Transport for London

Northern line extension to Battersea

TfL Commitment 2: Operational noise

October 2013

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1. Context

This note explains the approach taken by TfL to ensure the effective mitigation of operational noise arising from the use by underground trains of the new railway to be constructed as part of the NLE.

There are two principal components to TfL's approach:

- local authority control through the imposition of a planning condition dealing with operational noise; and
- contractual control through requirements imposed on the contractor appointed to construct the NLE.

Both are explained in further detail below.

2. Proposed planning condition

TfL will propose to the Secretary of State that a specific planning condition dealing with operational noise is imposed on the grant of deemed planning permission for the NLE.

The precise wording of the condition is currently the subject of ongoing discussions between TfL and the relevant local authorities, (Wandsworth, Lambeth and Southwark). However, the principle underlying the proposed condition is agreed with all three authorities.

TfL proposes the following draft condition (subject to ongoing discussion with the local planning authorities):

Groundborne noise from the operation of trains

(a) Work Nos. 1, 2 and 3 shall be designed and constructed such that their permanent track support system is a consistent system and is predicted by the person or body responsible for carrying out the Development to give rise in all reasonably foreseeable circumstances to a level of groundborne noise arising from the passage of a train in service on Work Nos. 1, 2 and 3 not exceeding 35dB L_{AFmax} near the centre of any habitable room within a residential property.

(b) The groundborne noise prediction model utilised for the purposes of Condition [ ](a) must be fully compliant with the guidance provided in ISO 14837-1:2005, Mechanical Vibration - Groundborne noise and vibration arising from rail systems - Part 1: General Guidance.

(c) Before installing any part of the permanent track support system the following details shall be submitted to the Local Planning Authority:

(i) details of the groundborne noise prediction model utilised for the purposes of Condition [ ](a), including details of the model development, calibration, validation and verification procedures undertaken to comply with the guidance mentioned in condition [ ](b), and the identified model accuracy;

(ii) the modelling results for the design identified for the purposes of Condition [ ](a); and

(iii) the details of the type of permanent track support system proposed.

(d) Before Work Nos. 1, 2 and 3 are brought into public use, groundborne noise measurements carried out by or on behalf of the person or body mentioned in Condition [ ](a) and taken in a representative sample of habitable rooms in residential properties (subject to reasonable access being given) shall be submitted to the Local Planning Authority.

(e) In maintaining the permanent track support system designed and constructed pursuant to Condition [ ](a), reasonable endeavours shall be used to achieve the performance levels mentioned in Condition [ ](a), with reference to best practicable means.

Through the above, the NLE will be designed to achieve operational noise levels not exceeding 35dB L_{AFmax}, thereby meeting the relevant design guidance for groundborne noise and vibration. It should be noted that the prescribed noise level is considered by TfL's noise expert to result in a negligible groundborne noise effect. It represents an improvement as compared with other recent railway projects, for instance Crossrail, and also has the effect of reducing operational groundborne vibration effects to negligible.

The planning condition will ensure that the detailed design, noise modelling predictions and, once built, actual noise measurements are all submitted to the relevant local planning authorities. The local planning authority will therefore be involved in monitoring operational noise performance throughout design and construction and before operation of the NLE may commence. Provision is also made within the condition as regards the approach to future maintenance of the railway.

TfL will be under a legal obligation to comply with the terms of all planning conditions imposed by the Secretary of State. Should TfL fail to comply, it will be in breach of planning control it would be open for the relevant local planning authorities to pursue enforcement action against TfL.

3. Contractor requirements

TfL will appoint a contractor to design and construct the NLE following a competitive tender exercise. The successful bidder will enter into a contract with TfL. Through this 'design and build' contract, TfL can impose requirements on the contractor. Further, these requirements can be set down within the tender documentation as obligations with which all bidders must comply. In this way, TfL can ensure that the construction contract will ultimately include particular requirements.

TfL will include within the tender documentation an obligation to comply with the terms of the operational noise planning condition. In other words, the contractor will be contractually obliged to design the NLE to meet the 35dB L_{AFmax} noise limit. The contractor will also be required to adopt an iterative process to the design of the NLE. This process will require the contractor to submit design work to TfL for review and acceptance. In reviewing the contractor's design work TfL will ensure that the requirements of the operational noise condition (and the terms of the design and build

contract) have been complied with. TfL will reject submissions which are not satisfactory and the contractor will not be able to proceed until its design work meets the relevant standards.

The NLE Environmental Statement predicted groundborne noise levels from the passage of a train to be no more than 35dB L_{AFmax} for all locations along the route. It is proposed that a consistent track support system will be employed for the plain line, selected to achieve the figure of 35 dB L_{AFmax} in the locations where noise levels are highest (for example due to speed or depth of tunnel), This means that in some locations lower noise levels of between 20 and 30dB L_{AFmax} are predicted where the tunnel depth is greater or the train speeds are lower. TfL recognises that where the employment of best practicable means in the design and construction of the NLE would result, on account of (for example) lower train speed or greater tunnel depth, in a lower noise level than the 35dB L_{AFmax} specified within the operational noise planning condition, this is desirable.

TfL will therefore include within the tender documentation:

(a) a requirement on each bidding contractor to submit, as part of the tender process, further details explaining how they would employ best practicable means in the design and construction of the NLE in order to improve, where reasonably practicable, upon the 35dB L_{AFmax} noise level specified within the operational noise planning condition; and

(b) an obligation upon the appointed contractor to employ best practicable means in the design and construction of the NLE, even though the noise level specified within the operational noise condition is predicted to be met.

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For further information please refer to tfl.gov.uk/nle or click on the following links:

- Factsheet F. Operational noise and vibration (PDF 434KB).
- The noise and vibration Proof of Evidence (PDF 137 KB).