each zone has between 50 and 76 level crossings with about 61 on average.⁷

- 2.2.2 The frequency of inspection varies by the type of level crossing, from a maximum inspection interval of 7 weeks for controlled crossings, to 6 months for footpath and bridleway crossings. This is detailed within the Network Rail standard for asset inspections (NR21).
- 2.2.3 The reduction in the number of level crossings that needs to be managed will result in a reduction in headcount from 14 to 13 Level Crossing Managers. This would represent a saving of approx. £40,000 per annum for the removal of one Band 4 role.⁸
- 2.2.4 In addition to the LCM staffing costs, the assets themselves represent a significant ongoing cost to maintain the status quo. Dan Fisk's evidence considers these maintenance costs in more detail.
- 2.2.5 If a complete renewal of the assets were required, this would represent £89,000 for a passive public footpath level crossing and £370,000 for the renewal of a user worked crossing with telephones (UWCT). These renewal costs have been taken from the national CP6 cost model, which are the cost estimates on which Network Rail is basing its CP6 funding application, which was included in Appendix D of the Network Rail Statement of Case (NR26).
- 2.2.6 Where the railway is built at a higher level than the surrounding land, the raised approaches to a vehicular level crossing must be assessed and maintained so that vehicles do not become grounded on the level crossing. As many of these earthworks date from the Victorian era, before the modern understanding of geotechnics was developed, and weather is becoming more extreme, this has the potential to be a worsening problem. An estimate of £10,000 – 20,000 per crossing is not unrealistic where significant earthworks are required.
- 2.2.7 The future strategy for level crossings, and the desire to reduce risks that cannot be eliminated, will lead to more technology being installed at passive level crossings. This is described in Transforming Level Crossings 2015–2040 (NR17). However, an increased level of warning equipment at level crossings leads to a railway which is more complex—and hence more expensive—to operate and maintain. There will be more signalling equipment to inspect, maintain and renew, and more failure points to investigate and rectify. As level crossings may share some technology, say for train detection, failures may impact on several level crossings simultaneously. Elimination rather than mitigation of the risk remains a preferred solution, in line with the ORR approach set out in NR14 and as outlined by Mark Brunnen in his evidence.

⁷ Note that this figure counts hybrid crossings, such as a UWC with a footpath through separate wicket gates, as 2 crossings.

⁸ Level Crossing Manager minimum salary: £32,256 (transparent pay grade 4B) + employer's pension contributions, NI, expenses etc.

- 2.2.8 The anticipated cost of converting a passive footpath level crossings to automatic warning systems with Miniature Stop Lights (MSLs) is estimated at £300,000 per level crossing based on the CP6 cost model (NR26) and even when utilising the most recent costs from an overlay MSL scheme on the Wickford to Southminster line that achieved a reduction in cost per site of £249,000 this would still equate to a significant cost outlay. This would be on top of the other remaining passive crossings within the Anglia region.
- 2.2.9 Further details on the maintenance requirements and costs are covered below in section 2.4 of this proof.

2.3 Safety impacts

- 2.3.1 Risks are not equally distributed amongst level crossings. The risk at each crossing is quantified using the All Level Crossing Risk Model (ALCRM), explained in more detail in Mark Brunnen's evidence. This is a system that ranks level crossings based on factors including usage, linespeed, frequency of train service, the environment, the technology installed, and the history of incidents and accidents. It calculates the likelihood of a fatality (or injury equivalent) every year and expresses it as a Fatalities and Weighted Injuries (FWI) value.
- 2.3.2 A FWI of 1.0 equates to the risk of 1 death, or 10 major injuries, or 200 RIDDOR⁹ reportable minor injuries and class 1 shock/trauma, or 1000 non-RIDDOR reportable minor injuries and class 2 shock/trauma per year. The total FWI attributable to the level crossings on Anglia route is 2.95, which is 25% of the overall national level crossing risk.
- 2.3.3 Incidents and accidents in the use or operation of level crossings are logged, and inform the risk assessment process. Incidents generally fall into the following categories:
- Deliberate misuse
 - User human error
 - Rail operator human error
 - Rail equipment failure
 - External causes
- 2.3.4 Incidents at level crossings have previously been categorised generally as misuse, near misses, and accidents. Whilst Network Rail has adopted the new terminology, which is more descriptive, it does require a greater level of investigation of each incident in order to correctly ascertain the chain of causation. It is not always possible to establish this level of understanding from the records of events that occurred in previous years.

⁹ Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013

- 2.3.5 Across Anglia route in the financial year of 2016/2017, there were 567 recorded incidents of deliberate misuse/user human error, 79 near misses and 29 incidents of users not calling the signaller back when requested.
- 2.3.6 When someone dies at a level crossing, the emotional impacts on those directly and indirectly involved can be far reaching. Those affected include the friends and families of the victim, the train crews, emergency services, Network Rail operations and maintenance staff, and passengers on the train. Network Rail has worked with the Samaritans to discourage suicides on the railway network, but the distress of an accidental fatality at a level crossing can be even greater.
- 2.3.7 In the event of a collision at a level crossing, the affected train will stop and, if the driver is able to, they will contact the signaller to request all services in the area be stopped through the signals being turned to red. If the incident involves loss of life, the scene will be declared a crime scene and it will not be possible to move any trains until the police have attended site. This can lead to delays in services of several hours. If it is not possible to move the train to its destination, there can be a need to arrange substitute road transport for passengers, which can take several hours to put in place.
- 2.3.8 After a collision at a level crossing, there will be a report written by the Rail Accident Investigation Branch (RAIB), with the involvement of Network Rail staff. These reports are written to establish the cause and make recommendations for the future reduction of risks.
- 2.3.9 Through its programme of risk assessment and maintenance, Network Rail aims to ensure all its level crossings are compliant with railway standards and the risk at each is as low as reasonably practicable. However, on occasions when Network Rail has failed to discharge its duty appropriately, fines imposed by courts have been severe. The largest fine to date relates to a fatality at Gipsy Lane level crossing in Needham Market, Suffolk, where an 82 year old pedestrian was crossing the line and misjudged the speed of an approaching train. Network Rail had previously undertaken a risk assessment and identified that vulnerable users were using the level crossing, but had not acted on this information by imposing a speed restriction on trains. As this was held to be the cause of the fatality, Network Rail was fined £4,000,000 by Ipswich Crown Court in 2016. The case also illustrates the inherent tension that exists in ensuring the safety of the public at interfaces between the railway and public highways, and the operational needs of a 21st century railway network.

2.4 Operational impacts

- 2.4.1 In the event that a level crossing inspection identifies a defect or a non-compliance the Section Managers, Section Planners, Infrastructure Maintenance Engineer and relevant skilled staff will work together to complete any repair works required to bring the level crossing back up to a safe standard.

- 2.4.2 In the event of reported incidents, e.g. a gate left open, it will be for a Mobile Operations Manager to attend a level crossing in the first instance. If a crossing user fails to follow the signaller's instructions to call back and declare the line clear after crossing, or if the signaller becomes aware of an incident, trains will be stopped or cautioned until the incident is resolved. In some instances, a train driver will be instructed to shut the gate at a level crossing when he reaches it. The cautioning or stopping of trains impacts on performance and reliability.
- 2.4.3 When certain track maintenance operations are performed, it is necessary to remove level crossing decks, and arrange a temporary closure of the level crossing while this is done. Each closure of a public crossing requires an application to the highway authority for a temporary closure and payment of its fee for processing and advertising the order (often £1,000 per crossing). It also requires gangs to attend to remove the deck, then to reinstate it after works are completed. This means that railway maintenance interrupts rights of way, impacting local communities. Diversion to grade-separated routes eliminates many of the occasions when temporary closure is required. Whilst bridges still need to be closed occasionally for maintenance or renewal, maintenance of the permanent way does not usually necessitate any interference with grade-separated crossings of the railway.
- 2.4.4 In the scenario where Network Rail is unable to obtain the required closure of a level crossing to enable the decking to be lifted, then this can result in the track not being tamped across level crossings. This can impact adversely on ride quality and require speed restrictions. An untamped section of railway may cause a bounce which will create a decreasing ripple effect of wear away from the level crossing due to the train weight not being evenly loaded on the track.
- 2.4.5 Some areas of Anglia route require tamping several times a year, owing to ground conditions.
- 2.4.6 In addition to the asset inspections, the Level Crossings Managers have to carry out risk assessments.
- 2.4.7 The frequency of risk assessment at level crossings varies with the present risk score of the level crossing, and is specified in the ALCRM system for each crossing. The minimum frequency for any crossing is once every 3.25 years (unless the crossing is out of use), although many crossings are assessed more frequently.
- 2.4.8 Additionally, level crossings receive 'unplanned' risk assessments following a trigger event, such as incidents of misuse, near misses or accidents. The requirements are set out in Network Rail operations manuals.
- 2.4.9 After each risk assessment, the Level Crossing Manager will complete optioneering, looking at ways of eliminating or reducing the risks that have been measured, to make the risk as low as reasonably practicable. Whilst outside the scope of this Order,

Network Rail has a wider programme of gate-to-gate enhancements and installation of technology to reduce the risk at level crossings. The rolling programme of risk mitigation sometimes means that level crossings where closure is planned in the future may be fitted with technology as a short term measure until closure can be arranged; the risk is reduced until it can be removed altogether.

- 2.4.10 Within the Essex Order a supplementary audible warning system (SAWD) has been installed at 5 level crossings (stolen at level crossing T01) that already have whistle board protection. This provides an additional audible warning at the crossing, warning users of an approaching train at those crossings with insufficient sighting. This has come at a cost of circa £25,000 per crossing and further passive crossings within this Order will potentially have to be fitted with SAWD if they are unable to be closed, if issues over vegetation clearance or use by vulnerable users are identified through future assessments.
- 2.4.11 Enhancement of level crossings usually entails works that Network Rail can deliver unilaterally, for which it already has powers. However, elimination of risk on the network by permanent closure of level crossings requires public and private rights of way to be changed, for which Network Rail must apply for powers.
- 2.4.12 There are a number of level crossings where Network Rail has eliminated the risk by closing them temporarily due to the crossing having non-compliant sighting, or because the furniture at the level crossing does not allow safe ascent and descent of the embankment or cutting necessary to reach the crossing.
- 2.4.13 Within the Essex Order there are 4 level crossings that are temporarily closed, where the cost to make them compliant would be disproportionately costly. In all cases Network Rail is seeking to extend the closures until such time that the level crossings can be closed through powers granted as part of the Order. In the case of E09 Elephant, E56 Abbots and E30 Ferry level crossings an integrated MSL would be required to provide suitable warning to users at a cost of £452,000 per crossing, based on the CP6 cost model (NR26).
- 2.4.14 In such cases, Network Rail will usually apply to the relevant highway authority to arrange a Temporary Traffic Regulation Order, authorising temporary closure of the public right of way (or highway) across the level crossing. These Orders may last for up to 6 months at public right of way level crossings, but may be extended on application by the highway authority to the Secretary of State.
- 2.4.15 Network Rail will also apply for a Temporary Traffic Regulation Order when level crossings are being maintained, which precludes the level crossing being available for public use.
- 2.4.16 If a level crossing has insufficient sighting, Network Rail may consider implementation of a temporary speed restriction (TSR).

These speed restrictions affect the efficient running of train services, delaying passengers and requiring compensation to be paid to operators.

2.4.17 TSRs may have further-reaching effects on the safety of users:

- They may have an adverse effect on the operation of active level crossings, which are calibrated to be triggered when the train passes a certain point. This may increase the risk at these crossings.
- Trains may become out of sequence, causing network congestion and increasing signaller workload, increasing the risk of mistakes being made.
- TSRs are only effective if the driver observes the local instructions. The more TSRs on a route, the greater the chance of one being accidentally missed by a driver.

2.4.18 For these reasons, TSRs are only applied where absolutely necessary and where there will be negligible transference of risk. Within the Essex Order there is a TSR in place at Pagets level crossing on the Down line, which has added an additional 40 seconds in journey times for passengers travelling in that direction.

2.4.19 Developing the capacity of the railway requires, as a minimum, a suitable and sufficient risk assessment of every level crossing on the affected route under the proposed new conditions. The general effects of increasing the speed and/or frequency of trains are:

- Increased risk of a collision at level crossings
- Worse consequences in the event of a collision at a level crossing, owing to higher velocity of impact and/or a greater chance of a second train coming
- Reduction of sighting of approaching trains, reducing the available time to cross
- A requirement to move existing whistle boards further away, such that they may no longer be effective
- Longer closure time of crossings to vehicles (public and private) and pedestrians
- Movement of strike-in points, which detects an approaching train, for active level crossings

2.4.20 Network Rail has a statutory duty, as outlined in the proof of Mark Brunnen, to run an efficient railway. Level crossings are a significant risk to timetable resilience, where any asset failures or incidents can lead to train delays. Only by removing these interface points through the rationalisation of the level crossing network can we entirely remove this risk to the efficient and effective timetabled service.

- 2.4.21 Further details on the operational responsibilities for the Route Level Crossing Managers and their teams will be covered in Dan Fisks proof on each specific level crossing.

2.5 Capacity and Network Development

- 2.5.1 Anglia route covers five main corridors through Greater London, Cambridgeshire, Essex, Norfolk and Suffolk. The route takes in the railway from London Liverpool Street station, to Norwich, Cambridge, Hertford, Southend, Stansted Airport and the Port of Felixstowe; services into Essex from London Fenchurch Street; and Overground services from Stratford to Richmond. London Liverpool Street is the capital's third busiest station, with 63.6 million passenger journeys passing through every year.
- 2.5.2 Outside London, Anglia has the fastest growing employment in England, and in effect our services connect millions of people to city, town and country in a fast-growing region, vital to the City of London, and a gateway to three major UK ports and airports in London and the South East. The investment we are making as part of our current Railway Upgrade Plan and the strategic business plan we are developing for 2019-2023 as part of the Periodic Review 2018 process seeks to improve passenger services and help deliver economic growth, reduce environmental impact and regeneration of communities.
- 2.5.3 Level crossings act as a constraint to any future enhancement scheme and lower the resilience of the railway line. If a future line speed or service improvement scheme is to be progressed then mitigation of the additional risks may require upgrades to level crossings. For example, automatic half barrier crossings may be replaced by full barrier crossings with object detection technology. These are a much safer type of crossing as they must be proved clear before a train can proceed across them, but there is a pronounced increase in road closure time, and also operational expense. For example, a typical automatic half barrier (AHB) level crossing may be closed for less than a minute per train, whereas the minimum closure for an object detection level crossing is 3 minutes.
- 2.5.4 Fewer level crossings on a stretch of line means fewer sites requiring risk assessments, and fewer crossings requiring potential upgrades or closures to accommodate enhancements to the railway service.
- 2.5.5 The future capacity and network development as outlined in the Anglia Route Study (NR24) is fully in support of the National Policy Statement for National Networks in dealing with services for rail users and also focusing on improving safety as outlined in Mark Brunnen's proof of evidence (NR28/1).

2.6 Approach to the selection of level crossings for closure

- 2.6.1 Historically those public level crossings with the highest risk ratings and FWI were selected for closure. This would typically involve

construction of bridges and/or significant levels of compensation to third parties.

- 2.6.2 On the commencement of Control Period 5 (CP5) and with a renewed focus on trying to achieve further risk reduction at level crossings, with closure of crossings a key component of that strategy, Anglia Route considered a new approach to managing level crossings.
- 2.6.3 Anglia is still targeting closure of level crossings with diversion routes over newly constructed bridges, but this comes at significant cost. The most recent ramped bridge being installed on Anglia to enable the pedestrian level crossing at Slipe Lane in Hertfordshire to closed is progressing with an anticipated final cost of £3.5–4m. These costs are set to continue to rise with inflation¹⁰ and with sites that will require extensive third party land to enable their construction. With this in mind there was a need to seek an alternative project that looked to reduce risk by targeting a large number of level crossings, which could be implemented at a lower cost.
- 2.6.4 In addition to the focus on the highest risk level crossings, which were becoming increasingly more complicated and difficult to eliminate the risk to users, Anglia Route also sought to obtain powers to rationalise the number of level crossings across the region through the closure / downgrade of multiple crossings across the region, which is documented in the Anglia Crossing Reduction CRD (NR18).
- 2.6.5 All crossings were assessed using in-house knowledge and put into 5 phases:
- Phase 1 – mainline level crossings that could be diverted and removed through the utilisation of existing nearby infrastructure and those that could be closed or downgraded due to extremely low usage;
 - Phase 2 – branch line level crossings that could be diverted and removed through the utilisation of existing nearby infrastructure and those that could be closed or downgraded due to extremely low usage
 - Phase 3 – non-vehicular level crossings closure of which requires new infrastructure for an alternative means of crossing the railway;
 - Phase 4 – vehicular level crossings requiring diversionary roads to existing infrastructure;
 - Phase 5 – vehicular level crossings requiring the construction of a vehicular bridge.

¹⁰ And which may, in the short term, worsen in connection with Brexit.

- 2.6.6 This Order progresses level crossings that fall within phases 1, 2 and 4. These phases are being progressed first due to the minimal infrastructure investment required.
- 2.6.7 Network Rail identified this opportunity to rationalise level crossings, improving the resilience of the network, improving user safety and delivering better value for money through identifying where existing infrastructure could be utilised in the first instance for alternative diversionary routes.
- 2.6.8 In these cases the installation of costly new infrastructure, including bridges and underpasses, cannot be justified, when existing infrastructure can be utilised to deliver the same benefits at a fraction of the construction cost.
- 2.6.9 Network Rail will continue to progress schemes that utilise new technology to improve safety at level crossings, but this approach does not remove the safety risk or constraint on future growth on the network. It also requires a cost outlay for installation and an ongoing maintenance burden.
- 2.6.10 In this Order, we have sought to improve accessibility for all users on our diversionary routes where feasible, and have proposed routes which are free of steps and stiles in the majority of cases. We have discharged our public sector equality duty at all levels of decision making, and have undertaken a Diversity Impact Assessment Scoping Report for all level crossings in the Order as well as preparing several site specific Diversity Impact Assessments where possible issues have been identified.
- 2.6.11 Network Rail has had regard to the National Planning Policy Framework (NPPF). I am not a planner, but I understand that NPPF embodies the principle that promotes a “presumption in favour of sustainable development”. In my view Network Rail’s proposals accord with that principle.
- 2.6.12 The Scheme will contribute to economic growth, particularly by removing constraints on the network, so as to provide a positive improvement to quality of life by contributing to improvements in the conditions in which people live, work, travel and take leisure (paragraph 9). Furthermore, it accords with the principles in paragraph 17, recognising the intrinsic character and beauty of the countryside and supporting rural communities (5th bullet), assists in actively managing patterns of growth to make the fullest possible use of public transport, walking and cycling (11th bullet) and assists in supporting local strategies to improve health, and deliver sufficient facilities to meet local needs (12th bullet).
- 2.6.13 Consistent with delivering sustainable development, the removal of constraints on the rail network to enable increased capacity and other operational improvements is also in line with building a strong, competitive economy, supporting sustainable economic growth a low carbon future (paragraphs 18 and 19), and supporting a prosperous rural economy (paragraph 28). The proposals fully support promoting sustainable transport to contribute to wider

sustainability and health issues and, in line with paragraph 35 of the NPPF will assist in accommodating efficient delivery of goods and supplies and access to high quality public transport facilities.

- 2.6.14 Given the limited nature of the scheme, in line with paragraph 75, the proposals protect and in certain cases enhance public rights of way and access; maintain the openness of the countryside and are consistent the principles relating to protection of the Green Belt, Flood Risk and conserving the natural environment.
- 2.6.15 The proposals in the Order to close level crossings are in line with Essex County Council's relevant plans, strategies and policies. For instance, removing constraints and encouraging future enhancements to the rail network will assist in addressing the issue identified at paragraph 27 of the Essex Plan, of the need to increase capacity on key rail links, and will help to meet both the general aims of economic growth and specifically the delivery of infrastructure improvements for the county as set out in Issue 2, paragraph 37, by helping to address capacity issues on Essex rail links. The removal of level crossing constraints would also contribute to meeting the strategic transport priority in the Essex Transport Strategy for additional capacity and provision of competitive journey times for train services in Essex.
- 2.6.16 The closure of level crossings proposed in the Order also broadly accords with Essex County Council's vision for "a transport system which supports sustainable economic growth and helps deliver the best quality of life for the residents of Essex" (Essex Transport Strategy, 2.2). It also aligns with the five outcomes of the Essex Local Transport Plan, especially assisting in providing connectivity for Essex communities and international gateways to support sustainable economic growth and regeneration (outcome 1) and contributing to improving safety on the transport network (outcome 3). The Order proposals are in line with the Local Transport Plan policy 4 – public transport, which aims to develop the public transport network to assist economic growth and improve access to essential services by "continuing to work in partnership with train operating companies and Network Rail to improve rail services" (fourth bullet). By maintaining and in some instances enhancing connectivity with the wider prowl network, the Order proposals are also consistent with policy 5 – Connectivity, Policy 12 in maintaining the public rights of way network in line with usages and linkages to vital services and Policy 15 by promoting walking and use of the PROW network.
- 2.6.17 The details of the proposed diversionary routes and how they have been selected to ensure the continuity of rights of way network are contained in proofs of evidence of Sue Tilbrook and Andrew Kenning.

2.7 GRIP process and consultation

- 2.7.1 Governance for Railway Investment Projects (GRIP) is Network Rail's project management and control process for delivering

projects on the operational railway. It is mandatory for all projects. The approach is based on industry-wide best practice.

- 2.7.2 At GRIP stage 1 in 2015, Network Rail, with the support of design consultants Mott MacDonald, assessed the suitability of each of the level crossings that were initially placed in phases 1, 2 and 4.
- 2.7.3 In April 2016 Network Rail and our selected design consultants continued the development of the level crossing proposals.
- 2.7.4 The proof of evidence of Andy Kenning will go into more detail on the development works.
- 2.7.5 Network Rail recognises the importance of engagement and carried out a series of public exhibitions to gather and review feedback that was considered in developing proposals.
- 2.7.6 Information obtained through GRIP 1 and 2 was used to prepare for the first round of public consultations in June 2016. A total of 12 exhibition venues were chosen with representation from Network Rail, its key contractors and technical leads. The venues chosen were accessible and generally located a maximum of 10 miles from any of the level crossings being consulted upon.
- 2.7.7 The relevant consultation event was advertised in advance at every level crossing, within local newspapers, on leaflets distributed to local residents, at local public facilities and on the Network Rail public website.
- 2.7.8 Each exhibition event provided summary boards and route maps, as well as detailed site plans displaying the various diversion routes for each site. Where multiple diversion routes were available for a particular level crossing, colour coding was used to show the options.
- 2.7.9 County, District, and Parish/Town Councils were invited to attend the events an hour before they opened to the public. The plans for each event went live on the website on the morning of each consultation event.
- 2.7.10 Questionnaire responses were invited from those that attended the events. The details on display at the event were also made available online, and questionnaires could be electronically submitted regardless of whether one attended an event.
- 2.7.11 Follow up workshops were subsequently held with the County and District Councils to review the responses received.
- 2.7.12 The second round of public consultation commenced in September 2016 and included the previous 12 venues with one extra venue in Thurrock to improve the distance and spread of level crossings from their respective venue.

- 2.7.13 A third round of information was released to the public on those crossings that had seen significant changes from what had been presented at the round 2 consultation events.
- 2.7.14 Consultation with private landowners affected directly or indirectly by the plans continued through to deposition.
- 2.7.15 The Statement of Consultation (NR05) contains further details on the consultation undertaken.
- 2.7.16 8 crossings were de-scoped from the project prior to deposition of the Essex and Others Level Crossing Reduction Order due to consultation feedback or the cost associated with the individual closures.¹¹
- 2.7.17 2 further crossings have been de-scoped from the Order post deposition.¹²

2.8 Address “in principle” objections

- 2.8.1 The Ramblers (OBJ/148), the Essex Local Access Forum, ELAF (OBJ/142) and David Atkins (OBJ/176) make a number of general objections to the Order. Network Rail’s case for closure of the crossings is set out in the Statement of Case (NR26) that highlights Network Rail’s responsibilities for running a safe and efficient railway network under its license and in accordance with the policies of the Office of Rail and Road. Furthermore, the need for closure is not just centred on safety, but on a number of benefits, including reliability, cost savings and resilience.
- 2.8.2 In response to concerns raised on the impact to users, Network Rail fully appreciates the benefits of Public Rights of Way (PRoW) for health and wellbeing. Network Rail has sought to maintain the local network, which is demonstrated by the volume of new paths and ways being proposed for creation in the Order. The purpose of the project is to identify level crossings that could be closed without the provision of costly new infrastructure across the railway, through the cost effective utilisation of existing alternative crossing points. Where diversions are proposed, Network Rail considers that they are suitable and convenient.
- 2.8.3 Network Rail has undertaken consultation that is in line with the requirements of the Transport and Works Rules 2006. Specific details of the consultation undertaken are detailed within the Consultation Report (NR5).
- 2.8.4 Under the Order, Network Rail will not be closing any level crossings until the alternative routes are open and available for use. Any new diversions will need to be created to the reasonable satisfaction of the Highways Authority. All new PRoWs will be maintained by and at the expense of Network Rail for a period of 12

¹¹ E44 Frating Abbey, E53 Josselyns, E55 Lamarsh Kings Farm, E03 Sadlers, E40 Creaksea Place 1, E27 Puddle Dock, H07 Twyford Road and E24 Church 1.

¹² E42 Sand Pit and H08 Johnsons.

months from their completion and, thereafter, by and at the expense of the highway authority.

- 2.8.5 Essex County Council (OBJ/195) objects to the closure of specific crossings which is covered in the Statement of Case and will be dealt with in the site specific proofs of evidence. Essex County Council also makes a general objection to all proposals included in the Order until detailed designs and commuted sums are agreed with the Council. Network Rail will continue to work with the Council and seeks to agree principles on commuted sums to cover the increased maintenance burden on the Highways Authority. Network Rail will be engaging with the Council on the schedule of works for each level crossing diversion. The Council is further protected by the provision in the Order that no new PRow can come into effect until it has been completed to the reasonable satisfaction of the Highways Authority.
- 2.8.6 The National Farmers' Union (OBJ/34 and OBJ/84) make a general objection in terms of potential impacts on access to land, implications for farming businesses and adequacy of consultation. Network Rail's consultation is described in the Statement of Case. It complied with the legislative requirements of the 2006 Rules and took account of feedback from a variety of interested parties. Where Network Rail is proposing an alternative route on farmland, it is considered that the route is required, suitable and convenient. Network Rail will continue to engage with affected landowners to discuss how their concerns can be mitigated.
- 2.8.7 The Environment Agency (OBJ/172) was concerned about the content and scope of the protective provisions in the draft Order for the protection of the Environment Agency. Network Rail is in discussions with the Environment Agency regarding the form of the proposed protective provisions.
- 2.8.8 The Royal Mail Group (OBJ/156) make a general objection on the grounds that their operational and statutory duties to collect and deliver mail may be adversely affected, but add that they are unable at this stage to fully determine the potential impact. The street works in the Order are very limited in extent and expected to be of short duration to cause little disruption to vehicular traffic as practicable, and Network Rail expects that there will only be limited effects on Royal Mail and its ability to collect or deliver mail.

3. Statement of truth

3.1.1 Witness declaration

3.1.2 I hereby declare as follows:

- (i) 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.

- (ii) I believe the facts that I have stated in this proof of evidence are true and that the opinions expressed are correct.
- (iii) I understand my duty to the Inquiry to help it with matters within my expertise and I have complied with that duty.

Signed:

Eliane Algaard

Director Route Safety and Asset Management

September 2017

Addendum

Proof of Evidence of Eliane Algaard

NR28/1

The following paragraph should be inserted and read after paragraph 2.4.9 and before paragraph 2.4.10 of the above Proof of Evidence

Cost benefit Analysis (CBA)

1. In order to carry out Optioneering, each safety enhancement option is modelled in ALCRM, which produces a safety benefit measured as a reduction to the Fatalities and Weighted Injuries (FWI) value. The level crossing FWI and whole-life cost of each option is entered into a cost benefit analysis (CBA) tool, which enables a comparison of the safety enhancement options available.
2. A CBA value of 0.00 to 0.49 is considered to be weak, 0.05 to 0.99 is considered reasonable and a CBA value over 1 is considered positive. It should be noted that the CBA calculation is not the only factor considered by the business when making safety investment decisions. The narrative risk assessment, prepared by Network Rail's Level Crossing Managers, is also used to support balanced decision making.
3. It is also important to note that CBA may inform but not discharge responsibilities for legal compliance.