



Plans to extend the Northern line to Nine Elms and Battersea

TfL's response to the updated independent technical review conducted by Ramboll on behalf of the London Borough of Lambeth

4 March 2013

1. Background

On 24 December 2012 Ramboll, consultants instructed by the London Borough of Lambeth, released a report summarising their independent technical review of TfL's design for the proposed Northern line extension (NLE) to Battersea. This response relates to the updated report released on 4 March 2013.

It is recognised that the design continues to evolve as TfL prepares to submit a Transport and Works Act Order¹ (TWAO) application in April 2013 and that the version of the design reviewed by Ramboll represents a fixed point in an ongoing process. The application relates to the proposed extension of the Charing Cross branch of the Northern line from Kennington to Nine Elms and Battersea, which aims to support the regeneration of the Vauxhall, Nine Elms and Battersea (VNEB) Opportunity Area as identified in the London Plan.

The scheme is strongly supported by policy including the London Plan, the Mayor's Transport Strategy and the VNEB Opportunity Area Planning Framework. The London boroughs of Lambeth and Wandsworth are represented on the VNEB Strategy Board, which endorsed the preferred route of the NLE in 2011. Lambeth's Cabinet similarly lent support to the preferred route in January 2012, and the Chancellor gave support to the NLE in his 2012 Autumn Statement.

2. TfL's response

TfL welcomes feedback from Ramboll and regards engagement with the boroughs, stakeholders and the public as essential aspects of developing proposals for the NLE. Continued consultation and liaison with Lambeth is a fundamental part of the process of preparing a TWAO application in April of this year. Ramboll's independent review of the NLE project has touched on many issues that TfL has been working hard to get right, with a number of Ramboll's recommendations relating to issues that TfL has already addressed. This demonstrates that the ongoing project development is focusing on the areas of greatest concern, including: noise and vibration, ground settlement, parking, traffic, construction practices and environmental concerns. TfL has extensive experience of undertaking environmental assessments in relation to major projects and this is reiterated in a number of our responses to the recommendations put forward by Ramboll.

While TfL understands Ramboll's wish to have access to the Environmental Statement (ES), submitting a TWAO application is a defined statutory process which sets out the timetable and format for document preparation and submission. It is standard for the ES to be submitted as part of the TWAO application and, as such, it will not be finalised and publicly available until April of this year. It is important to understand that many of the processes

¹ See section 4 for further information about Transport and Works Act Orders.

contributing to the final submission are iterative and TfL is committed to getting the proposals right. For this reason many of the application documents will not be finalised until the submission date; however, they will be publicly available once the application is lodged. Section 4 below outlines the TWAO process and what documents will be submitted.

Significant recent developments in the project include the deletion of the ventilation and intervention shaft at Claylands Green, the development of new noise and vibration guidance and engagement with local government and interest groups regarding the design of head houses at Kennington Park and Kennington Green. Each of these elements of the project was revisited after consultation with the public and further work was done in an effort to improve the scheme and respond to the issues raised by local people.

3. Consultations

TfL has conducted a series of public consultations, the latest of which ended on 30 December 2012. Detailed analysis of all feedback and comments received during the most recent consultation has been undertaken and the summary report is available at www.tfl.gov.uk/nle. Previous consultation reports are also available on the website. A report summarising all NLE consultations will be submitted in April as part of the TWAO application.

TfL would like to reiterate that there will be further opportunities to comment on the proposals after the submission of our application. This can be done by making formal representations to the Secretary of State.

4. Information about the TWAO process

An application for a Transport and Works Act Order (TWAO) will be submitted to the Secretary of State for Transport seeking powers to construct and operate the proposed NLE. If granted the powers also allow for the compulsory purchase of property (including subsoil) identified. The submission will include an application for deemed planning permission for the works. Subsidiary applications (e.g. Conservation Area Consent and Listed Building Consent) will be made as necessary.

Prior to making the TWAO application, TfL will gain approval from the TfL Board and the Mayor of London to proceed.

The application will include, but is not limited to, the following documents:

- a draft Order and an explanatory memorandum
- a concise statement of the aims of the proposals
- a consultation report
- plans and sections of the proposed route
- an environmental statement
- a book of reference, containing names of owners and occupiers of land (including subsoil) affected by the proposals
- the estimated costs of the proposed works and a statement outlining how the scheme will be funded
- the application for deemed planning permission including the elements of the proposed development and proposed planning conditions
- a list of all consents, permissions or licences required.

Once the application has been submitted TfL will:

- publish a notice in the London Gazette and local newspapers
- display site notices at intervals along the proposed route of the scheme
- serve notice on the parties listed in the Book of Reference

- serve notice of the application on particular parties listed in the TWAO application rules.

Within a period of 42 days from the date of application objections or other representations must be sent to the Secretary of State for Transport. Details of how to do this will be included in the notices and on the www.tfl.gov.uk/nle website.

Depending on the nature and number of comments received the Secretary of State will decide if a public inquiry is required. If an inquiry is necessary the appointed inspector will hear the case and make a recommendation to the Secretary of State to either grant (with or without changes) or reject the application.

It is anticipated the whole process will take about 18 months from the date of the application to the date of the Secretary of State's decision and it needs to be completed before the project can move forward into the construction phase. More information about the TWAO process can be found at www.dft.gov.uk/publications/twa-orders-guide.

5. Next steps

TfL is continuously working to improve the scheme design in preparation for the TWAO application. It is now considering responses received during the most recent consultation and will continue to engage with local groups and representatives. TfL continues to meet with the London Borough of Lambeth and Ramboll regularly and looks forward to further dialogue. Comments are welcome via nle@tfl.gov.uk

Appendix: TfL's response to individual recommendations

Ramboll's report includes a number of recommendations which TfL has responded to below. The recommendations can be found throughout the document; we have listed them in order below. For convenience, we have assigned each recommendation a number; however they are not numbered in Ramboll's report.

Recommendation 1, p. 5:

It is recommended that prior to, or at the point of issue of the Transport and Works Act Order a new Final revision of the Reference Design documentation is provided to LB Lambeth and it's consultants for review in relation to the further or changed impacts on residents and receptors within the Lambeth Borough.

An updated design will be issued as one of the documents to support our case at the public inquiry should the Secretary of State for Transport decide that one is necessary.

Recommendation 2, p. 8:

Ramboll recommends that additional phases of ground investigation should be planned and carried out to fully investigate ground borne geotechnical and hydrogeological risks to route selection, and later to characterise the specific local variations in conditions and construction specific challenges at key locations.

Notably the step-plate and works proposed towards the east of the route are likely to require significant groundwater control measures.

The groundwater regime will require full and detailed assessment as part of the site investigation strategy required, and potentially pumping trials may be needed.

A Desk Top Study was carried out by consultants working for REO/Treasury Holdings which identified the need for additional ground investigation to inform the design. This site investigation was undertaken and the results incorporated in the design. TfL agrees that ground investigations are necessary and important, but considers sufficient ground investigation has been undertaken to support the current level of design. However, it is recognised that further site investigation is likely to be needed during detailed design and construction.

Recommendation 3, p. 9:

All preliminary settlement assessments have been carried out prior to removal of the Claylands Green Shaft, and subsequent widening of the Tunnel diameters over the full length of the NLE. In addition, changes to the alignment have been made to the route, therefore Ramboll recommends that all assessments should be revised to account for these changes.

- *The Settlement Report (BH, 2010) states that assessments have been carried out in accordance with LUL Standard I-050. Ramboll have not received confirmation that this has been agreed between all key stakeholder parties. It should be noted that this procedure is potentially less rigorous than that which was adopted for Crossrail as summarised in Figure 3.1.*

TfL regards LUL Standard I-050 as comparable to and having the same rigour as that which was adopted for Crossrail. If Ramboll has any specific concerns regarding the Standard TfL will endeavour to address them.

TfL would like to note that the settlement report Ramboll has assessed for this report is now

out of date and a new one will be appended to the Environmental Statement, which will be made available on submission of the application.

Recommendation 4, p. 9:

Ramboll recommends that a more detailed assessment procedure be further developed and agreed between TfL & Lambeth Council. This should be clearly set out in a Design Statement for the NLE and included as part of the TWAO submission.

London Underground Guidelines on Ground Movement Due to Tunnelling and Deep Excavations is a guidance document that sets out the assessment procedure. It has been supplied to Ramboll and is available to read at www.tfl.gov.uk/nle.

Recommendation 5, p. 10:

Ramboll will propose further questions to TfL and their designers in relation to building assessments, and details of properties and services likely to need further assessment and reporting, and proposals to liaise with and accommodate potentially impacted parties.

Ground water control measures can induce significant settlements and further characterisation of the ground water regime, potentially including pumping trials, may be required.

TfL welcomes questions and will work with Ramboll and the London Borough of Lambeth to ensure that key concerns are addressed.

See also our response to recommendation 25.

Recommendation 6, p. 11:

A full desk based assessment will be required and will need to detail a preliminary Conceptual Site Model (CSM). The most significant issues are likely to be realised in areas where potential contamination issues correspond to areas of significant near surface excavation such as shafts and stations. Examples of such links are as follows:

- *Kennington Green Vent shaft - Gas Works/Gin Distillery/Works*
- *Nine Elms - Gas Works/Railway Land/Works*
- *Battersea Station - Power Station/Gas works*

URS state that the ES will include a Conceptual Site Model (CSM) and risk, assessment for each construction shaft and station site. Where relevant measures for the clean-up (remediation) of contaminated land encountered during the excavation and construction phase will be identified within the ES. Similarly, mitigation measures will be employed to eliminate the risk of mobilising contaminants during excavation and construction.

TfL has extensive experience of environmental assessment and is aware of what needs to be done in respect of potential ground contamination.

Desk based assessments were conducted during the initial development of these matters. As stated by Ramboll, preliminary CSM and risk assessment will be included in ES. This will also include a proposed outline remediation strategy and recommendations for further monitoring. Further site investigations will be undertaken as necessary prior to commencement of construction if permission is granted.

Furthermore, the planning conditions are likely to require that where site investigations reveal

the presence of contaminated land no construction can take place until a scheme for remediation has been agreed with the local authority. The same regime applies to any land suspected in the ES as being of architectural importance.

Recommendation 7, p. 11-12:

The desk based study will identify issues requiring further assessment. Detailed site investigations will be required at key locations along the route, with particular emphasis on shafts and stations where numerous issues will require detailed assessment.

- *Significant Historical industrial and current development has occurred across the area and in the vicinity of the route, which presents the potential for ground and groundwater contamination;*
- *Made Ground is likely to be present at all locations as a result of historical development and the existing limited site investigation identified Made Ground to exist up to 2.4m bgl;*
- *There is the potential for elevated concentrations of contamination within the soil profile along the route, with particular risk associated with areas of industrial activity such as gas works.*
- *Ground gases can also be generated from any organic material present in the Made Ground material or natural organic strata along the route.*

Other issues requiring consideration include:

- *Potential for asbestos containing materials in Made Ground.*
- *Materials requiring off-site disposal will be subject to waste management regulations e.g. duty of care regulations.*
- *Archaeology may remain in the ground beneath or surrounding the site.*
- *Unexploded ordnance may exist in the ground beneath or surrounding the site.*

The desk study will need to address these issues and inform appropriate intrusive site investigations designed to characterise the soil profile, groundwater and ground gas regimes at some of the key locations along the route, principally at the shaft and station locations.

This should include a programme of groundwater and ground gas monitoring together with appropriate chemical analysis in order to identify how risks should be managed as part of the proposed development. This should also include appropriate waste classification for excess material due for off-site disposal.

Other issues which will require addressing include an assessment of any archaeological interests and the risk of encountering unexploded ordnance along the proposed route.

See our response to recommendation 6.

Recommendation 8, p. 12-13:

The groundwater regime along the route has not been characterised. Significant quantities of groundwater are not expected within the London Clay as this is classified as unproductive strata however the overlying gravels and alluvium will be water bearing. Critically, the Harwich Formation and underlying Lambeth Group are likely to require ground water control measures at key tunnelling and shaft and station construction locations.

Notably the step-plate and works proposed towards the east of the route are likely to require significant groundwater control measures.

The groundwater regime will require full and detailed assessment as part of the site investigation strategy required.

See our response to recommendation 2.

Recommendation 9, p. 15:

The NLE has two distinct phases - construction and operation - and both have their own issues and impacts. The description of the construction process works provided in the ES should be complemented by a description of how the NLE will be operated. The development description should be accompanied by a full set of plans, confirmation of use and scale of all proposed elements of the development (including anticipated number of train services and passenger numbers), layout, route, appearance, landscaping, transport and access, service requirements (i.e. water, gas, drainage, electricity etc.), sources of wastes and emissions etc.

Matters listed above will be covered in the TWAO submission, which is described in section 4 of our main response above.

TfL has extensive experience of environmental assessment and, as stated by Ramboll, details of construction works will be provided in the Environmental Statement (ES). A summary description of both construction and operation of the proposed NLE will be provided within the ES, with reference to relevant further detail as necessary, including but not limited to a Transport Assessment, Design and Access Statement, scheme design and Energy Strategy.

Recommendation 10, p.15:

The list of topics proposed for the CoCP in the EIA Scoping Report does not include some areas required by the Lambeth Borough Council Code of Practice for Construction Sites. Example omissions are: site security (hoardings, access gates, scaffolding), artificial lighting, wheel washing, asbestos, pest control and other forms of air pollution besides dust generation (e.g. smoke and fumes).

The NLE CoCP should address the requirements of Lambeth, Southwark and Wandsworth Borough Councils.

It is noted that an example TFL CoCP for the Victoria Station Upgrade (dated 21 January 2009) does largely cover all these issues.

An updated draft Code of Construction Practice (CoCP) for the NLE was issued to the London boroughs of Lambeth, Wandsworth and Southwark on 30 November 2012 for review and comment and is the subject of ongoing discussion. TfL invites the boroughs to raise any outstanding points via the review process, but notes that the draft CoCP for NLE addresses the issues raised by Ramboll and is, in this respect, similar to the CoCP used for the Victoria Station Upgrade.

Recommendation 11, p. 16:

Some policy referenced in this 2010 Scoping Report has been superseded. All references to policy throughout the document should be reviewed and updated as required.

For example, reference to Planning Policy Statement 5 in Section 5.42 Archaeology and Heritage Resources, and reference to Planning Policy Statement 205 in Section 5.73 Water Resources, Drainage and Flood Risk Assessment which should now reference the NPPF.

All policy references will, of course, be updated as necessary.

Recommendation 12, p. 16:

If electromagnetic hazards are identified, mitigation measures should be identified as part of the ES.

TfL has extensive experience of environmental assessment and will ensure that the Electromagnetism Compatibility Chapter in the ES, along with a supporting technical appendix, will assess Electromagnetic Interference and the Electromagnetic Fields of the proposed development. They will also consider mitigation measures included in the design and identify additional actions required in construction and operation to reduce or eliminate any significant impacts.

Recommendation 13, p. 17:

A preliminary understanding of archaeology should inform the design phase as soon as possible, to ensure that impacts can be avoided or minimised (where possible) rather than merely mitigated later on.

TfL has significant experience dealing with archaeology and will ensure that site specific field evaluations will be carried out prior to construction (as advised during further general investigation works). Where necessary, a process for watching briefs and reservation by record will be arranged. We intend to seek agreement with the boroughs concerning a planning condition regarding archaeological remains.

Recommendation 14, p. 17:

If the desktop investigation provides insufficient detail upon which to identify archaeological assets and necessary mitigation measures, the Desk Based Assessment Report should recommend a full programme, of archaeological evaluation (such as by trial trenching) in order to fully understand the potential impacts and which should be undertaken in time to inform the ES.

It has been determined that desktop investigations provide sufficient details to identify archaeological assets and necessary mitigation measures. However, where appropriate, mitigation will, of course, include site investigations to be undertaken during detailed design. These will be conducted in accordance with an agreed Written Scheme of Investigation with English Heritage.

Recommendation 15, p. 17:

If there are any above ground historic structures that could potentially be affected, an archaeological historical building assessment or 'archaeological interpretative survey' should be carried out.

It is not anticipated that any above ground historic structures will be materially affected. Two structures within conservation areas (both of relatively recent origin) will be demolished and an appropriate assessment will accompany the applications for Conservation Area Consent. Sensitive and sympathetic architectural design will be adopted as necessary.

See also our response to Recommendation 6.

Recommendation: 16, p. 17:

The Scoping Report states that the impact of shaft and station structures will be considered in the ES. The assessment should consider all ground interactions across the broader worksite and any service diversions/installations etc.

TfL has extensive experience conducting environmental assessments and, as stated by

Ramboll, the Scoping Report states that the impact of shaft and station structures will be considered in the ES. This includes worksites, temporary locations and identified ancillary works across the broader worksite.

Unanticipated discoveries or further ancillary works will follow best practice and the CoCP subject to suitable planning, assessment and mitigation as necessary.

See also our response to Recommendation 6.

Recommendation 17, p. 18:

The adequacy of existing baseline air quality data to inform modelling, in the absence of any further data collection surveys, should be assessed, confirmed and clearly reported in the ES. Otherwise, further baseline monitoring surveys should be undertaken.

TfL has extensive experience of environmental assessment in relation to major projects and is aware of what needs to be done regarding air quality.

Recommendation 18, p. 18:

The Scoping document states that 2001 census data will be used to identify the number of people living in different areas. If appropriate, the more recent 2011 census data should be used instead.

Also, when assessing modelled impacts on the future, this should account for projected increases in population associated with the development of the Opportunity Area.

The assessment will, of course, consider the air quality impacts of the proposed scheme at locations that are representative of existing and future air quality sensitive areas.

Recommendation 19, p. 18:

The ES assessment should evaluate the likely accuracy of results from the Bond St ventilation shaft sampling to predict emissions from the NLE shafts. It would need to be demonstrated that key parameters are comparable such as the volume of tunnel being vented, the efficiency of any filters and the ejection velocity (where relevant). Otherwise, another monitoring study at a more comparable shaft may be required or calculations may need to be adjusted/weighted to account for the differences.

TfL will only rely on the results of the Bond Street sampling to the extent that is appropriate.

Recommendation 20, p. 18:

The Scoping Report states that the ES will identify mitigation measures with respect to construction phase air quality impacts, but not with respect to operational phase impacts. The identification of mitigation measures for both phases should be included in the ES.

The ES will consider mitigation measures with respect to construction and operational phase impacts to the extent necessary to deal satisfactorily with predicted effects.

Recommendation 21, p. 18:

The Scoping Report references Planning Policy Statement 23. This has been superseded by the National Planning Policy Framework, and the reference should be updated.

As is standard, all policy references will be updated as necessary.

Recommendation 22, p. 18-19:

If the Phase I Habitat Survey identifies the need for further surveys, these should be undertaken in time to inform the ES as the presence of legally protected species is a material consideration in the determination of any planning decision.

TfL has extensive experience conducting environmental assessments including those relating to ecology. Phase I Habitat surveys and careful review of previous survey information have identified limited and negligible potential for protected species at most sites of the proposed development. Wintering bird surveys are being conducted and Environmental Agency data concerning annual fish surveys at Battersea Power Station are being collated, and both will be included in the ES.

Further surveys have not been deemed necessary.

Recommendation 23, p. 19:

A comprehensive ecology mitigation strategy should accompany the ES.

Suitable mitigation such as watching briefs and sensitive site restoration will be included in the ES.

Unanticipated discoveries or further ancillary works will follow best practice and the CoCP subject to suitable planning, assessment and mitigation as necessary.

Recommendation 24, p. 19:

If there is the potential for the development to impact on trees, the ES should be accompanied by an Arboricultural Implications Assessment and Arboricultural Method Statement as well as a Tree Protection Measures statement, particularly if there are any Tree Preservation Orders, planning conditions or restrictive Covenants.

An arboricultural assessment will be included as a technical appendix to the ES and will inform appropriate measures. There is also likely to be a planning condition dealing with replacement of trees to be in accordance with details approved by the local authorities.

Recommendation 25, p. 19:

ES needs to assess impacts and propose mitigation measures associated with dewatering during construction (and during the operational phase if applicable).

Dewatering is not currently proposed for the NLE and this will be reflected in the revised design. There may be a need to control water around the step plate junction construction area, but this is not expected to require dewatering, which is a process that uses boreholes to lower the water table.

Recommendation 26, p. 19:

If there are any lost (historical) water courses in the area, these should be considered in the ES.

The ES will consider surface water resources that have the potential to be influenced by the proposed development with reference to suitable potential historic data sources.

Recommendation 27, p. 19:

Flood risk vulnerability should be considered for both the construction and operational phases.

The ES will consider flood risk vulnerability with reference to the updated flood risk assessment completed by Buro Happold (consultants working with TfL).

Recommendation 28, p. 19:

The pre-defined views for assessment should be subject to consultation with the community.

Following consultation, TfL and the London Borough of Lambeth have agreed to assess specific pre-defined views.

Recommendation 29, p. 20:

The assessment should include consideration of mitigation measures.

As is expected, the ES will include relevant mitigation measures, as well as any appropriate assessment to accompany the applications for Conservation Area Consent etc.

Recommendation 30, p. 20:

The Scoping Report currently notes that the impact of the operational phase will be assessed. The impacts during the construction phase on townscape, built heritage and visual impact (and any appropriate mitigation measures) may also warrant consideration.

See our response to recommendation 29.

Recommendation 31, p. 22:

- *The tracking/swept path drawings need to be examined to demonstrate that construction vehicles can negotiate site access routes that have on-street parking*
- *The local hot spots where parking capacity may not meet demands, and how any shortfall will be addressed, needs to be confirmed by TfL*
- *The construction vehicle movements assumptions should be clarified and confirmed by TfL*
- *There needs to be a non-technical summary of passenger loadings on the NL with and without the NLE proposals to demonstrate the changes and a comparison with capacities*
- *The reasons for the predicted split between the Charing Cross and City branch lines needs to be explained by TfL in simple terms*
- *The expected transfers at Kennington station need to be set out in simple terms and assessed against station capacity.*

1. The tracking/swept path drawings need to be examined to demonstrate that construction vehicles can negotiate site access routes that have on-street parking.

- Ramboll was provided with a draft Traffic and Parking Impact Assessment at the end of November 2012. This identified the feasibility of movements based on three different types of construction vehicles (10m rigid, large tipper, low loader) and the changes in parking arrangements to accommodate movements.

2. The local hotspots where parking capacity may not meet demands, and how any shortfall will be addressed, needs to be confirmed by TfL.

- Joint working with Lambeth to ensure the impact of the parking loss is mitigated is a high priority for TfL. The final Impact Assessment will propose potential mitigation measures where parking demand may exceed supply as a consequence of the NLE construction. The findings of the Impact Assessment and any requisite

mitigation will be presented in the Environmental Statement submitted as part of the TWAO. Any potential measures will be discussed and refined with boroughs.

3. The construction vehicle movements assumptions should be clarified and confirmed by TfL.
 - The construction vehicle numbers continue to be refined and will be reported as part of the Environmental Statement. Given that all the construction worksites are adjacent to the TfL Road Network (TFLRN) the proposed construction routes will utilise the strategic road network, entering onto non-strategic roads only at the point of accessing worksites located within, or adjacent, to non-strategic roads.
 - Consultation with local highway authorities on lorry routes continues to form part of the discussions about traffic management plans prior to the start of construction.

4. There needs to be a non-technical summary of passenger loadings on the Northern line with and without the NLE proposals to demonstrate the changes and a comparison with capacities.
 - The Environmental Statement will set out the impact of the NLE on future Northern line services.
 - The work undertaken thus far demonstrates that there will be sufficient capacity on the Northern line following the upgrading of train services to manage the demand generated by the NLE.

5. The reasons for the predicted split between the Charing Cross and City branch lines need to be explained by TfL in simple terms.
 - North of Kennington TfL expects the majority of additional passengers generated as a result of the NLE to use the Charing Cross rather than the Bank branch of the Northern line. Some reasons for this include:
 - The Charing Cross branch will be much less crowded than the Bank branch
 - No need to interchange for passengers coming from Nine Elms or Battersea
 - Ease of interchange to get to the City and Canary Wharf (including with Crossrail) at stations such as Tottenham Court Road, Embankment and Waterloo.
 - Employment opportunities in the City of Westminster and London Borough of Camden.
 - The full impact of the NLE on passenger flows north of Kennington will be set out in the Environmental Statement. TfL would not pursue the scheme were it to lead to significant adverse impacts on the existing network.

6. The expected transfers at Kennington station need to be set out in simple terms and assessed against station capacity.
 - The LUL Station Planning Standard is being used to assess the capacity of Kennington station to accommodate the passengers generated by the NLE.
 - Initial work suggests that if the demand generated by the NLE results in crowding at Kennington that exceeds London Underground's service standards, there are measures available that would ensure the impact can be mitigated, for example the possible addition of new cross passages.
 - The Environmental Statement will set out the results of this work on relevant stations – including Kennington – and any requisite mitigation measures.

Recommendation 32, p. 25:

The design target is considered by Ramboll to be acceptable to most people but a lower design target closer to 30dB LAmax,S would be preferable, and Ramboll recommends that TfL should aim for this as a target.

TfL note that Ramboll consider the design target of 35dB LAmax,S to be acceptable to most people but they then go on to say that they recommend that TfL should aim for a lower design target closer to 30dB LAmax,S. TfL has given this matter very careful consideration, including reference to current good practice on other metro systems throughout the world, and has concluded that the current design target of 35dB LAmax,F is the right one and gives due weight to the amenity of residents and other receptors. As recommendation 34 states, TfL's adopted design target is an improvement on previous standards such as those used for Crossrail.

Recommendation 33, p. 27:

All of the noise and vibration impacts resulting from the scheme should be considered and not just those from the stations. It should consider noise from fixed plant, such as ventilation shafts, groundborne noise from running trains as well as any airborne noise from trains or stations.

TfL has extensive experience conducting environmental assessments including those addressing noise and vibration. It is, of course, intended that all material noise and vibration effects will be considered in the Environmental Statement.

Recommendation 34, p. 29:

Until a full impacts assessment of groundborne noise is undertaken it is not possible to determine what level of mitigation is required to meet the design standard. The adopted design standard of 35dB LAmax,F is an improvement over previous standards such as those used for Crossrail. Ramboll's experience of subjective tests in this area suggests that 35dB is an acceptable standard for most people but that a lower level of 30dB would be preferable and Ramboll recommends that TfL should aim for this as a target.

See our response to recommendation 32.

Recommendation 35, p. 31:

It is recommended that the design team undertake detailed consultations with the relevant local authorities for which works are being undertaken in order that the LA are fully conversant with their obligations during the works and can make proper provision of resources.

TfL has met with relevant local authorities for many months, including in working groups during consultations in the summer and autumn of 2011 and regular borough liaison meetings held since May 2012. TfL intends to continue working together with all three local authorities in order to best prepare for the implementation of the NLE.