

13/03202/CND – vibration: plain line, section H  
14/00232/CND – vibration: switches + crossings, section H  
15/00956/CND – noise: section H

**Technical Briefing:**  
**the discharge of Condition 19 to**  
**the deemed planning permission for**  
**East West Rail Phase 1**

**11<sup>th</sup> June 2015**  
**6.30 - 8pm**

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# Introductions

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*Lead officer for noise and vibration issues advising planners in connection with the discharge of planning conditions for EWRP1*



# Purpose of Briefing

- To outline the background and context for the decisions before the Committee
- To explain the technical advice
- To explain the Officers Recommendations
- To answer Members' questions
- To hear statements from the public



# Briefing

- Introduction
- The Council's Role
- Location of section H
- Context for the Council's decision
- The Reasonable Planning Scenario
- Schemes of Assessment – consideration process
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  - Officer Recommendations – vibration
  - Officer Recommendations – noise
  - The Use of Conditions on Approvals
  - Condition Specifics
  - Wider Considerations
  - Members' Questions
  - Statements from Public



# Introduction

- Deemed planning permission was given by the Secretary of State for Transport for EWRP1 in October 2012.
- Condition 19 requires:
  - operational noise and vibration to be predicted; and
  - mitigation to be installed if prescribed levels exceeded.
- Predictions and mitigation proposals to be submitted in Schemes of Assessment
- Noise and Vibration Mitigation Policy (agreed by Secretary of State)
  - the reasonable planning scenario to be used in predicting noise and vibration for the Schemes of Assessment; and,
  - the prescribed noise and vibration levels which are not to be exceeded
- Condition 19 required Independent Experts to be appointed to comment on the robustness of the Schemes of Assessment.

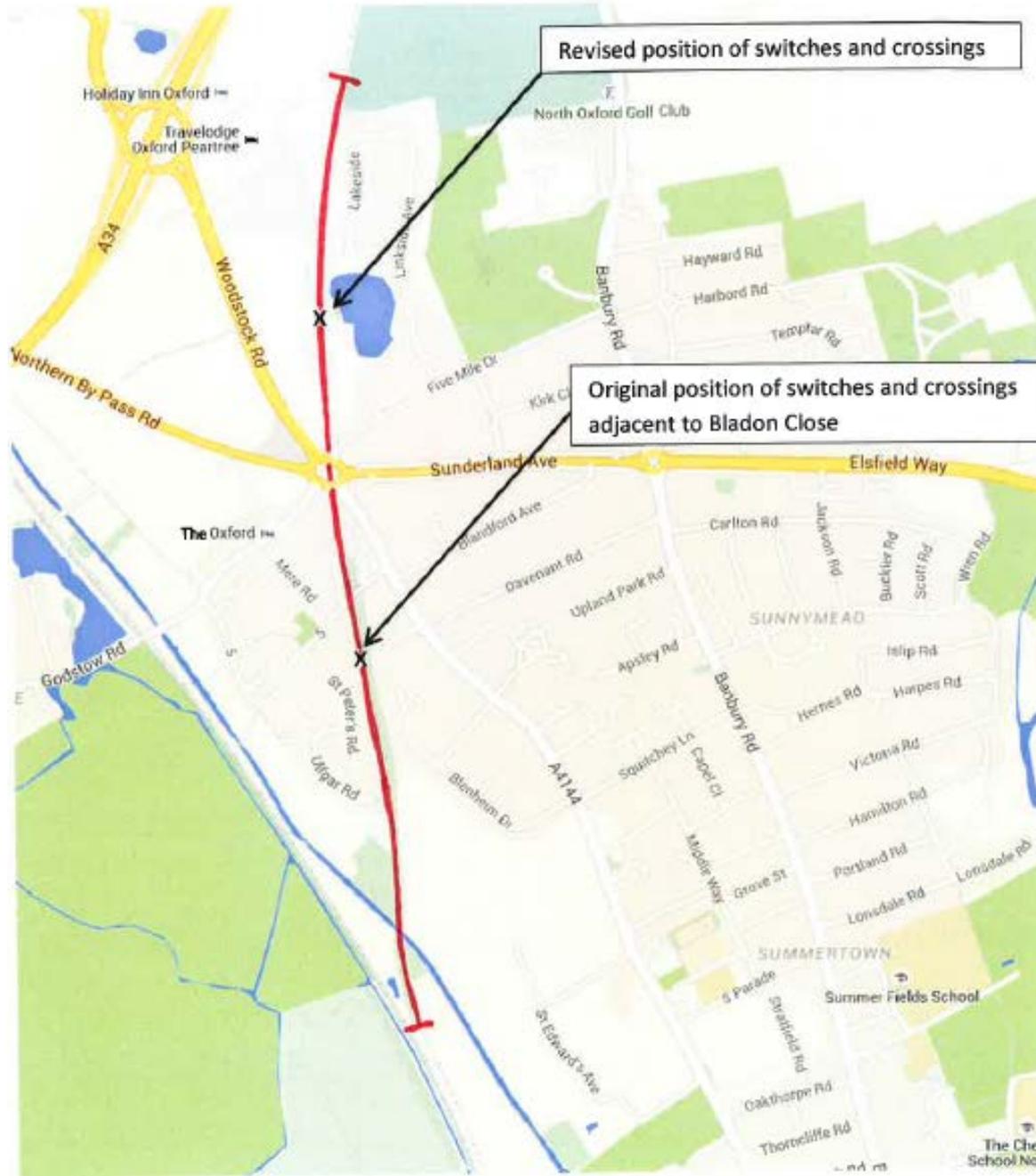


# The Council's role

- Consider and determine the Schemes of Assessment
- Cannot re-visit the Secretary of State's original permission
- Unable to ask: is EWRP1 acceptable in noise and vibration terms?
  -
- Can only ask: will the scheme meet the levels set in the Noise and Vibration Mitigation Policy?
- Can only take into account the 'reasonable planning scenario' set out in the Noise and Vibration Mitigation Policy
- Concerns about possible future intensification of use of this rail line cannot bear on the Council's decision



# Section H, East West Rail Phase 1



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# Context for the Council's decision

3 Schemes of Assessment have been submitted for section H:

- one for noise;
- two for vibration: plain line, and switches and crossings.

If these are acceptable the condition can be partially discharged - in relation to section H

The context for the Committee's decision comprises:

1. the deemed planning permission;
2. the detailed wording of Condition 19;
3. the Noise and Vibration Mitigation Policy: acceptable levels and reasonable planning scenario;
4. public comments and objections – substantial and continuing;
5. the changes and clarifications made (next slide);
6. The reports of the Independent Experts: agree submissions robust;
7. the advice of ARUP (on vibration): agrees submissions robust.



# The Reasonable Planning Scenario

Concern that the impacts of freight trains from East West Rail Phase 2 (EWRP2) (Bicester to Bletchley) and High Speed Rail Link 2 (HS2) have not been taken into account.

EWRP2: even though this does not have permission, assumptions about train frequency, type and speeds are in the:

- Environmental Statement
- Noise and Vibration Mitigation Policy

HS2:

- is not referred to in any of the documents
- currently does not have permission
- the possible impacts of freight trains from HS2 therefore are not within the scope of the Schemes of Assessment and would not therefore be expected to be taken into account.



# Scheme of Assessment - consideration process

## **This iterative process began October 2012 prior to submission**

- Lead case officers identified and have been working on this process continually – including discharge of other conditions
- liaison with Cherwell DC,
- expert advice used
- 10 – Chiltern Railways agreed to IE terms of reference and communications protocol
- Chiltern/NR revised and refined their methodology and approach before submission

## **Public consultation**

- Immediately post-submission member briefing and public meeting set up
- Comments received throughout the process
- Further public meetings
- Webpage



## Noise

- NR improved their public consultation proposals, holding a public meeting and full public consultation prior to final submission
- NR considered additional properties for inclusion in the Scheme
- NR have acknowledged that Silent Rail could be trialled and this led to a proposed condition
- NR have agreed to clarify their policy for noise insulation implementation

## Vibration

- 1** – Arup's challenge to the assumptions about the transfer of vibration from outside to inside buildings, led to NR's acceptance of an exceedence at the Bladon Close due to the proximity of Switches and Crossings. This resulted in them being moved to a location near Lakeside
- Correction of some re-calculation errors pointed out by residents
- A willingness to consider the use of train monitoring through train tracking device

## Section I

- NR have accepted that they need to carry out noise and vibration SoAs in this section



## Technical advice – noise and vibration

- **Noise and Vibration Mitigation Policy (NVMP)** is the key reference for condition 19 compliance. It contains commitments, principles, assumptions and standards for noise and vibration assessment and control. *See Item 3 Appendix 2*
- **Assessment** baseline measurements from representative trains are fed into a computer based model which predicts with-scheme impacts at specific noise/vibration -sensitive receptor buildings
- **Scheme of Assessment (SoA)** these set out: how the impacts of noise or vibration have been assessed; what mitigation, if necessary, is proposed; and what the resulting impacts are. Condition 19 requires that an Independent Expert reports on the robustness of its noise/or vibration elements. Officers have applied several tests to each submitted SoA before making a recommendation. *See Item 3, s.24, p16 or item 4, s.22, p278)*
- **Reasonable worst case scenario** is used in risk-based approaches to dealing with uncertainty. In considering the predicted noise and vibration impacts of the ‘reasonable planning scenario,’ the ‘reasonable worst case scenario’ has been tested rather than depending merely on what is considered “likely”. (*item 3, s.46,p.30; item 4 s.39,p283*).
- **Mitigation** condition 19 and the NVMP require mitigation if standards are predicted to be exceeded. Mitigation measures are described in the latter and in the SoAs. At source mitigation is the first preference, with other measures being described.
- **Best Practicable Means** is not defined in the Permission, though the NVMP quotes the Control of Pollution Act 1974 definition as “reasonably practicable having regard among other things to local conditions and circumstances, to the current state of technical knowledge, financial considerations and compatibility with safety and safe working conditions
- **Monitoring** is required by condition 19 to be in accordance with the approved SoAs and the NVMP. The latter requires monitoring of the effectiveness of mitigation measures at 6 and 18 months from commencement. The noise SoA contains monitoring commitments.



# Technical advice— vibration

- **Causes** The surfaces of train wheels and tracks are not perfectly smooth. Any “roughness” causes train axles to move upwards and downwards as the train moves along the track. These movements generate vibration which is transmitted downwards into the ground. The wavelength and thereby frequency of vibration waves varies according to nature of the roughness, type of train, soil type and other factors (see *item 3, Appendix 29, p255*) soft ground is more susceptible to vibration than firm ground,
- **Propagation** vibration travels through the ground parallel with the surface, thereby following topographical features such as cuttings and embankments. The most important vibration frequencies are low, in the range 5Hz to 100Hz. Generally, freight traffic is the most important source of low frequency vibration. Propagation of low frequency vibration is mainly affected by soil stiffness at depths of 10m or more. When entering and travelling through a building vibration is affected by construction type and materials.
- **Measurement** Railway vibration from train movements is by nature short term and sporadic, making comparisons between locations and scenarios problematic. The Vibration Dose Value (VDV) is a cumulative measurement of the vibration level received over an 8-hour or 16-hour period, thereby allowing e.g. before and after comparisons,
- **Standards** British Standard BS6472-1 2008 uses VDV's to predict the likelihood of “adverse comment” from occupiers of buildings affected by “feelable” vibration. The NVMP adopts the approach used in the British Standard and the VDV ranges within it. The key chosen thresholds are located between the lower and middle of three VDV ranges, where the Standard predicts a change between a “low probability of adverse comment” and “adverse comment possible”. The numerical values are: Day (0700 – 2300 hours): 0.4 m/s<sup>1.75</sup>; and Night (2300 – 0700 hours): 0.2 m/s<sup>1.75</sup>...



# Technical advice - noise

- **Causes** Throughout Section H the major noise source is rolling noise, a combination of wheel - radiated and track - radiated noise. Rolling noise increases with speed. For diesel locomotives on full power noise from the power unit (at c4m height) exceeds rolling noise. It applies for a shorter time with increasing speed. (see *Appendix p351*)
- **Propagation** Rail noise travels as pressure waves through structures and through the air. Propagation is affected by topography, ground type, reflecting and refractive surfaces and weather conditions.
- **Measurement** noise is measured in decibels (dB). For comparison purposes the noise energy in a given period, expressed as LAeq,t. is considered. In addition individual train impacts may be expressed using Maximum Noise Level, LAmax. Noise levels expressed in these ways behaves logarithmically rather than follows a logarithmic A 3dBA change in noise level is considered to be the minimum discernible by most people. A 10dBA change is considered to be perceived as a doubling or halving in volume.
- **Standards** The *Calculation of Rail Noise (CRN)* is the standard prediction method for rail noise. It uses LAeq,day and LAeq, night values to describe impact and eligibility for statutory noise insulation. The *NVMP* uses both standards and sets thresholds/limits at or below those in the *Noise Insulation Regulations*
- **Mitigation** the Noise Scheme of Assessment finds that at-source measures are not reasonably practicable; barriers and property-based insulation therefore are required to meet the NVMP standards.
- **Monitoring** is required where mitigation has been applied, 6 months and 18 months after Scheme operation commences. Any defects found must be put right.

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# Officer Recommendations - Vibration

- The methodology, data, assumptions and calculations used in the Vibration Schemes of Assessment are considered to be robust.
- The Schemes of Assessment show that, taking a reasonable worst case scenario, vibration levels will be likely to increase but will not exceed the limits in the Noise and Vibration Mitigation Policy. No mitigation is therefore required.
- Concerns expressed about the possible future use of the line, apart from those forming part of the reasonable planning scenario (EWR Part 2 assumptions in the NVMP), fall outside the remit of condition 19.
- There is no basis for refusal or deferral of the decision.



# Officer Recommendations - Noise

- The methodology, data, assumptions and calculations used in the Noise Scheme of Assessment are considered to be robust
- The Noise Scheme of Assessment shows that, taking a reasonable worst case scenario, noise levels will be likely to exceed the noise threshold limits set by The Noise and Vibration Mitigation Policy, thereby making mitigation necessary
- The mitigation measures proposed are considered to meet the standards set in the Noise and Vibration Mitigation Policy.
- Whilst noise dampers are not currently available as a mitigation measure, efforts to obtain type approval and trial their use should be made, in line with the spirit of The Noise and Vibration Mitigation Policy that mitigation at-source should be employed.
- As with vibration – future use of the line apart from that already in the NVMP cannot be taken into account.
- There is no basis for refusal or deferral of the decision



# The use of conditions on approvals

**Approvals under a condition can be conditional**

## **The proposed conditions must**

- be necessary to allow the approval to be granted,
- fairly and reasonably relate to the determination being made
- directly relate to the determination being made
- be enforceable
- be precise
- be reasonable in all other respects

**It is not possible to re-visit the decisions of the Secretary of State when subsequently discharging planning conditions**



# Condition Specifics

- Requiring alignment to be as submitted
- Rail dampening
- Train numbers
- Other noise limits/controls
- Monitoring and potential remedials
- Train speeds



# Wider Issues

- Links with wider Network Rail programme
- Implications with HS2 and TWA scheme
- Vibration monitoring arrangements
- Speed restrictions: 30 mph



# Questions from Members

1. Given the importance of the estimates of train numbers, does the council as planning authority have any power to control what these numbers will be?	Cllr Gant
2. Does the council have the authority to impose speed limits on trains as a planning condition?	
3. And is there consensus among experts about what those limits should be (for example, some believe that slower trains cause more noise and vibration, because they take longer to pass a given point)	
4. If monitoring of noise and vibration is required as a condition, who would carry it out and decide where it is done? What powers would be available to the council if the results differ from those predicted?	



# Statements from Public

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