

**PROPOSED CHILTERN RAILWAYS (BICESTER TO OXFORD IMPROVEMENTS)
ORDER**

CHILTERN RAILWAYS' REBUTTAL PROOF OF EVIDENCE

**IN RELATION TO
THE OBJECTION AND EVIDENCE OF
LADY JACKIE GRAY**

1 Introduction

- 1.1 This rebuttal proof of evidence has been prepared on behalf of the Chiltern Railway Company Limited (Chiltern Railways) to respond to particular aspects of the objection and evidence of Lady Jackie Gray.
- 1.2 In particular, Lady Jackie Gray has raised new points in her proof of evidence provided for the Inquiry that Chiltern Railways had not previously addressed in the proofs of evidence prepared by their witnesses, which were submitted to the Inspector and to certain objectors on 1 October 2010.
- 1.3 It is not intended that this rebuttal proof should repeat material that the witnesses for Chiltern Railways have already covered in their evidence. Cross-references to relevant paragraphs of those witnesses' proofs of evidence are given below, where appropriate.
- 1.4 It is intended that this rebuttal proof should be a composite response by Chiltern Railways to those new points raised in the evidence of Lady Jackie Gray and referred to above. In this respect, for cross-examination purposes, the name of the Chiltern Railways witness who is responsible for each aspect of this rebuttal proof is given at the beginning of each section below.

2 Defined Terms

- 2.1 The following defined terms are referred to throughout this rebuttal proof:

“the Correspondence” means correspondence exchanged between Chiltern Railways and Lady Jackie Gray dated 12 February 2010, 23 June 2010, 29 July 2010, 18 October 2010 and are set out in Appendix A to

this rebuttal proof;

“the Objector” means Lady Jackie Gray;

“the Objector’s evidence” means the proof of evidence of Lady Jackie Gray;

“the Order application” means the application for the proposed Order submitted on 6 January 2010 and the Proposed Modification dated 9 September 2010; and

“the proposed Order” means the proposed Chiltern Railways (Bicester to Oxford Improvements) Order.

3 Chiltern Railways’ Rebuttal of the Objector’s Evidence

Context

- 3.1 The Objector lives at 59 Lakeside, North Oxford, some 15 metres from the railway.

Noise Impacts, Michael Fraser

- 3.2 The Objector states that the level of service of relatively infrequent two carriage half-empty passenger trains are tolerable because they travel at slow speeds. The Objector states that the noise measurement for the North Oxford Golf Course is not representative for Lakeside as the A34 provides an additional noise source. The Objector states that additional noise measurements were undertaken at Lakeside but have not been disclosed. The Objector states that background noise levels in Lakeside and surroundings already exceed WHO recommendations. The Objector is concerned that more frequent and faster trains will therefore not only increase noise to more unacceptable and intolerable levels, but also breach the recommended guidelines further.
- 3.3 The Objector notes that noise measurements that were made at her property, but these measurements have not been made available to her.
- 3.4 The measurements that ERM undertook were vibration measurements not noise measurements. These vibration measurements have been undertaken at 55 Lakeside and the results are attached as Appendix B to this rebuttal proof.
- 3.5 The measured baseline noise levels are a true representation of the background noise in the area. If noise levels were in fact higher than measured, the effect of the Order Scheme would be reduced compared to that which has been predicted in the ES [CD/1.16]. Chiltern Railways is not, of course, responsible for the more general concerns about road noise raised by the Objector.
- 3.6 The standard noise prediction methodology, Calculation of Railway Noise (CRN) [CD/5.12], has been used for Chiltern Railways’ predictions, which uses the LAeq parameter. In addition, Chiltern Railways has also considered the maximum noise levels from individual trains, and has reported predicted maximum levels in the ES [CD/1.16]. Noise insulation trigger values are set out in the Noise and Vibration

Mitigation Policy [CD/1.29]. The levels that are shown in Table 6.12 and Table 6.13 of the ES are without the benefit of any noise barrier. The increase in noise during the time that an individual train passes by the property is estimated to be 7 dB, without a barrier. The proposed noise barrier will be effective in reducing noise by approximately 15 dB for individual trains at Lakeside. Therefore, with the barrier in place the noise from individual trains is predicted to decrease by 8dB from the current noise levels.

- 3.7 The Environmental Statement (ES) [CD/1.16] describes noise levels both during Phase 1 of the Scheme when Chiltern Railways will operate a passenger service of up to two trains per hour in each direction, and during Phase 2 which will only occur if and when the East West Rail proposal is built.
- 3.8 Chiltern Railways is committed to using the Best Practicable Means to design the railway so as to avoid significant noise and vibration impacts. The Objectors were sent on 18 October 2010 a copy of the *Chiltern Railways (Bicester to Oxford Improvements) TWA Order Noise and Vibration Mitigation Policy (October 2010)* [CD/1.29], which sets out in practical detail Chiltern Railways' commitment to control noise and vibration impacts.
- 3.9 Since the publication of the Environmental Statement (ES) further refined noise modelling and monitoring have been carried out. The result from the refined noise modelling work provides more specific noise predictions for groups of properties. A calculation of predicted noise levels was undertaken for 61 Lakeside, the neighbouring property to the Objector. The predicted noise levels are reproduced in *Table 1* of this rebuttal as they are applicable to the Objector's property.

Table 1: Predicted Noise Impacts of the Scheme (Based on the Refined Noise Modelling and Monitoring) at 61 Lakeside

	Noise Impact over Period Shown (dB)	
	Day	Night
Existing noise level (L _{Aeq, Period})	53	49
Future noise impact without mitigation	8	11
Mitigation proposed	2m barrier	
Future noise impact with this mitigation	0	0
Change in noise impact as a result of mitigating the scheme (item 4 compared with 2).	8	11

- 3.10 At the Objectors' property no increase over current ambient noise levels has been predicted after implementation of a mitigation scheme based on the use of noise barriers. Since this impact is not significant, further mitigation is not required. The smallest change in noise level that is noticeable under normal listening conditions (ie not in a laboratory) is 3 dB. The noise impact at the Objectors' property has been classed as 'None' because it is not expected to have a noticeable effect even at the first floor level outside the Objectors' property. The barrier will be more effective at ground floor level.

Noise Mitigation, Michael Fraser

- 3.11 The Objector states that the noise mitigation proposals are totally inadequate and do not address the problem. The Objector states that the proposal for a two metre high 'fence-type barrier' and proposals for the double glazing of properties in Lakeside (which the Objector states they already have) will not mitigate the noise impacts.
- 3.12 Chiltern Railways will undertake mitigation of the railway in accordance with the Noise Insulation (Railways and Other Guided Systems) Regulations 1996 [CD/5.13]. These regulations set out the UK Government policy for when noise mitigation should be provided for railways. In setting the standards, the Government has taken account of the various guidance documents that are available in the UK and internationally. Chiltern Railways has acknowledged its responsibility under these regulations, and has chosen to offer further non-statutory noise mitigation to reduce the effects of the Order Scheme. These additional mitigation measures are set out in the Noise and Vibration Mitigation Policy [CD/1.29]. The trigger levels for mitigation measures can be established by measurements and prediction of standard numerical noise parameters, and take account of existing and future conditions in the area. The intention is to reduce the noise using Best Practicable Means and to offer mitigation to residents on a fair basis.
- 3.13 As stated in paragraph 3.10 of this rebuttal, the only mitigation that is justified for this property is a noise barrier. The property would not qualify for or need noise insulation (eg double glazing).

Proposal for a Tunnel Solution, Stephen Barker

- 3.14 The Objector states that the most effective mitigation would be a tunnel running from south of Wolvercote School northwards to the North Oxford Golf Club plus the possible lowering of the track, which is said by Chiltern Railways not to be possible.
- 3.15 The Objector states that a tunnel would be beneficial in terms of air quality and noise impacts.
- 3.16 Any such structure would be sizeable. The internal dimensions of the structure would need to provide adequate clearances for future electrification of the route and for safe evacuation trains in the event of an emergency. The cost of constructing such a structure would be considerable and the structure would substantially increase the ongoing maintenance costs as a result not only of the cost of inspecting and maintaining the tunnel structure itself but also because of the additional costs of maintaining the rest of the rail infrastructure within the confined space within the tunnel. Given the necessary size of the structure, it would have a significant visual

impact on adjacent properties, especially at the Lakeside end where the railway emerges from cutting on to a low embankment.

Vibration, Michael Fraser

- 3.17 The Objector states that the soil in the local area is heavy clay which adds to the likelihood of structural damage by the Order Scheme. She states that the houses in Lakeside were built in 1968 when it was expected that the 'little used' railway line would close and as a result, most of the bedrooms face towards the railway line. The Objector states that shortly after the houses were built the line became used for the transportation of heavy materials on lengthy trains which caused vibration inside the houses on both sides of the road, with the result that at least two of them were adversely affected by subsidence and required under-pinning. The Objector states that the predicted speeds and frequency of the currently proposed scheme can only add to the risk of structural damage.
- 3.18 Although buildings may display structural defects such as cracking, this may be due to a number of factors, and it has not been possible to locate any evidence that any damage that may have occurred at Lakeside was caused by train vibration. The steps that have been taken to identify records of claims of historical damage are discussed in the Proof of Evidence of Michael Fraser [CRCL/P/9/A] in paragraph 5.65.
- 3.19 In terms of vibration page 6-42 of the ES highlighted that levels of ground vibration are not expected to exceed the BS 6472 [CD/5.26] assessment criterion for 'a low probability of adverse comment' from beyond approximately 10 metres from the tracks. The Objectors' property is beyond this distance from the tracks and vibration is not expected to result in significant disturbance based on these stringent thresholds. Measurements of existing vibration carried out since the ES was written (set out in Appendix B) have confirmed that no structural or cosmetic damage to property will occur as a result of train vibration whether within 10 metres of the track or further away. In fact other events which occur in the normal use of a house such as footfalls and slamming doors, result in higher levels of vibration in houses than was surveyed at Lakeside from the trains that currently pass. The train vibration levels were less than 1 mm/s, and other events resulted in vibration levels of 2.5 mm/s. Both the train vibration levels and the other events are typical of what might be expected and are well below the damage threshold of 15 mm/s for cosmetic damage to buildings set out in BS5228 [CD/5.28]. These readings also confirm the view that ground conditions are not likely to result in unusual vibration propagation conditions with the new track in place and in use.

Speed, Frequency and Types of Trains, Stephen Barker and Allan Dare

- 3.20 The Objector states that Chiltern Railways has issued confusing versions of the predicted speeds, frequency, type of train and possible uses of trains associated with the Order Scheme. The Objector states that they now believe that high-speed trains will use the track every 12 minutes at speeds of 70 to 100 mph.

- 3.21 The Objector states that Chiltern Railways maintains that they will have no control over freight use of the line. The Objector states that freight traffic is likely to increase to 24 hour traffic and will be an enormous additional intrusion in the neighbourhood.
- 3.22 Train speeds are discussed in Stephen Barker's evidence [CRCL/P/6/A]. The predicted speed of trains varies with a number of factors, the most obvious of which is location. Passing through Wolvercote, passenger trains heading towards Bicester will be travelling at up to 75mph. In the opposite direction, passenger trains are unlikely to exceed 70mph through Wolvercote because of the stop at Water Eaton Parkway. The line speed limit for passenger trains between Oxford and Water Eaton Parkway will thus be 75mph. The situation with freight trains is more difficult to predict accurately because train lengths and weights are more variable and these factors affect speeds. However, unlike the proposed passenger services, all freight trains will be routed to or from the existing Didcot – Banbury line at Oxford North Junction. The junction is subject to a 25mph speed restriction, and the line speed limit on the parallel single line between Oxford North Junction and Woodstock Road Junction will be 30mph. This in turn will directly impact on the speed of freight trains immediately east of Woodstock Road, and Junction, and it is therefore likely that most freight trains in the Wolvercote area will be travelling little faster than the speeds at which freight trains presently operate over this section of line.
- 3.23 As noted in Allan Dare's evidence [CRCL/P/2/A] there will be no increase in the number of freight trains as a result of Phases 1 and 2A. Phase 2B will only proceed if the East-West Rail (EWR) project goes ahead. This may result in additional freight trains, although as noted in Patrick O'Sullivan's evidence [CRCL/P/4/A], the EWR business case is not dependent on freight traffic. A potential of one freight train path each hour each way has been assumed for planning purposes; this was determined following discussions between the EWR Consortium, the Department for Transport and Network Rail. Freight operations are governed by both long-term and short-term market demand, and by the availability of line capacity on connecting routes and at junctions. Experience on the main line through Oxford shows that typically only 50% of allocated freight train paths are used on any given day, and this figure was used for the Environmental Impact Assessment.
- 3.24 There is, by law, "open access" to the national rail network. In accordance with the 1993 Railways Act and successor legislation, any operator can run trains over any line, subject to having the appropriate licences, to paying Network Rail the requisite track access charges, and to line capacity being available. Chiltern Railways cannot therefore prevent the operation of freight trains for which line capacity is available.
- 3.25 It may be noted that, as with other parts of the rail network, there are no legal or planning restrictions on the number, type or time at which trains may operate over the existing line, and that there is already line capacity to run many more freight trains (including at night) than at present, should the need arise.

Air Quality, Ian Gilder

- 3.26 The Objector states that it became apparent at the Oxford Core Strategy EIP that air pollution levels at the Wolvercote and Cutteslowe roundabouts already exceeds WHO and EU guidelines. The Objector states that proposals to add to levels which

are already harmful and in breach of the law cannot be justified on any account. The Objector states that emissions from diesel are seriously harmful to health. As a direct consequence of the new station at Water Eaton Parkway, the Objector states that that peak time congestion will have a further detrimental impact on the air quality in the area.

- 3.27 Although the City Council does not take measurements of NO₂ or PM₁₀ in the Wolvercote or Cutteslowe areas, it does have an extensive monitoring programme across the city that provides a clear picture of air quality in locations that are 'urban background' or 'roadside' in character. Concentrations of NO₂ and PM₁₀ vary significantly according to the proximity of major roads. The confidence in the pollutant concentrations used as estimates of the 'background' or 'existing' concentration is very high.
- 3.28 The assessment carried out for the EIA has made predictions of the additional concentrations of pollutants for all relevant averaging periods. In Table 13.11 of the ES, the results can be seen expressed for twenty one locations as both an annual average and as a variety of short term peak concentrations reflecting the air quality standard relevant to each pollutant. The incremental concentrations (ie those arising from the trains using the railway line) are explicitly and clearly set out in the ES and obtained through the use of a dispersion model (Receptors R8 and R9 refer to Wolvercote Primary School and Lakeside). The existing concentrations are estimated from measurements made by Oxford City Council at locations across the city and by Defra at rural locations in Oxfordshire.
- 3.29 The impacts are evaluated against the air quality standards established to protect the more vulnerable members of the population, including children. Air quality standards used in the European Union are derived from World Health Organisation guidelines that reflect the opinions of the leading academic community active in the science of air pollution and health and these guidelines are based on the lowest concentrations known to affect the most vulnerable members of the population.
- 3.30 It is clear from the modelling results that the likely additional concentrations of particulate matter at the locations of interest attributable to the Order Scheme are very small in relation to the appropriate air quality standard; less than 1% in all cases. Particulate matter is recognised as being the most significant pollutant in respect of air pollution and health and is often cited in relation to emissions from diesel engines. The incremental concentrations of NO_x are larger, as a percentage of the relevant air quality standard, but the overall annual average concentration will be far below the concentration of 40 µg m⁻³ used as the air quality limit value.
- 3.31 Government at local, national and European level has policies to measure and to improve air quality. Many of these policies are aimed at reducing emissions from road traffic, which is largely responsible for the high concentrations of PM₁₀, PM_{2.5} and NO₂ observed in towns and cities. In this specific case, the key point is that the increased exposure to air pollution attributable to the Scheme for people living or working close to the railway is actually very small, especially with regard to PM₁₀ or PM_{2.5}, the pollutants for which the scientific evidence of associated health effects is most compelling.

4 Conclusion

- 4.1 This rebuttal proof responds comprehensively to the evidence presented by the Objector.
- 4.2 The concerns raised by the Objector about noise and vibration mitigation have been addressed. Chiltern Railways has adopted an effective Noise and Vibration Mitigation Policy for delivery of noise mitigation for Phases 1 and 2 [CD/1.29] to be implemented through planning condition 16 [CD/1.21/1] and will comply with the Code of Construction Practice that is implemented through planning condition 15 [CD/1.12/1]. At this property, the likely mitigation will be a noise barrier, which will be effective.
- 4.3 The likely speeds and frequency of passenger and freight trains on the railway are set out. These assumptions are realistic and reasonable and have been used as the basis for all of the assessments reported in the ES and have not been materially changed since the ES was published.
- 4.4 Although the objector raises a number of concerns regarding the air quality impact of the proposed Order Scheme on residents, it is considered that the assessments undertaken to date are in line with existing policy and industry best practice and are therefore sufficiently robust to assess the impacts of the Scheme on air quality. The Environmental Statement [CD/1.16] concludes that there are not likely to be significant impacts on air quality either in the short or long term.

Appendix A

CRCL/R/OBJ149/B

Relevant Correspondence
between Chiltern Railways
and the Objector

DEPARTMENT FOR TRANSPORT 2010 Transport and Works Act 1992
 Transport and Works (Applications and Objections Procedure) (England and Wales) Rules 2006
 THE CHILTERN RAILWAYS (BICESTER TO OXFORD IMPROVEMENTS) ORDER

OBJ/149	OBJECTIONS	RECEIVED IN
TO: The Secretary of State for Transport, Department for Transport c/o TWA Orders Unit, Zone 1/31, 76 Marsham Street, London SW1P 4DR Email: transportandworksact@dft.gsi.gov.uk		16 FEB 2010
THIS MUST BE RETURNED BY 17 TH FEBRUARY 2010 TO THE ABOVE ADDRESS		TWA ORDERS UNIT

I object to the proposed scheme for the following reasons: (please place tick or cross in box if you agree)

<input checked="" type="checkbox"/>	Individual concerns have not been properly addressed
<input checked="" type="checkbox"/>	Since the start of the consultation process, there has been an incremental and significant increase in numbers of trains; new passenger timetable (May 2009), trains on Sundays, more freight trains
<input checked="" type="checkbox"/>	The new track will bring trains closer to my property which will increase noise and vibration
<input checked="" type="checkbox"/>	Faster trains will increase noise and vibration
<input checked="" type="checkbox"/>	Freight trains will be longer and carry larger loads which will increase noise and vibration
<input checked="" type="checkbox"/>	Trains can be heard above the background noise in my house, such as the television, boiler, fridge, etc., even when the windows are closed. The noise and vibration from passing trains is overwhelming in the garden and in my house if the windows are open. With many more trains, living in adjacent properties to the railway line will become intolerable, our neighbourhood will be destroyed by both the exodus of those people that can afford to move and by a fall in quality of the area. This will inevitably impact on the value of my house making moving to a similarly pleasant location (as now) within Oxford much more difficult
<input checked="" type="checkbox"/>	As transport by rail increases, the numbers of passenger and freight trains will continue to increase incrementally once the scheme is complete leading to further increases in noise and vibration
<input checked="" type="checkbox"/>	Pollution levels in the immediate vicinity already exceed EU statutory guidelines, and these will be further exacerbated
Any other comments (please use an additional sheet, if necessary)	

I urge Chiltern Railways and/or Network Rail to: (please place tick or cross in box if you agree)

<input checked="" type="checkbox"/>	Ensure that everything possible is done to reduce the impact of the increased train service, such as <ul style="list-style-type: none"> • installation of fully-effective noise and vibration barriers next to the track as a matter of urgency concurrent with the work, • install track infrastructure designed to reduce noise and vibration including welded track, rail dampers, etc., • use only well maintained rolling stock fitted with noise and vibration mitigating devices including wheel dampers, etc., • use trains that retain sanitary waste for off-track disposal, and • review all noise and vibration mitigating measures every six months and repair or upgrade as necessary
<input checked="" type="checkbox"/>	Base mitigation on the numbers of passenger and (longer, heavier) freight trains projected to operate after completion of EastWest Rail and then no subsequent incremental increases in train traffic allowed without full consultation with residents
<input checked="" type="checkbox"/>	Provide funding to equip my house with the highest quality glazing and to undertake any repairs to my house caused by vibration
<input checked="" type="checkbox"/>	Maintain and enforce the present speed restriction (40 mph) on all trains along the sections of the track adjoining residential areas
<input checked="" type="checkbox"/>	No trains during the night from 00:00 until 05:00
<input checked="" type="checkbox"/>	Electrify the line as soon as practically possible
Any other comments (please use an additional sheet, if necessary)	

FROM: Signed Muir & Jackie Gray
 Print Name MR MUIR & JACKIE GRAY
 Address 59 Lakewood
Oxford OX2 8JH

Date 12 February 2010

Additional Comment from Sir Muir and Lady Gray, 59 Lakeside, Oxford OX2 8JQ

The very highest priority MUST be given to mitigating measures of the proposals to those of us living in Lakeside whose back gardens face the railway line. The LINE IS RAISED above the ground level of our gardens BY SEVERAL METRES. It is therefore incumbent on Chiltern Rail to install screening which will eliminate

- the diesel pollution,
- the noise, and
- the visual intrusion of these trains.

It is of course true that we all knew of the existence of the railway line when we purchased our houses, BUT the present use of a barely occupied 2 carriage train at 40 mph several times a day does not in any way equate to a high-speed service at 70-100mph every 15 minutes, PLUS freight trains night and day. This will in effect mean that our gardens are unusable unless the measures below are addressed.

Therefore:

(1) A lowering of the track MUST be considered (at a recent meeting into the Department of Transport, Lord Adonis asked that this suggestion be looked into).

(2) Full visual and noise reduction measures MUST be looked into such as those in place in Switzerland and Germany, where there are half exposed (i.e. one-sided) tunnels covered in grass/natural vegetation which blend in to be virtually indistinguishable, in a short time, from the natural landscape.

(3) Most residents would be likely to forgo pursuing financial compensation were these two measures to be properly addressed.

M. & J. Gray

23 June 2010

Muir and Jackie Gray
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Ref: 0110147 OBJ/149

Dear Muir and Jackie Gray

Chiltern Railways (Bicester to Oxford Improvements) Order Application

Thank you for your letter dated 12th February 2010 submitted to the Department for Transport, which objects to the Order application. You have responded using the standard tick sheet and we are responding accordingly.

The following paragraphs respond to the form that you completed and sent to the Department for Transport regarding The Chiltern Railways (Bicester to Oxford Improvements) Order, described below as the 'Scheme'.

The responses set out below are standard answers to the statements in the form that you have ticked, and that are reproduced in the bold italic typeface heading.

Individual concerns have not been properly addressed

Chiltern Railways has been committed to engaging local residents throughout the process of preparing the application for the Scheme. An extensive public consultation exercise has taken place including exhibitions, newsletters, infomails and a website. A hotline has been made available so that residents can contact a dedicated consultation team. The consultation team had detailed discussions on specific points with many residents who live close to the Scheme, before the application was submitted.

Since submission of the application to the Department for Transport in January 2010, there has been continued consultation with local residents. This included a meeting held for north Oxford residents on 25th March 2010. Chiltern Railways has and will continue to address specific concerns that residents raise.

Since the start of the consultation process, there has been an incremental and significant increase in numbers of trains, new passenger timetable (May 2009), trains on Sundays, more freight trains

Passenger timetables are reviewed twice yearly, so as to match train services with emerging market needs. The enhanced service introduced in May 2009, including Sunday trains, resulted from an agreement between First Great Western and Oxfordshire County Council. This is part of the County Council's wider policy of improving public transport services into Oxford. Chiltern Railways is not currently the operators of the Bicester to Oxford line, and was not involved in that agreement.

The number of freight trains on any railway line depends on contracts between the freight train companies and their customers, and on the demand for the goods being moved. There have been no new freight contracts affecting the Bicester to Oxford line agreed recently, but, there will be day-to-day variation in the number of trains, due, for example, to the changing demand for construction aggregates or military supplies. Chiltern Railways does not operate freight trains and will not be involved in the operation of freight trains on this line in future.

The current passenger and freight timetable including the most recent changes has been taken into account when describing the environmental impacts of the Scheme.

The new track will bring trains closer to my property which will increase noise and vibration

As part of the Scheme, the line from Oxford North Junction towards Bicester will be re-laid as double track. Although this effectively replaces a track which was taken up some years ago, the location of the nearest track will change compared to its current location. This is referred to as the "new" line in the paragraphs below, which describes the changes at the closest properties.

At the southern end of Ulfgar Road, the existing track is on east side of the trackbed, so the "new" line will be on the west side (i.e. the Ulfgar Road side). In this location the "new" track will be approximately 4 m nearer the boundary of the railway corridor, but this is only for a short distance affecting a few houses.

From Blenheim Drive/St Peters Road through Wolvercot tunnel to Carey Close, the existing single track is in the centre of the trackbed, so that when

this is replaced with double track, the "new" line will be no more than 2 m nearer the boundary of the railway corridor on either side.

From Linkside northwards, past Lakeside, the existing track is on the east side of the trackbed, i.e. the side nearest the houses. The "new" line will thus be on the west side, away from the houses, so the proximity of the nearest track to the Lakeside houses will not be changed.

Changes at other locations along the route are discussed in Volume 1 of the Environmental Statement (ES) where the Scheme is described.

Although the track is being re-laid closer to existing residential property in some cases, the noise from individual trains passing will only be slightly greater. The repositioning of the tracks is a smaller component of the change in train noise at most locations than the increase in the frequency of passenger and freight trains and changes in speed. All of the factors including the type of train that will be used have been taken into account in the noise assessment and mitigation strategy.

The noise assessments reported in the Environmental Statement have been carried out at the three locations, called receptors, which are closest to the tracks and are representative of those properties that are likely to be most affected by noise increases. The receptors used in North Oxford were numbers 14 (Lakeside), 15 (Wolvercote Primary School) and 16 (St Peters Road).

The predicted noise levels at these receptors, with and without the Scheme, are presented in the ES (Volume 2, Table 6.13 on page 6-35). These houses are already exposed to railway and road traffic noise, and this has been taken into account in the ES.

Since noise from the Scheme will affect people both in terms of how noticeable the noise changes are and how loud the noise is, noise has been assessed taking both of these factors into account. The factor that best describes the effect of the noise from the trains in the area being considered is used to determine the noise impact. In urban areas the change from existing ambient noise level tends to be the determinant of the effects of noise. In more rural areas, with very low ambient noise levels, how loud the noise is in isolation tends to be the determinant of the effect of noise on people. In these areas, the noise from the trains is compared to an absolute threshold level and the impact is assessed based on the amount by which the train noise is likely to exceed that level. All of these assessments are of noise levels measured outside rather than inside houses.

The ES describes noise levels both during Phase 1 of the Scheme when Chiltern Railways will operate a passenger service of up to 2 trains per hour

in each direction, and during Phase 2 which will only occur if and when the East West Rail proposal is built. The noise levels shown below relate to the worst case ie after Phase 2 of the Scheme.

The results of the noise predictions for receptors in North Oxford, reported in the ES, are reproduced below. For residential areas in this mainly urban area, the assessment has been based on the change in noise levels between the existing, or ambient, noise level and those noise levels that will occur after the Scheme is built.

For residential properties the largest noise impact, before mitigation such as noise barriers is provided, is expected to be at night. At receptor 14 (Lakeside), and receptor 16 (St Peters Road) an increase of 12 dB over current ambient noise levels has been predicted as the impact before mitigation. Mitigation has been considered in the ES, and a mitigation scheme based on the use of noise barriers is presented. The final choice of mitigation measures will be determined during detailed design, but it will ensure that noise levels are no higher than the noise levels with noise mitigation in place, as is set out in the ES.

The predictions suggest that barriers are likely to be required over a total length of over 1.5 km in this area to protect residential properties. The barrier has been designed to be 2 m high relative to the railway tracks. The resulting noise impacts are described in Volume 2, Table 6.2.3, on page 6-57 of the ES, and is summarised below for the receptors in this area:

Receptor 14 Lakeside

With the proposed barrier in place, a 2 dB residual noise increase is predicted, compared to 12 dB before mitigation at first floor level of the nearest houses in Lakeside where the barrier screening would be least effective. The residual noise change is expected to be less than 2 dB at ground floor level.

To explain what this means, the smallest change in noise level that is noticeable under normal listening conditions (ie not in a laboratory) is 3 dB. Therefore, the noise change at this property has been classed as a "slight" noise impact in the ES because it is not expected to have a noticeable effect even at first floor level outside these properties. The barrier will be more effective at ground floor level and no noticeable noise increase will occur.

Noise barriers and other mitigation will be installed during construction of the Scheme, wherever it is needed to mitigate the effects of Phase 1. Additional noise mitigation measures may be needed if Phase 2 of the Scheme, for the East West Rail project, is built. The effects predicted above are for Phase 2, and the effects in Phase 1 will be less than these predictions.

The levels of vibration that will arise from the new train service and track have been carefully assessed. These will be way below the levels which could cause any sort of damage to property. Even if, at present, you can feel or hear vibration or groundborne noise from trains, new track and ballast will be provided which will reduce vibration levels, even though it is accepted that there will be a greater frequency of trains passing.

Where it is predicted that vibration levels will increase, there are engineering methods, which may have to be used to “damp” vibration from the track. These will be used to ensure that, wherever practicable, everywhere along the railway, vibration felt inside residential properties is kept to below a very strict limit, which is defined in British Standard 6472 as a “low probability of adverse comment”. In one or two locations, if full vibration mitigation is not practicable, the vibration levels will, at worst, be limited to “adverse comments possible” according to BS 6472, which is still a strict limit. Even at this level, no structural or cosmetic damage to property will occur.

Faster trains will increase noise and vibration

Although most of the Scheme consists of an existing operational railway, the Scheme will result in an increase in train speeds along the route resulting in increased noise as trains pass. While higher train speeds will increase the noise from individual trains, the noise mitigation, including over 1.5 km of noise barriers in North Oxford, will offset noise increases which result from increased train speeds.

Vibration from trains will be kept below a very strict limit. In some places, engineering measures will be needed, but there will be no risk of either cosmetic or structural damage to buildings.

Freight trains will be longer and carry larger loads which will increase noise and vibration

The maximum axleload for freight trains will, in future, be 25.5 tonnes, the same as it is now. This is normally only fully used by trains carrying bulk materials, such as gravel or crushed rock. Most other freight trains are much lighter; the typical axleload on a container train is around 17 to 18 tonnes. This is partly because consumer goods weigh much less and also because containers are transported by both road and rail, and their weight is constrained by the maximum overall weight allowed for lorries.

The Department for Transport is funding work to enable trains to carry the international standard 9'6" high containers through Wolvercot tunnel without

the need for special low-floor wagons (as against 9'0" high containers at present). This does not mean there will be any significant increase in axleloads, since, as noted above this is constrained by the maximum weight of containers that can be carried on lorries.

The length of freight trains varies according to market needs, e.g. the length of the trains carrying crushed rock is a result of the demand for building materials in the Oxford area, so upgrading the line will not in itself result in increased train lengths. Train lengths could increase for these reasons if the Scheme was not implemented. Trains of up to 650 metres length already use the line on occasions.

In Phase 1, it is very unlikely there will be any change in the number of freight trains on the line, as there will be no new freight terminals. However, if and when the East-West Rail (EWR) project is built, there may be more freight trains. These are most likely to be carrying shipping containers from Southampton. We have therefore included more freight trains in the evaluations for our Environmental Statement, so that this reflects the "worst case".

Freight trains are much more environmentally sustainable than road haulage as they use far less fuel per tonne of freight moved, and moving freight off the roads greatly reduces road damage and congestion. Modern freight trains on modern track are also very much quieter than those of even a few years ago.

Trains can be heard above the background noise in my house, such as the television, boiler, fridge, etc., even when the windows are closed. The noise and vibration from passing trains is overwhelming in the garden and in my house if the windows are open. With many more trains, living in adjacent properties to the railway line will become intolerable, our neighbourhood will be destroyed by both the exodus of those people that can afford to move and by a fall in quality of the area. This will inevitably impact on the value of my house making moving to a similarly pleasant location (as now) within Oxford much more difficult.

Whilst train speed will increase the noise from individual trains, the noise mitigation, including over 1.5 km of noise barriers in North Oxford, is likely to offset increases in speed. However, the number of trains will increase.

Chiltern Railways is proposing noise mitigation which will apply to noise levels much lower than the statutory limits set out in the Noise insulation Regulations.

The ES sets out, in a form which will be legally binding on Chiltern Railways, the noise levels above which mitigation will be applied. The preferred option for noise mitigation is one that contains noise at source, such as maintaining the rails and wheels and considering infrastructure solutions to the track bed which reduce noise. Where these are not possible, measures such as noise barriers will be considered. These interrupt the path of the noise between the rails and the windows of the nearest properties. All of these measures will provide benefits in terms of reducing noise both inside and outside the properties.

Chiltern Railways is proposing noise mitigation in the form of barriers for all locations where there are noise impacts, without mitigation, of at least 5 to 7 dB. In areas such as North Oxford noise changes determine the size of the noise impact. In more rural areas away from major road noise sources, the amount by which the train noise exceeds a daytime threshold of 55 dB or the night-time threshold of 45 dB is the best way of assessing the noise impact. If impacts of more than 10 dB are likely to be experienced at residential properties, Chiltern Railways will consider installing noise insulation. Wherever possible, other forms of mitigation, such as barriers, will be preferred.

The actual location of properties which will be offered noise insulation will be determined during the detailed design stage and work is ongoing to refine mitigation, but the ES makes clear the standards that are to be achieved in Volume 2, section 6.5.2 on page 6-47.

As transport by rail increases, the numbers of passengers and freight trains will continue to increase incrementally once the scheme is complete leading to further increases in noise and vibration

Different frequencies of service have been assessed under Phases 1 and 2 of the Scheme. These frequencies take account of any likely future increase in service frequencies that may occur.

The frequency of trains using the line will be limited by the capacity of the track layout and signalling system, and the need to offer a robust and reliable service. The assessments of noise and vibration have been based on forecast numbers of all passenger and freight trains in the future, not just those on Chiltern Railways' services. These forecast numbers of services are almost at the maximum capacity of the double track line with the signalling arrangements that are proposed.

Pollution levels in the immediate vicinity already exceed EU statutory guidelines, and these will be further exacerbated

Modelling of the dispersion of emissions from rail and road traffic movements associated with Phase 2 of the Scheme (ie with more frequent train movements than in Phase 1) has indicated that pollutant concentrations at residential properties closest to the railway line will not cause significant air quality impacts. The total pollutant concentrations, including those from trains using the Scheme are likely to be within EU statutory guidelines, as implemented in UK law.

The Scheme is generally a positive development for improving air quality, as it provides a sustainable alternative to the car, particularly for commuting journeys into Oxford from surrounding areas.

In addition the standard objection included a section that urges Chiltern Railways and/or Network Rail to:

Ensure that everything possible is done to reduce the impact of the increased train service, such as:

- *installation of fully-effective noise and vibration barriers next to the track as a matter of urgency concurrent with the work;*

Chiltern Railways, in association with Network Rail, is doing everything that can reasonably be done to reduce the environmental impacts of the increased services after the Scheme is built. This includes the installation of effective noise and vibration mitigation, including noise barriers and insulation, where necessary. Those required to deal with noise from Phase 1 will be installed before any additional train services start running. If Phase 2, for the East West Rail project, is built, additional mitigation measures will be installed, where required.

- *install track infrastructure designed to reduce noise and vibration including welded track, rail dampers, etc; and*

Continuously welded track will be installed. A range of additional mitigation measures including rail dampers will be considered to mitigate impacts where these have been identified. The extent and type of mitigation at individual locations will be determined as part of the detailed design which will be

developed following the approval of the Order. However, the ES identifies the noise and vibration limits for which mitigation will be provided.

- *use only well maintained rolling stock fitted with noise and vibration mitigating devices including wheel dampers, etc.*

Chiltern Railways operates modern trains and undertakes regular inspection and maintenance including regular wheel maintenance at its own facility to correct any wheel flats or other defects that may increase operational noise. Wheel dampers are not normally fitted to trains and would only have a marginal effect under most conditions, and are not proposed for this Scheme.

- *use trains that retain sanitary waste for off-track disposal, and*

All trains built since about 1990 have toilet retention tanks and do not discharge onto the track. Any Chiltern Railways trains in regular service on the Bicester to Oxford line will have retention tanks.

- *review all noise and vibration mitigating measures every six months and repair or upgrade as necessary.*

Noise will be minimised by ensuring a high standard of maintenance during the operating life of the railway to avoid noise levels increasing unnecessarily due to wear and tear of the wheel and rail surfaces. The track and any noise barriers will be maintained by Network Rail. Furthermore, Chiltern Railways undertakes regular train inspection and wheel maintenance to correct any wheel flats or other defects that may increase operational noise. The frequency of these inspections will be commensurate with the upgraded railway.

Baseline mitigation on the number of passenger and (longer, heavier) freight trains projected to operate after completion of EastWest Rail and then no subsequent incremental increases in train traffic allowed without full consultation with residents.

The ES has assessed the likely future numbers and types of train, including the expected increase as a result of the EastWest Rail proposed level of services and has suggested appropriate mitigation measures for this, which will be implemented if Phase 2 of the Scheme, which is needed for East West Rail, goes ahead. The forecast numbers and types of trains used for the

assessment of Phase 2 are almost at the maximum that could use the railway with the double track and signalling arrangements which are proposed. Mitigation is designed in the first instance for Phase 1, with a requirement that the Phase 2 mitigation is done before the Phase 2 works are brought into use.

Provide funding to equip my house with the highest quality glazing and to undertake any repairs to my house caused by vibration.

It is very unlikely that vibrations from the operation of the trains will cause any form of structural damage. In the unlikely event that it does, owners will be able to claim for compensation under the Compulsory Purchase Compensation Code. More detail on this can be found in the booklet on compensation produced by The Office of the Deputy Prime Minister, which can be found on line at:

<http://www.communities.gov.uk/publications/planningandbuilding/compulsorypurchase4>

Noise insulation, usually secondary or double glazing, will be provided at a small number of properties that qualify under the Noise Insulation Regulations. The properties at which this is likely to be the case are outlined in the ES in Volume 2, Table 6.14, Page 6-38. There are a few other properties, which do not qualify under the Regulations, where Chiltern Railways believes that noise insulation should be offered. These are discussed in Volume 2 of the ES at page 6-54 and 6-59.

Maintain and enforce the present speed restriction (40mph) on all trains along the sections of the track adjoining residential areas.

The predicted increased noise levels resulting from all causes will be mitigated as set out in the ES. Speed restrictions will apply to various sections of the line for safety reasons, but restricting speeds to 40 mph, for example, from Oxford station to the edge of the built up area, would not be practicable. Timetable predictions show that reducing speed from those proposed for the Scheme would make reliable operation impractical and would not meet the aims of the project, which are to provide reliable and fast rail services between Oxford, Bicester and London. At lower speeds it would be impossible to operate a viable timetable that avoids congestion on the single track section of the route from Oxford station to Oxford North Junction and fits with the required timetable train paths onwards to Bicester and London.

No trains during the night from 00:00 until 05:00

Chiltern Railways will not be running passenger trains through the night, and services in late evening and early morning will be at a reduced frequency. A very small number of trains (perhaps 1 or 2) may arrive in Oxford after midnight or depart from Oxford before 0600.

Any overall increase in freight train numbers above those currently operated is only likely if and when the East-West Rail project goes ahead. The number of freight movements will reflect national freight demand, and will be limited by the number of available freight paths (1 per hour in each direction) and the likely market demand. Based on analysis of the number of the existing situation on the main line through Oxford, only about half of the available freight paths are likely to be used limiting the number to perhaps five freight train movements between midnight and 0500 hours, and perhaps 8 train movements between 2300 to 0700 hours.

Electrify the line as soon as practically possible

Electrification is an issue for consideration by Network Rail and the Department for Transport as it must be considered on a network wide basis. There are no proposals at present to electrify the line. However, all new and rebuilt structures on the line (bridges, tunnels, etc) will be constructed with sufficient clearances to enable electrification in future.

These responses deal with the general concerns raised on the standard form you submitted. We hope that these answers deal with your concerns. Chiltern Railways will be continuing to work with local residents to address individual concerns and if you have a particular issue that has not been addressed please contact us.

Yours sincerely

Charlene Baker
Consultant
ERM

on behalf of the Chiltern Railway Company Ltd

29 July 2010

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Dear Muir and Jackie Gray,

**Draft Chiltern Railways (Bicester to Oxford improvements) Order
Objection number 149– Muir and Jackie Gray**

I am writing further to the letter we sent to you on 24.06.2010 in response to your letter of objection, which was sent to the Department For Transport. We have not received any response to the letter we sent to you, I trust we have addressed all of your concerns.

If you do have any further questions in relation to the proposed Order or if we have not successfully addressed your concerns, please do not hesitate to contact me on charlene.baker@erm.com. If you feel that we have addressed your concerns with the above Order then you are able to withdraw your objection by writing to the Secretary of State for Transport. Ideally Chiltern will have no objections remaining at the Public Inquiry, we welcome the opportunity to work with you to achieve this position.

Yours faithfully,

Charlene Baker
Consultant
ERM

On behalf of Chiltern Railways

18 October 2010

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Your ref: OBJ/149

Dear Muir and Jackie Gray

Proposed Chiltern Railways (Bicester to Oxford Improvements) TWA Order

I write to you as an objector to the Chiltern Railways TWA Order. Specifically, you have raised concern about the effect of noise and/or vibration of the proposed Scheme and its impact on your property.

Chiltern Railways is committed to using the Best Practicable Means to design the railway so as to avoid significant noise and vibration impacts. Enclosed is the *Chiltern Railways (Bicester to Oxford Improvements) TWA Order Draft Noise and Vibration Mitigation Policy (October 2010)*, which sets out Chiltern Railways' commitment to control noise and vibration impacts in detail. This document will be finalised following consideration of improvements that are identified during the Inquiry.

We hope that this policy, which will be legally enforced by planning condition, will satisfy your concerns regarding noise and vibration, and that you will be able to remove your objection to the Scheme.

Yours sincerely,



Ian Gilder
Head of Planning

For and on behalf of the Chiltern Railway Company Ltd

Appendix B

CRCL/R/OBJ149/B

Vibration Trace at 55 Lakeside

1.1 The vibration recorded at one of the closest properties at 55 Lakeside of existing trains and other events in the property are shown in *Figure 1.1*. The events are recorded using the PPV (Peak Particle Velocity). The traces for individual events have been reviewed and this showed that the events that are above 1 mm/s PPV are not due to trains, but to events (such as door slams and foot falls) within the measurement room, which was in regular use.

Figure 1.1 **Vibration Trace at 55 Lakeside**

