Objection to Leeds Trolleybus TWAO by North West Leeds Transport Forum

STATEMENT OF CASE

Reference: TWA/13/APP/04/OBJ/1719

A Introduction

The North West Leeds Transport Forum (NWLT) [www.nwltf.org.uk](http://www.nwltf.org.uk) submitted a Statement of Case in January 2014. This document is a revision of that submission in the light of the new Statement of Case and Revised Business Case submitted by the Applicants in January 2014. The new material submitted by the applicants contains new results and an indication that the analysis methodology has been changed. Some details of the new analysis methods have not been provided and some important results have not yet been released. NWLT therefore reserves the right to further supplement or amend this Revised Statement in the light of further documentation entering the public domain.

NWLT has the support of local businesses and the Resident Associations in West Park, Weetwood, Becketts’ Park, St Chads’, Far Headingley, Drummonds and Churchwoods. It holds regular meetings open to representatives of these organisations and has drawn on advice from individuals with professional expertise and experience in transport, engineering, planning, safety, conservation and civic matters. It was formed in 2013 to represent the communities and businesses in North West Leeds who were concerned by the proposals to introduce a trolleybus system on the A660 and Otley Old Road but who, nevertheless, wanted to see improvements to transport in North West Leeds.

NWLT is an independent body, which seeks to promote the most appropriate transportation solutions for Leeds in general and its North West sector in particular. It has, accordingly, drawn up an outline of an alternative approach to address the transport needs of this part of Leeds (attached as our Appendix A).

NWLT have devoted considerable time and expertise to an examination of the background to the NGT proposal, to the analysis which has been put forward to support it and to the implications that it would have for North West Leeds and the wider conurbation. We have concluded that it is a flawed proposal which fails to meet the requirements of relevant legislation or the objectives of relevant policies and plans or even those objectives which have been set for it. Contrary to the claims of the proposers in section 17 of their revised statement of case, we conclude that its deleterious impacts far outweigh any benefits which can realistically be claimed to flow from it.

NWLT further conclude that the analysis which has been forward to support the proposal is flawed and biased in favour of the NGT relative to alternative approaches.

NWLT’s objection to the granting of the Transport and Works Act Order (TWAO) is made in the interests of the members of our constituent organisations and more generally on behalf of residents, taxpayers, council taxpayers, local businesses and consumers of services funded locally and nationally. It can be considered on nine counts:

1. That the underlying analysis is flawed
2. That full and fair attention has not been given to alternatives.
3. That the proposed scheme is inconsistent with relevant legislation, guidelines, plans and policies.
4. That the proposals fail to meet the aims, objectives and constraints set out for them in TWAO literature and in the Business Case
5. That the proposals would seriously detract from the amenity of North West Leeds
6. That the proposals would harm the economy of North West Leeds
7. That the chosen technology is inappropriate
8. That there is a likelihood that the public transport services that would eventually be offered would be less attractive than those outlined in the TWAO
9. That the consultation was deficient.

It should be noted that, notwithstanding our objections to the trolleybus technology, most of our objections apply equally to the Next Best Alternative.

Finally, we argue that, if the TWAO were to be granted despite the objections raised, conditions should be attached to limit the harmful effects that would then follow.

Before proceeding to outline our points of objection we think it useful to provide our perception of the main issues in the A660 “corridor”. We suggest that its key features (elaborated in a paper submitted by the Weetwood Residents Association ref TWA/13/APP/04/OBJ/1354) can be summarised as:

a) A medium capacity route with substantial frontage activity and a number of pinch-points restricting through movement.
b) Complex patterns of local demand including and a substantial demand for cross-corridor movement via a dog-leg at Headingley.
c) High quality streetscape recognised in a string of conservation areas and given very pleasant ambience by the large number of trees, grass verges and open space.
d) A high proportion of students in the population in the southern part of the route balanced by a population of above average age and income in the northern part of the route.
e) A number of bus services which, in combination, offer a very frequent service which is very well patronised despite high fares and long boarding times which contribute to bus-bunching.
f) Well above average proportions of bus users, cyclists, and pedestrians.
g) Traffic congestion during the morning peak and an extended evening peak during university terms (relatively free running at other times).
h) Parking problems associated with the two university campuses and with informal park & ride north of Headingley.
i) Reductions in travel demand in recent years perhaps associated with the reduced number of students in the northern part of the corridor.

We think it similarly helpful to summarise the recent history of public transport planning in the corridor:

a) The A660 was chosen as one of the routes for a city-wide tram network (“Supertram”) which was refused funding by central government (Government invited Leeds to come forward with a bus-based solution to Leeds transport problems).
b) The A660 was chosen as one of the routes for a city-wide trolleybus network (the original plan was for a city-centre box with three radial routes but financial constraints caused the proposed network to be pruned to a single north-south trolleybus line (comprising the “northern” and “southern” routes now proposed).
c) The proposal was met with very strong local opposition and a widespread belief that:
The decision to propose a trolleybus system was driven by the fact that:
- it would qualify for a TWAO and thus give the Proposers control over the services and revenue, and
- that it might be relatively simple to re-cycle the designs which had been prepared for Supertram.

The decision to include the A660 route was driven by the belief that it could generate a high revenue rather than by a consideration of the needs or constraints along the route.

Some local politicians had become so fixated on the idea that Leeds had “missed out” on central government funding for a major investment in public transport that they were supporting this scheme simply because it would attract substantial government funding (a feeling given greater urgency in the light of the changes in funding arrangements due in 2014).

The attention and priority given to Supertram, and subsequently to NGT, had diverted resources and attention from other more worthwhile improvements in public transport in Leeds.

B  The Grounds for Objection

1  We consider that it would be wholly wrong and unsafe to grant the TWAO given the many deficiencies in the analysis. For example:

   a. The public transport run time analyses reported in Document C-1-13 are crucial to the case for NGT (they are a key determinant of the demand forecasts and of the appraisal results and a difference of a few minutes can make a significant difference to the results). However, their accuracy and fitness-for-purpose must be in doubt given the large number of anomalies and/or errors evident in the documentation. For example:

      i. The run time model predictions provided in Table 13 of Document C-1-8 indicate that, between 2008 and 2016, the journey times between Bodington to the City would increase more for buses than for cars (except inbound in the interpeak and pm peak). For example, outbound during the pm peak, bus journey time is predicted to increase by 7.99 minutes while that for cars is predicted to increase by 1.85 minute. Given that the buses run in the general traffic for most of the route, this difference could only happen if bus boarding times were increasing (which would not be consistent with the do minimum prediction - recorded in Table 48 of Doc c-1-8 - that the number of bus passengers on the A660 will have fallen by 23% during that period) or if the enforcement of bus lanes were to become less effective (which would be contrary to policy).

      ii. Paragraph 1.2 of the executive summary of Doc C-1-13 reports that the “observed” am peak period bus journey time from Bodington to the City by bus is 33 minutes. However, it is clear from the data presented in Appendix B of Document C-1-13 that it is misleading to state that the observed value was 33 minutes (there were two surveys, one – based on eight observations in March 2013 - gave an average of 33 minutes 21 secs and one-based on six observations in April 2013 - gave an average of 30 minutes and 3 secs). It appears that data which puts the performance of conventional bus services in a better light has been ignored. If all the survey data had been used, the average value would be just under 32 minutes (or just under 31 minutes if the obvious outlier is removed from the April data).
iii. Further to ii, it should also be noted that 5 of the 14 bus journey time observations were made on Monday mornings. This is not a fair comparison given that the highway journey times were estimated for an average Tuesday-Thursday and, again the effect will have been to exaggerate the bus journey times relative to those of cars.

iv. Paragraphs 2.17, 2.18 and 2.26 of Document C-1-13 indicate that Trolleybuses are assumed to receive priority from the SPRUCE system such that it has minimal delays at junctions and none at free-standing pedestrian crossings while buses will not receive the same level of priority and will therefore be delayed. Table 3.1 indicates that at various locations (Churchwood Avenue for example) the bus would be delayed but the Trolleybus would not. There is no justification for the assumption that, when a bus approaches signals immediately ahead of a trolleybus, the latter can receive priority while the former does not.

v. Table 3.1 and Appendix A of Document C-1-13 identify several locations where buses would be delayed at bus stops but, although some of these bus stops have no laybys (Southbound at Weetwood for example), it has been assumed that the NGT vehicles would not be delayed by these stationary buses.

vi. The annexes to the Runtime Assessment Report (Doc C-1-13) reveal some other rather odd assumptions. For example, Annexes 33-35 indicate that, southbound along the A660 in the morning peak, the Do Minimum bus will experience 10 seconds “junction delay” at Weetwood Lane and at St Michaels Lane even though, under current conditions, they have full priority at these junctions. Such assumptions obviously tend to increase predicted journey times for the Do Minimum bus relative to those for NGT.

vii. The authors of C-1-13 note (in para 2.13), quite rightly, that junction delays are an important element of overall run times but then indicate (in para 2.14) that many of the estimates have relied on their own judgement informed by advice from UTC personnel and by data from any available modelling. This must raise some concern because:

- The modelling work extant at the time that the run time estimates were made has now been superseded
- There are some concerns about the quality of the junction modelling work (see 2b below)
- The errors, inconsistencies and biases referred to above do not leave one confident that subjective judgement necessarily equates to objective accuracy.

viii. The confusion over the year for which run time estimates have been made does not engender much confidence (Document B-9 says, in Section 3.41 and in the titles to tables 4.1 et seq, that estimates are for 2016 whereas document C-1-13 says that they are for 2020 – even though the titles of tables in Appendix A to that document contain the code “2016”).

b. The estimated journey times by the various modes in the various scenarios are crucial inputs to the demand model and to the appraisal. A key contributor to these estimates (particularly for the car mode) is the estimation of delays at junctions. The approach adopted (as described in Document B-9) involves using software (notably ARCADY and PICARDY) to model the ability of individual junctions to cope with flows predicted by the Leeds Transport Model. This approach is safe provided (1) that the junctions do not interact with one another (the most important assumption being that flows held up at a downstream junction do not back up so far that they prevent the smooth discharge of an upstream junction), and (2) that the flows assumed at individual junctions are consistent with each other and with the overall assumed pattern of demand. Unfortunately, there is reason to doubt that these conditions hold. For example:
i. Chapter 5 of Document B-9 presents results for the performance of individual junctions and, if there were perfect consistency, the flow into the upstream end of a given link would match the flow out of it at the downstream end (after allowing for net inflow or outflow from un-modelled side roads or frontage). Inflows in excess of outflows in a given time period indicate a build-up of congestion and vice versa. Examination of the data presented for individual junctions reveals some worrying examples of mismatch. For example, confining our attention to southbound flows in the morning peak, we see that:

- Comparison of the flow diagrams in sections 5.5.2.2 and 5.5.3.1 (the A660 from Lawnswood roundabout to the Spen Lane junction) reveals inflow above outflow (50 pcus) in the Do Something (with NGT) case but outflow above inflow (33 pcus) in the Do Minimum (without NGT).
- Comparison of the flow diagrams in sections 5.5.4.1 and 5.5.4.2 (the short stretch of A660 from Shaw Lane to Alma Road) reveals inflow above outflow (15 pcus) in the Do Something (with NGT) case but outflow above inflow (1 pcu) in the Do Minimum (without NGT).
- Comparison of the flow diagrams in sections 5.5.5.3 and 5.5.5.4 (the short stretch of A660 from Hyde Park junction to Cliff Road) reveals inflow above outflow (71 pcus) in the Do Something (with NGT) case but outflow above inflow (54 pcus) in the Do Minimum (without NGT).
- Comparison of the flow diagrams in sections 5.5.5.4 and 5.5.5.5 (the short stretch of A660 from Cliff Road to Rampart Road) reveals outflow above inflow in the Do Something and in the Do Minimum cases (69 and 20 respectively).

There are many other examples of mismatches and it is notable that many are significant and cannot be explained by frontage activity. Also, although it not universal, there is a clear pattern to the mismatches – the with-NGT case shows that congestion is building up whereas the without-NGT case does not. This suggests that blocking-back (due to build-up of congestion at the downstream end of the link) is most particularly marked in the with-NGT case and that, if this has been ignored in the LTM, the results will be biased towards an underestimation of delays in the with-NGT case. Further investigation of this issue requires more information about the LTM’s representation of turning movement delays and access to data on flows forecast by the LTM.

ii. It is known that, in the morning peak, traffic queuing to pass southbound through the junction of the A660 with North Lane in Headingley often backs up to or beyond Alma Road (and sometimes back to Shaw Lane and beyond). This is recognised in the commentaries included in Table 3.1 of Document C-1-13 (on page 11 it states that, the Otley Road between Shaw Lane and North Lane “is a heavily congested link” and that, at Otley Road between Shaw Lane and Alma Road, the do minimum scenario should assume “a 10kph speed restriction in AM peak to reflect queuing traffic”) and yet, for the NGT scenarios it is assumed that the southbound output from Alma Road is unconstrained. The flow diagrams in Section 5.5.4.1 and 5.5.4.2 of document B-9 further indicate that the predicted morning peak performance of the Shaw Lane-A660-Alma Road junction is dependent on an assumed reduction of 137 pcus in the traffic turning right from Shaw Lane and a reduction of 84 pcus (after allowing for the 30 pcus contributed by NGT vehicles) in the traffic turning left into Alma road.

c. A key contributor to generalised cost and thus to the predicted demand for trolleybus is the assumed walking time to and from public transport. Detailed information about the assumed
walking times was not published in the TWAO documentation but analysis of the predicted numbers of passengers boarding and alighting the NGT at each stop (e.g. as detailed in table 5.3 of document C-1-8) suggested that something is amiss. For example, it is predicted that the new NGT stop on Headingley Hill will attract more passengers than the NGT stop at the Arndale Centre (in the morning peak it is predicted that 11 passengers will alight here whereas none would alight at the Arndale Centre) whereas a knowledge of the local topography and land use makes such predictions quite unbelievable. A glance at the map of walk links and centroid connectors (attached as our Appendix B) seems to show that errors in the location of the centroid connectors will have caused the problem:

i. the centroid connectors from the zones centred on St Annes Road, and Wood Lane will route public transport users via the Headingley Hill NGT stop rather than the bus or NGT stops at the Arndale Centre (to which, in reality, they are much closer),

ii. the centroid connectors from the zone centred on St Michaels Road will route public transport users via the NGT stop on Headingley Hill rather than the bus stop at St Michaels church (which is, in reality, much closer).

Fundamental errors of this kind must cast doubt on the reliability of the model predictions and we note that the errors noted above will have boosted NGT patronage at the expense of bus patronage.

d. The appraisal of the NGT scheme, including the calculation of the BCR, includes a significant benefit (£84.2m over the 60 year period) attributed to improved punctuality. However, this estimate, which is explained in document C-1-11, will have been inflated in the following respects:

i. Although the estimate of unpredictable variability has apparently (see paragraph 2.7) allowed for known effects related to the time of day and some aspects of seasonality, it does not allow for the fact that differences between travel times in and out of term time are well understood and anticipated by travellers (and hence should be excluded from the calculation of variability).

ii. The extent of variation in public transport journey times has been calculated without including the walking time (inclusion of the walking time, which is relatively predictable, would reduce the standard deviation and thus reduce the estimate of variability)

iii. Although it is hard to imagine how a journey by NGT can achieve greater predictability than walking, it has been assumed (see for example Table 3.1) that travellers who shift from active modes will benefit from a significant increase in punctuality.

e. The predicted demand for the trolleybus (hence the trolleybus revenue, the residual demand for buses and for car travel, hence the number of buses likely to remain and hence the traffic conditions on the A660) is dependent, not only on the assumed journey times discussed above but also on ‘quality factors’ which have been assumed to influence mode choice. Details of the manner in which these factors have been used is obscure. According to paragraph 4.2 of document C-1-8 the penalty for using a bus rather than NGT is about 5.7 minutes per trip (‘around 11’ minus ‘1.27’ minus ‘over 4’) whereas, the Quality Factors Report (C-2-4) refers to a boarding penalty of 5.55 minutes and a further penalty averaging 11.73 minutes and paragraph 3.2 of the Transport Model update Document (C-1-3) refers only to an ‘overall transfer penalty’ of 10 minutes. (We have asked Metro for the requisite details but they have not yet been provided). The most detailed description of the penalties is in the Quality Factors Report so it is those which we now examine. The penalty equivalent to 5.55 minutes of journey time is imposed for boarding a bus rather than a trolley bus and a further penalty, averaging 11.73
minutes of journey time, for using a typical bus stop rather than a typical NGT stop. These values, which are apparently applied to all travellers except those on employers’ business, were derived from stated preference work carried out for Metro in 2008 and described in Document C-4-24. Careful reading of these documents reveals some interesting facts:

i. The figure of 5.55 minutes was derived by dividing the willingness to pay (WTP) for a journey on a “very new bus” rather than on an “old bus” by the value of time while travelling on a vehicle with “plenty of seating spaces”. This seems to be a very odd choice of numerator since, although there were no WTP values available for a journey on a trolleybus, WTP values were available (in Table 2 of Document C-2-4) for a journey on a “a new bus with new technology like FTR” rather than on an “old bus” (the graphics below were used to explain the difference between the vehicle types to respondents and note that the FTR vehicle has more in common with the proposed trolleybus than does the very new bus). If the numerator for the FTR-like vehicle had been used the penalty value would have been 4.15 minutes (10.01/2.41) rather than 5.5 minutes.

![Vehicle Comparison]

But it also seems odd to have chosen “plenty of seating spaces” as the denominator since values were available for the value of time while travelling on a vehicle with “all seats taken but plenty of room to stand” (which is a much better description of the expected conditions on the proposed trolleybus). If the more appropriate numerator and denominators available in Table 2 of document C-2-4 had been used, the boarding penalty would have been 3.64 minutes rather than 5.55 minutes. The use of the 5.5 minute penalty thus seems unduly favourable to NGT.

ii. The 11.73 minute penalty applied to journeys via a typical bus stop (rather than via a typical NGT stop) is derived, by a method described in document C-2-4, from a constrained sum of WTPs for specified attributes (CCTV, good lighting, electronic displays, etc) which are to be provided at NGT stops but which are not found at a typical bus stop. The values used in the current study are higher than those normally accepted by DfT. Professional opinion is divided as to the reliability of such values and the validity of combining them, but there must be the suspicion that some at least of the WTP values from the Metro study will be overestimates. For example, the conclusion that commuters would be willing to pay 25.5p per trip for “good lighting” on each and every trip was derived using the graphics below – despite the fact that most of the trips would be made in daylight.

![Lighting Comparison]

iii. Although the values in Table 2 of Document C-2-4 indicate that the willingness to pay for a journey on a “very new bus” might be 4.2 pence greater than that for one on a vehicle “like FTR” (and note again that the FTR-like vehicle has a lot in common with the trolleybus), this preference has not been allowed for in the analysis or appraisal of NGT, the NBA or the LCA. (Document C-4-24 concluded, in paragraph 9.5, that there was “strong evidence that whether the service is provided by a bus, trolleybus or tram is less important to travellers than other characteristics of the service.”) and this was taken to
justify the approach which was adopted – namely the estimation of modal penalties as a function of the WTPs for their attributes).

iv. Although the Stated Preference survey did reveal a willingness to pay to travel on a vehicle with “plenty of seating spaces” rather than one with “all seats taken but plenty of room to stand”, this was apparently ignored in the analysis and forecasting (Metro have been asked to supply the further details required to confirm this but have not yet responded). A failure to allow for a disinclination to stand will have resulted in an overestimation of demand for NGT. (In fact the value of having access to a seat derived from Metro’s Stated Preference work is lower than might have been expected given the results of research in the rail industry – but this may simply result from the fact, noted in paragraph 5.9 of document C-4-24, that the results came from a survey sample which excluded anyone with access to free travel (i.e. the old and infirm – the very people who are likely to have greatest disinclination to stand and who constitute an above average proportion of people in Weetwood and West Park).

v. Document C-2-4 notes, in paragraph 2.12, that models based on stated preference results often overestimate propensity to shift mode and that this tendency should be corrected by using scaling factors based on revealed preference data. It further notes that a scaling factor could be applied to the car/public transport choice but not to the bus/NGT choice. It is not known whether such a scaling factor was applied in the models whose results were reported in January 2014 (we have requested details of the models but they have not yet been provided), but if no scaling was applied for the bus/NGT choice, the use of NGT will have been overpredicted and the quality benefits will have been exaggerated.

f. The use of the attribute-based factors described above might be justified if they were applied fairly to all the competing modes. However, the modelling and appraisal of the proposed trolleybus (and of the NBA) has been based on the assumption that:
   i. Metro’s improvement to bus stops will not extend beyond installation of CCTV (as indicated in paragraph 4.2 of document C-1-8)
   ii. Bus operators will not provide more attractive vehicles
   iii. The fleet of trolleybuses will for ever be regarded as “newer” than the buses with which they will be competing. A much more realistic assumption would allow for the likelihood that bus operators would allocate their most attractive vehicles on the important Headingley routes, cascading their older stock onto less important routes – an option not realistically available to the trolleybus operator – see Objection 7b below. Since customer preference for new stock is well known (and was reflected in the finding from the stated preference work that an improvement from “old bus” to “very new bus” would be valued more highly than a shift from “old bus” to “FTR”), the mode choice model ought thus to include a “penalty” for use of the older trolleybuses rather than a penalty for use of what are likely to be newer buses.

g. The demand forecasts and appraisal results are also dependent on a number of other assumptions whose basis is at least questionable. Namely:
   i. That bus operators will not provide improved boarding times (and hence reduce journey times and reduce unreliability associated with bus-bunching).
   ii. That the bus operators will not seek to compete with the trolleybus by offering lower fares (the promoters have assumed that the fares of bus and trolleybus will be broadly similar - see PEBC 8.16 or Document C-1-6). In actual fact, as of February 2014, a new bus
operator (Leeds Tiger) is already offering lower fares along the most profitable stretch of the route.

iii. That the socio-economic characteristics of the population resident in the northern part of the NGT Catchment area will continue to generate substantial demand for public transport. The student population is falling while the new population associated with new housing developments will have higher car ownership and will thus be less captive to public transport. A recent report by Unipol (attached as an appendix to the Statement of Case submitted by the West Park Residents’ Association - TWA/13/APP/04/OBJ/1720), reveals that, between 2006 and 2012, the number of students living in street properties in Beketts Park, Far Headingley and West Park fell by 57% while those in Central Headingley fell by 19%. The report indicates that the reductions are in large part due to the construction of purpose-built student accommodation near, and to the south of, the University campuses.

iv. That the falling levels of traffic flow on the A660 in recent years do not reflect an underlying switch from travel to e-activity (we note that the presence of two universities means that involvement in the information economy is very pronounced in the A660 sector and, as is clear from recent statistics, the reductions in peak traffic flow are more marked in the A660 corridor than in any other corridor into Leeds – suggesting that they are not simply a result of economic recession. (DfT census data http://api.dft.gov.uk/v2/trafficcounts/countpoint/id/17374.csv and (http://www.dft.gov.uk/traffic-counts/area.php?region=Yorkshire+and+The+Humber&la=Leeds) reveals that, between 2002 and 2012, the flow of traffic on the A660 at Woodhouse Moor has fallen by 17% while the total for all main roads in Leeds has remained almost constant).

ev. That the park and ride facility at Bodington will be successful (from table 12.4 in Document C-1 it can be seen that, weighting for the number of hours of each type, over half of the predicted shift from car to NGT is by people using the park and ride) despite the fact that the trolleybus will not offer a dedicated, non-stop, shuttle service and users will be particularly frustrated in the evening peak when they have to compete with other users to get a seat – and even perhaps any space at all. Some concerns about the method by which the demand for the park and ride was assessed are discussed in objection 1i below.

h. The perceived values and penalties described in Objection 1e above have been included in the calculation of benefits in the TEE tables (where they dominate the benefits claimed for punctuality and passenger time savings) and in the calculation of overall BCR (where they are responsible for a large part of the assessed benefits). It should thus be recognised that the economic case for the scheme rests entirely on the valuation of vehicle and bus stop attributes which could be achieved without investment in NGT. This may not be against the letter of the rules but it is most definitely against their spirit if no equivalent allowance is made for perceptions of negatives such the loss of streetscape ambience.

i. A significant portion of the predicted NGT patronage is due to use of the Bodington and Stourton P&R sites. It is therefore important to be sure that the prediction of P&R usage is robust. Section 4.2.1 of Document C-1-3 explains that the demand for park and ride has been forecast via a parking choice model which predicts where drivers heading for the centre of Leeds will choose to park - in the city centre, further out, or at a P&R site. Some aspects of this model give cause for concern. For example:

   i. The parking choice model was unable to replicate the observed use of existing P&R sites without the addition of some very significant car-park-specific penalties and by
underweighting the public transport element of the cost of using P&R sites. It is not known what penalties were applied in forecasting the use of Bodington and Stourton P&R sites but it is noted that the generalised costs of P&R trips had to be re-weighted (multiplying the car element by 1.71 and the NGT element by 0.82) in order to replicate the extents of existing P&R catchments. The fact that the model required the inclusion of large car-par-specific penalties and significant adjustment (for which no justification exists in demand modelling theory) to the generalised cost matrix is an obvious cause for concern. (The modellers recognition of this may be evident in Section 4.5.1.2 of Document C-1-3 where, commenting on the validation tests, they say that “While this provides assurance in the broad magnitude of the forecasts it also suggests that where precise detailed forecasts are required this should be supplemented by more detailed scheme level analysis.”).

ii. A key reason for using a P&R service rather than seeking to park in the city centre is the time taken searching for (and accessing) city centre parking. However, data on this is difficult to obtain and, as explained in Section 4.2.1.2 of Document C-1-3, these times were estimated by a method which, according to its authors “is not designed to model significantly and consistently over-crowded car-parks”.

j. The appraisal of the NGT scheme (e.g. in Table 17.4 of Document C-1) shows a total net benefit of £448m (2010 values, over a 60 year appraisal period). The main contributor to this is an estimated £701m in passenger travel time savings. However, as is clear from the Appraisal Summary Table (Table 17.12 in Document C-1) and on page 11 of the TUBA Report (Document C-1-17), these travel time savings relate to perceived (not resource) savings and include “quality benefits” which are assumed to result from use of the trolleybus. It is interesting to consider the implications of this; taking the 5.5 minute boarding time penalty which according to document C-2-4 has been applied to bus journeys and valuing this for the 75% of the 11.79 million NGT journeys per annum which were transferred from bus, and using the recommended PSV passenger Value of Time (£21.69/hr) this contributes £17m (5.5/60 x 21.69 x 11.79 x 0.75) to the time savings in the first year and, over the 60 year appraisal period, using the recommended discount rate, contributes around £440m of benefit (even assuming no growth in patronage beyond year one). In other words the net benefit calculated for the scheme is almost entirely due to the boarding time penalty whose value is open to question (see Objection 1ei above and note that, if one used a value of 3.64 minutes rather than 5.55 minutes, the travel time saving would be reduced by £288m). (Note that there is some uncertainty as to the size of penalties applied and that much greater numbers are at stake if the penalties are actually more than 5.55 minutes).

k. The appraisal of the NGT scheme was based on an annualisation of the impacts predicted for different times of day. The peak period impacts were estimated for peak periods during school and university terms (when congestion is at its most marked and hence when NGT would perform best relative to its competitor modes). No estimate of the performance of NGT outside of University and school terms has been published despite the fact that such conditions apply for 28 weeks a year. An adjustment to allow for the fact that the modelled peak period might not be typical was made using data from automatic traffic counts (see Page 5 of Document C-1-2) and from public transport passenger counts (Table 24 in Document C-1-2) but the traffic and passenger counts were Leeds-wide and so will not have reflected the much more marked effects of the University term time in the A660 corridor.
I. The public transport demand forecasts have a number of very curious features which must raise doubts about their reliability. For example:

i. Table 47 of document C-1-8 indicates that, for the base year, the model predicts the outbound flow of public transport passengers in the Woodhouse Lane Corridor to be 4908 (am peak, interpeak and pm peak combined) whereas it predicts the equivalent inbound flow to be only 2373. There is no obvious explanation for this remarkable lack of symmetry.

ii. Table 10 of appendix 11 of the PEBC (dated March 2012) indicates 36,015 public transport trips in the 2008 morning peak base case while Table 18 of document C-1-8 (dated January 2014) indicates the same thing as 70,878. Either one of the two figures is a mistake or this is an indication of a massive change in the model’s prediction. Neither of which possibilities engenders much confidence.

There seems also to be some uncertainty about the level of current demand for buses. Appendix 13 of Appendix 3 of the PEBC reports results of the bus occupancy survey which are different from those reported in Appendix 8 (which deals with bus flow modelling). The morning peak southbound flow at woodhouse flow is variously reported as 1400 or 1045.

m. The analysis documents also contain many errors which, even if not crucial to the outcome, clearly raise questions about the quality control on the analysis and on the reliability of other claims made for the proposed trolleybus system. For example:

i. The number of NGT users transferring from bus as quoted in Table 12.4 of Document C-1 differ from that quoted in Table 51 of Document C-1-8.

ii. Document A-08e-4 (Socio-economics Technical appendix K) claims (in Table 3.6 on p15) that the development of 1385 houses at Kirkstall Forge is “in close proximity to St Chads NGT stop” and that the resulting change in accessibility is “significantly beneficial”. (Kirkstall Forge is actually about 1.5 miles from St Chads NGT stop as the crow flies and the walk would involve an exhausting trek crossing three roads, ignoring the bus routes thereon, crossing a railway line, climbing several steep gradients and passing through two woods and across a campus).

iii. The Programme Entry Business Case (in section 2.12, p10/87) states that the bunching of bus services is ‘due to traffic congestion’. This suggests a worrying lack of knowledge about the causes of bus bunching – its fundamental cause is long dwell times at bus stops rather than congestion.

iv. As noted in Objection 1avi above, there is confusion about the year for which the run time analyses were conducted (2016 or 2020).

n. The assessment of NGT’s impact on accessibility appears not to have taken account of the greater average walking distance, the longer average waiting times, the increased likelihood of having to stand while on the vehicle or the likelihood of decreased frequency of buses serving places not on the NGT route (DfT guidance, in Door to Door - A Strategy for improving Sustainable Transport Integration – published in 2013, stresses, in item 3 of the Executive Summary, the importance of ‘... the cost, convenience and complexity of the entire door-to-door journey – not simply one element of it’).

o. The appraisal has failed to give due regard to some important elements of the cost of the NGT proposal. For example:

i. The additional travel time and vehicle operating costs during the construction period have been ignored (DfT advice is clear – in paragraph 10.11 of TAG unit A1.3
- it states that “Costs to existing transport users due to the construction of a project and costs (or benefits) to users arising during future maintenance should be recorded in the TEE tables where they are likely to be significant”.

ii. Costs to businesses and revenue lost to local bus operators during the construction period have been ignored (again, in paragraph 11.12 of TAG unit A1.3, DfT indicate that the impact on operators’ revenues should be considered).

iii. The (negative) value of the loss of trees associated with the proposed scheme. This is remarkable given the strength of public opinion on this issue. A sample survey of 21 trees at St Chads using the Capital Asset Value for Amenity Trees (CAVAT) method suggested they were worth £500,000. (See our attached Appendix C). The full value of all 400+ trees to be lost and of those to be lopped can only be speculated on, however given that this sample is largely representative of the overall size, age and quality of trees proposed for removal along the entire route and using data provided by Mott MacDonald within their Arboricultural Assessment, it is possible to extrapolate value of approximately £14,000,000 worth of trees for the proposed entirety of tree loss along the route - a figure which could make a difference to the overall BCR.

iv. The cost of maintaining (primarily watering) the new trees has apparently not been fully quantified (and we note that research for the Department of Communities and Local Government and published by ADAS in their Trees in Towns II report, published in 2008, shows that at least 25% of new tree planting in towns and cities perished).

v. The potential cost of mitigation of damage to heritage assets has not been allowed for. A professional assessment of the NGT Environmental Statement (attached as our appendix D) concludes, in section 1.4, that the potential cost is unknown and that the proposed use of a ‘Grampian’ condition to cover all future mitigation of damage to heritage assets is neither enforceable nor reasonable because the archaeological works required cannot be specified in advance.

vi. We have found no reference to the inclusion of costs for the required relocation of bus stops.

p. The appraisal has failed to give due attention to a number of downside risks. For example:

i. The possibility that the forecast revenue might be severely reduced if the residual bus operator were to compete by offering lower fares (thus leading to a reduced market share and/or reduced revenue per passenger for NGT)

ii. The risk of an escalation of costs of equipping, operating and maintaining a system which is unique in the UK (using right hand drive trolley vehicles for which a competitive range of suppliers will not exist)

iii. The possibility that eventual costs of upgrading might be substantial (when the merits of evolving battery technology are accepted, the purchase of a fleet of new vehicles and the removal of redundant equipment - as required by the provisions of a TWAO - will be only partially offset by the second-hand value of redundant overhead wires and obsolete trolley vehicles).

q. In revising the business case in January 2014 some very significant changes have been made to the modelling assumptions and data. Some key aspects of the modelling approach have been changed and the new results differ in crucial respects from those on which the Programme Entry Business case was based. This new modelling work has not yet been assessed by DfT and it cannot therefore be assumed that the approach, or results, would be accepted by DfT.
A number of key aspects of the modelling work are obscure. We have sought clarification on several issues but, pending such clarification, we believe there may be further causes for concern. For example:

i. Document B9 (Transport Assessment) does not clearly indicate how 2012 flows were adjusted to give 2020 flows. Text in para 5.2, and Fig 5.1, refer to growth factors based on the difference between LTM2016 and LTM2031. But it is not clear what growth rates were assumed to apply for 2012 to 2016.

ii. Document B9 (Transport Assessment) para5.2 refers to an iteration to ensure that the LTM flows are consistent and adjusted to local conditions, but no feedback loop is shown in Fig 5.1. The nature of the iteration is thus unclear (and examination of the turning movements described in Document B-9 suggests that convergence was far from complete).

iii. The PEBC documentation referred to constraining the growth in A660 flows in the light of congestion. Document B-9 no longer mentions this but it is not clear whether capacity constraints are now applied only via the traffic assignment model (i.e. that there is no “capacity” constraint on the demand model totals).

iv. It is not clear whether there been any detailed (e.g. Arcady/Transyt/Picardy) modelling of the North Lane/A660 junction or of the Weetwood Lane/Moor Road Junction – nor have any flow data been released to show the extent of diversion onto Weetwood Lane, Moor Road, Meanwood Road, Queenswood Drive etc

v. C-1-3 (the LTM Update Report) summarises changes to the demand model and indicates that separate parameters are now used for mode choice and interchange modelling. However, it does not detail what parameter values, scale factors etc have been used nor exactly how they were applied. C-1-3 indicates that there is now a logit model of the choice between NGT and other PT modes but no detail is provided on this model. There is reference to a “Public Transport Model Report” in para 4.2.1 but there is nothing in the document list which meets that description. Document C-1-8 has insufficient detail and contains numbers which seem inconsistent with the recommendations contained in Document C-2-4.

vi. There is no sufficiently detailed list/description of the infrastructure improvements which are included in the LCA scenario.

2 We consider that it would be wholly wrong and unsafe to grant the TWAO given that the analysis failed to give full and fair adequate attention to alternative schemes. For example:

a. There is evidence to suggest that the analyses have been unduly favourable to NGT. For example, due to:

i. Overestimation of the demand for public transport in the A660 Corridor (Table 3 in Document C-1-3 reveals the demand model was overpredicting inbound base year passenger flows by 15% in the am peak, by 7% in the interpeak and by 25% in the pm peak)

ii. Overestimation of the “do minimum” bus journey times (see Objection 1ai-iv above)

iii. Underestimation of traffic delays in the with-NGT case (see objection 1b above)

iv. Failure to include an accurate representation of the (longer) walk times for users of the NGT (see Objection 1c above)

v. Overestimation of the perceived attractiveness of NGT – in particular by ignoring passengers’ dislike of having to stand.
vi. Failure to allow for bus improvements in the Do Minimum case (reductions in boarding times and hence journey times and improvements in the perceptions of quality which would lead more people to choose bus rather than NGT).

vii. Exaggeration of the importance of the term-time peak conditions (within which conditions are most favourable to NGT) - (see Objection 1k above).

viii. An exaggerated estimate of the punctuality benefit (see objection 1d)

ix. Inclusion of perceived penalties in the estimation of travel time savings (see objection 1e) without inclusion of any measure of the perceived deterioration in amenity or streetscape (see objection 1h).

x. Failure to give due attention to important downside risks which could lead to reduced revenue and/or increased future costs (see objection 1p).

xi. Failure to consider the full costs of the scheme in the appraisal (see objection 1o).

b. Although Document C-1-1 (the Alternatives Review) recognises, in para 1.3, that “To obtain the TWAO .... the Promoters must demonstrate that they have considered an appropriate and reasonable set of alternatives to the promoted option”, the consideration of alternative, lower cost, solutions to Leeds’ transport problems has not been adequate. For example, the specification of the Low Cost Alternative (LCA) assumes:

i. use of an articulated vehicle (rather than a modern double-decker) and therefore omits the beneficial impact on other traffic (note also that the Stated preference work, reported in Document C-4-24, indicated a passenger preference for modern double-deckers over FTR-like vehicles);

ii. no improvement in bus service quality (Table 2 of Document C-1-9, describing the input assumptions for the LCA, states that bus service quality will be the same as existing buses);

iii. no reduction in bus emissions (despite legislation already in place);

iv. no increase in capacity or frequency (note that bus frequencies and capacities have already increased above the levels extant in early 2013);

v. no improvement in punctuality (such as would be achieved by reduced boarding times);

vi. no improvement in routing (e.g. to provide a cross city service or to avoid the inefficient routing at Blackman Lane);

vii. provision of increased priority which can only be described as poor (see objection 2c);

viii. a very modest improvement in bus stop quality (e.g. it excludes any further provision of at-stop information) despite the fact that such improvements are relatively cheap (the Capital Costs Report, Document C-2-18, indicates that the total cost for all of the NGT stops was around £5.2 m) and are responsible for the majority of the scheme benefits;

ix. that the Bodington Park and Ride site is served only by existing bus services rather than having a dedicated non-stop service.

c. Although some extension of bus priority is specified for the LCA, the modelling results suggest that it has not been properly designed and/or that the potential for more efficient signal settings has been ignored (Table 4.1 of Document C-1-13 show that, southbound from Bodington to the city, the LCA bus is actually slower than the DM bus). According to B1.14 of document C-1-1, the provision of more effective priority for buses was rejected because it would result in additional congestion. However, given that the NGT scenario is itself predicted to generate additional congestion, this restriction was clearly inappropriate (and, in fact, some significant benefits could be achieved with minimal impact on general traffic – for example at
the junction of Blackman Lane with Woodhouse Lane where buses are currently delayed by a minute or more but could be given priority over a very insignificant cross flow).

d. If the comparison of scenarios is to be meaningful it must compare like with like. A vital prerequisite is thus that the optimisation of junction designs in the alternative scenarios has received the same attention as it has in the NGT scenario. Document C-1-8 indicates that, with careful design and attention to signal settings, the junctions along the A660 can accommodate the NGT with no appreciable delay caused to other traffic. This is commendable and shows what can be achieved by careful design of junctions and signal settings. However there are several indications to suggest that this degree of attention has not been lavished on the optimisation of junctions in the DM and LCA scenarios. For example:

i. Document C-1-8 suggests (in section 2.4) that optimisation has been attempted in the Do Minimum scenario only for junctions where long delays were evident. Junctions with less severe congestion have apparently been ignored. Moreover, it seems clear that the approach to the optimisation of signals in the NGT scenario is quite different from that used in the other scenarios. A footnote in Table 4.1 of Document C-1-13 (page 23) explains that NGT’s southbound journey time is lower in the am peak than in the interpeak (a fact identified in our original Objection letter) because the signals give more priority to the northbound NGT in the am peak than in the interpeak; however we note that the DM Bus and LCA Bus are both much slower in the am peak than in the interpeak and conclude that the minimisation of with-flow congestion in the am peak has received much less priority in the no-NGT scenarios than it did in the NGT scenario.

ii. The runtime analyses summarised in Table 4.1 of Document C-1-13 (page 23) suggest that, southbound from Bodington to the city, the LCA bus is slower than the “bus with NGT” and even than the “Do Minimum bus” (despite supposedly benefitting from various junction improvements and having faster boarding times). This suggests that the junction “improvements” for the LCA were not very carefully designed.

e. Other low cost alternatives and variants appear not to have been given full consideration. For example:

i. The role of a Bus Quality Contract as a part of an alternative to the NGT scheme has not been fully considered (although it was mentioned in the PEBC as a means of protecting the NGT services once they had been introduced).

ii. The possibility of introducing selected parts of the proposed scheme (e.g. the South Route plus the southern part of the North route – up to the University - in combination with use of a Quality Bus Contract or Quality Bus Partnership together with limited engineering works and a phased introduction of Park and Ride at Bodington) has not been considered.

iii. A proposal developed by the North West Leeds Transport Forum (attached as our Appendix A) demonstrates how much of the benefit from the trolleybus scheme could be achieved much more quickly, at much lower cost and without such severe damage to local amenity and businesses. The NGT team are aware of this proposal but have not considered it seriously.

f. There has been no proper consideration of alternative uses of the “local” contribution of funds which would be required for the proposed trolleybus system:

i. To support the extension of real-time passenger information services and subsidy of non-commercial but socially-necessary bus services
ii. As a contribution towards the wider transport strategy of the City Region (including improvements to local rail and introduction of rail-based park-and-ride)

iii. As a contribution towards (or to defray reduction in) other non-transport priorities.

3 We consider that it would be wholly wrong and unsafe to grant the TWAO given that the scheme is inconsistent with relevant legislation, guidelines, plans and policies.

The summary of the revised (January 2014) Statement of Case includes the claim, in section 17.4, that the scheme “... has been developed in accordance with and meets defined policy objectives and it accords with national and local policy.” This is manifestly not the case. For example:

a. The Equality Act (2010) (see our attached appendix E.01) places a 'Public Sector Equality Duty' on public authorities like Metro to eliminate discrimination and advance equality of opportunities. Metro do indeed claim to prioritise the needs of disabled and infirm passengers but the NGT proposals clearly discriminates against them because of their particular difficulties in walking and standing or waiting out of doors. For example:

i. Those who choose to use the NGT will, on average, have to walk further to and from the nearest trolleybus stop than they used to have to walk to and from the nearest bus stop (the stops are further apart)

ii. Those who choose to use the NGT will be less likely to get a seat than they were when they used buses (current buses have 70 seats and space for 20 standing (77% seated) and, although the number of sets per NGT vehicle is not yet known, it has been estimated that achievement of the quoted 160 places in a single articulated vehicle would leave room for no more than 45 (28% seated)).

iii. Passengers will, on average, have to wait longer for the bus, or trolleybus, to arrive (the frequency of vehicles at any given stop will be half what it is now). This more than outweighs the predicted reduction in bus journey times.

iv. Passengers whose origin is beyond the NGT route (e.g. those boarding the #28, #97 or #1 before they join the NGT route) will suffer reduced service or a very long walk to the NGT route

v. Passengers whose destination is beyond the NGT route (e.g. those heading for St John’s centre, The Headrow, or the bus station for connection to St James Hospital or elsewhere) will suffer reduced service and/or have to make an additional interchange between vehicles.

vi. Many of the existing bus stops have been moved to less convenient locations (disadvantaging those passengers who want to use a bus rather than a trolleybus because of the destinations served or the seats available).

vii. Paragraphs 5.32 et seq in Document A-08h-3 claim that access to healthcare facilities will be improved because the journey times by trolley bus will be faster than those (currently) achievable by bus but the analysis appears not to have taken account of the greater average walking distance, the longer average waiting times, the increased likelihood of having to stand while on the vehicle or the likelihood of decreased frequency of buses serving places not on the NGT route.

viii. Examination of TWAO Document A-04 (the Traffic Regulation Order Plans), reveals several instances where loading-bans will adversely impact disabled or infirm drivers. For example,
• Sheet 1 of the above indicates a loading-ban around the High Field Surgery on Holtdale Approach which would impact on all patients but especially those who are mobility-impaired, and
• Sheets 8 and 9 indicate a significant reduction in the number of parking spaces in Far Headingley and, due to the 24-hour loading ban on the A660, southward to Alma Road.

b. Section 39 of the Road Traffic Act 1988 places a general duty on Highway Authorities to promote road safety. However, as noted in the Appraisal Summary Table (Table 17.12 in Document C-1), the NGT scheme is forecast to result in an increased number of accidents. More broadly, the proposal raises serious issues in respect of safety. For example:
   i. The failure to engage with the Ambulance Service in respect of the need for ambulances to move through the A660 corridor (particularly following closure of Accident and Emergency Services in Otley). The problems likely to be experienced in a more-congested Central Headingley are particularly alarming (Ref: A-01-3 paragraph 7.18).
   ii. The proposal that cyclists will share space with articulated vehicles is a grave concern. Guidelines for bus lane design indicate that the ideal width for a shared lane is 4.6 m and allows safe passing while 4.25 metres allows for passing but, since safety is affected, should only be used for short distances. The absolute minimum is 4 metres but it is noted that this may encourage unsafe passing, particularly where the adjacent lane has queuing traffic. Paragraph 16.28 of the Revised Statement of Case states that “where cyclists will share lanes with NGT and/or buses, the lanes are designed to be 4.2 metres wide” but even this aspiration seems often not to have been achieved. For example the outbound bus and cycle lane between St Mark’s Avenue and Clarendon Road is described as being generally 3.65 metres but scales to less than that at some points.
   iii. The siting of Trolley stops and bus stops on opposite sides of side roads creates a safety hazard when a would-be passenger at one stop sees a vehicle of the other type approaching first and so runs to that other stop (they may not pay sufficient heed to traffic turning in or out of the side road). This issue occurs at several locations. For example:
      • at the entrance to Weetwood Hall (southbound) (Ref: A-05 drawing 312694/TD/011)
      • at the entrance to “the Village” Leisure Centre (southbound) (Ref: A-05 drawing 312694/TD/012)
      • at The entrance to St Chads church (northbound) (Ref: A-05 drawing 312694/TD/014)
      • at Park Terrace (southbound) (Ref: A-05 drawing 312694/TD/014)
      • at Headingley Hill trolleybus stop (northbound) (Ref: A-05 drawing 312694/TD/019)
      • at Regent Park Avenue (southbound) (Ref: A-05 drawing 312694/TD/021)
   iv. A substantial number of site-specific safety concerns have been identified in the objection (ref TWA/13/APP/04/OBJ/573) submitted by Michael Broadbent – formerly West Yorkshire Police Road Traffic Inspector responsible for liaison with the Highways Department of Leeds City Council on traffic management and safety issues.

c. The principles of good street design are encapsulated in the widely respected Manual for Streets (2007 and 2010) (See our attached appendix E.02) but the NGT proposals are often inconsistent with these principles. For example:
i. Paragraph 4.71) (E.02a attached) states that ‘traditionally, road hierarchies have been based on traffic capacity’ e.g. radial road, distributor road, access road. However, the approach now recommended to street design is ‘determined by the relative importance of both their place and movement functions’ e.g. shopping street, boulevard, mixed-use street. The insensitive treatment of the A660 corridor, which has all the above characteristics, to enable the imposition of an inflexible system is contrary to these principles.

ii. In respect of public transport, para 6.5.11 (E.02b attached) that ‘Bus stops should be placed near junctions so that they can be accessed by more than one route on foot or near specific passenger destinations (schools, shops etc). Many bus stops along the route have been moved away from such locations.

iii. Paragraphs 10.1.1 and 10.1.2 (E.02c attached) that ‘street furniture and lighting equipment should also be integrated’ and ‘that it is especially important in historic towns and conservation areas’. It is therefore not appropriate to duplicate lighting columns with OLE and to have separate trolley and bus stops.

iv. This latter point is reinforced in Streets for All published by English Heritage (2004) (see our attached appendix E.03) which states that ‘the underlying principles are to reduce clutter, co-ordinate design, and reinforce local character whilst maintaining safety for all’.

d. The National Planning Policy Framework (NPPF) (see our attached appendix E.04) in para 64 (E.04a attached) states that ‘Permission should be refused for development of poor design that fails to take the opportunities for improving the character and quality of an area and the way it functions’. In West Park, for example, DF7 drawings state that there is an ‘opportunity to upgrade surfaces to the local neighbourhood centre’ but no actual proposals have been put forward in the TWAO.

e. The NPPF in para 65 (E.04b attached) goes on to state that ‘Local Planning Authorities should not refuse planning permission for buildings or infrastructure which promote high levels of sustainability because of concerns about incompatibility with an existing townscape, if those concerns have been mitigated by good design (unless the concern relates to a designated heritage asset and the impact would cause material harm to the asset or its setting which would not be outweighed by the proposal’s economic, social and environmental benefits).’ Conservation Areas (of which there are several along the A660 route – see our appendix F1 attached) are ‘designated heritage assets’, as are Listed Buildings and Structures (of which there are several along the A660 route).

f. The NPPF in para 132 (E.04c attached) states that ‘When considering the impact of a proposed development on the significance of a designated heritage asset, great weight should be given to the asset’s conservation ……. Significance can be harmed or lost through alteration or destruction of the heritage asset or development within its setting…. As heritage assets are irreplaceable, any harm or loss should require clear and convincing justification’. In respect of Conservation Areas those elements described as having ‘special architectural or historic interest’ are particularly significant to ‘the character or appearance of which it is desirable to preserve or enhance’. It should be noted that the Headingley, Hyde Park and Woodhouse Moor Conservation Area has been added to English Heritage’s ‘Heritage at Risk’ Register (2013) (See our attached appendix E.05). Further evidence on the threat to the historic environment posed by the NGT proposals is given in the Historical Environment Report.
attached as our appendix D). The TWAO seeks to justify the associated specific listed building and conservation area applications in general terms such as ‘considerable public benefit to the people of Leeds in economic growth and environmental terms’ which ‘outweighs any harm..... to their significance assets’. We contend that these justifications do not meet the NPPF test (see objections 3o to 3s below).

g. Paragraph 128 of the NPPF (E.04d attached) requires that, where a development includes a heritage asset with archaeological interest, ‘the developers should submit an appropriate desk based assessment and, where necessary, a field evaluation’. Policy P11 on Conservation in the Local Development Framework supports this and states that ‘Development proposals will be expected to demonstrate a full understanding of historic assets affected’ and that ‘Heritage statements assessing the significance of assets and mitigation measures will be required to be submitted by developers to accompany development proposals.’ However, paragraphs 2.26 and 2.29 of the Environmental Statement acknowledge that no fieldwork has taken place and that the impacts on the heritage assets are uncertain. No pre-determination evaluation has taken place on any archaeological site, despite the sites being referred to as ‘significant’ by the West Yorkshire Archaeology Advisory Service (WYAAS).

h. The Historical Environment Report attached as our Appendix D looks at two sample conservation areas which are considered to be designated heritage assets according to the NPPF Annexe 2 p51. It concludes:

i. That, contrary to guidance on page 56 of the NPPF (E.04e attached), the value of elements which make a positive contribution towards the character of the conservation areas (mostly mature trees, boundary walls and streetscape) have been downplayed despite clear steers from the conservation area appraisals (which are a material consideration in the determination of planning applications) that they are of significance and essential to the character of the area. The NPPF (on p56) states that ‘The value of a heritage asset to this and future generations because of its heritage interest. That interest may be archaeological, architectural, artistic or historic. Significance derives not only from a heritage asset’s physical presence, but also from its setting.’ However, the Technical Appendices of the Environmental Statement simply address concordance with designatable quality and significance. They do not look at the special interest - architectural, historic, artistic and/or archaeological - of a heritage asset beyond its listed status nor do they consider whether its relationship to the surroundings is part of its significance. Failure to consider these aspects leads the Environmental Statement to underestimate the impacts.

ii. That, contrary to guidance in paragraph 138 of the NPPF (E.04f attached), the cumulative impact on each conservation areas as a designated heritage asset has not been considered even though the cumulative impact of road widening, boundary wall moving and tree felling on the special interest of the conservation areas is significant. The NPPF 2012 requires local authorities to treat the loss of an element which makes a positive contribution to the significance of a conservation area as substantial harm (para 133) or less than substantial harm (para 134 ) and in doing so should take into account the element’s contribution to the conservation area as a whole (para 138). It is therefore vital that the significance in heritage terms should be assessed for each conservation area and the impact of the scheme on the conservation area as a whole should be identified. The landscape studies included in the Environmental Statement fail to do this.
i. ‘Saved Policies’ from the Unitary Development Plan (Review 2006) (see our attached appendix E.06) include SA1 (E.06a attached) which states a strategic aim to protect ‘existing good environment, and conserving and enhancing where there is scope for improvement’. More specifically N18A (E.06b attached) states that ‘There will be a presumption against any demolition of a building or parts of a building which makes a positive contribution to the character and appearance of a Conservation Area’ while N20 (E.06c attached) states that ‘Demolition or removal of other features which contribute to the character of the Conservation Area and which are subject to Planning Control, such as trees, boundary walls or railings will be resisted’. The NGT proposals in respect of the northern route are clearly contrary to the policies.

j. Policy T1(v) of the Unitary Development Plan (See our attached appendix E.06d) referred to the intention to “encourage integration between travel modes through better interchange between and within modes”. We contend that, by introducing a new mode with its own stops quite separate from the bus stops, the Trolleybus proposals would represent a reduction in integration.

k. The (third) West Yorkshire Local Transport Plan (WLTP) of Oct 2012 (see our attached appendix E.07) has six ‘big ideas’, including developing ‘integrated ticketing and smart card technology’, ‘a new approach to buses as part of an integrated transport system’ and ‘supporting Park and Ride buses’. In addition, their priorities include the ‘continued development of proposals for Bus Quality Contract Schemes’. We would support all these aspirations and consider them to be more appropriate solutions to the needs of the A660 corridor than a Trolleybus competing with existing bus services.

l. The (second) WYLTP also states under the Quality of Life (see our attached appendix E.08) heading that ‘the quality of public space (including streetscape) is, and will continue to be, an important consideration in all transport projects’. The TWAO proposals, involving loss of over 400 trees and the severe lopping of an unknown number to allow for the overhead power cables, the addition of extra street furniture and of the OLE poles and cables themselves, is clearly at odds with this consideration.

m. Objectives of the Local Transport Plan (according to The Programme Entry Business Case §2.16, p11/87) include “to make progress towards a low carbon, sustainable transport system for the region”. This is clearly at odds with the increase in greenhouse gas emissions and the reduction in the use of active modes which are forecast by Metro (see Table 7.3 in Document B-1 and Table 12.4in Document C-1, respectively) to result from the introduction of the trolleybus system.

n. Objectives of the Local Transport Plan (according to The Programme Entry Business Case §2.16, p11/87) include “to enhance the quality of life of people living and working in the region”. This is clearly at odds with the anticipated loss of trees and greenspace, the predicted increase in congestion and the threat to small businesses in the communities along the A660.

o. The NPPF (in paras 29-30) (E.04g attached) and the strategy for West Yorkshire’s Third Local Transport Plan (in our attached appendix E.07) each indicate that the use of sustainable modes of transport should be encouraged. The Leeds Climate Change Strategy - Vision for Action (see our attached appendix E.09) gives particular priority to the promotion of smarter choices including walking and cycling. The fact that the trolleybus is forecast to lead to a reduction in the use of active modes indicates that the TWAO proposals are contrary to these policies and priorities. We also note that, since the A660 corridor already has around twice the
proportion of active mode use and public transport use than that achieved in any other
corridor into Leeds, a policy-compliant priority would be to invest in increasing the use of
active modes in those other corridors rather than in jeopardising the current performance of
the A660.

p.  The Leeds City Region Transport Vision (see our attached appendix E.10) refers to “making
best use of the transport assets in the City Region”. We contend that, given its expected impact
on existing bus services and its resultant under-use of bus stops, it signally fails to do this.

Objections o, p, q, r and s below refer to heritage and design documents which are either
supplementary planning documents or material considerations in planning matters.

q.  The West Park Conservation Area Appraisal and Management Plan (2008) (see our attached
appendix E.11) states that ‘The parade of shops on Otley Road forms part of a focal point
around the roundabout area, a gateway to the suburb. The forecourt is the principal public
space in the Conservation Area’ (pg7)(E.11a attached). ‘There are a number of important
specimens (trees) by the parade of shops’ (pg12) (E.11b attached). The current proposals
involve the loss of at least one of the significant trees on the forecourt and while reference is
made in para 3.43 in the NGT Historic Environment Statement (A-08c-7) to ‘poor public realm
treatment that offers scope for enhancement’, there are no specific proposals to do so. (see
also our attached appendix D).

r.  The Far Headingley Conservation Area Appraisal and Management Plan (2008) (see our
attached appendix E.12) states that ‘Trees are an important part of the distinctive character of
the area’. ‘Tree lined roads are a defining feature’ (pg10)(E.12a attached) (significant trees are
identified on map pg8). It goes on to state the importance of ensuring ‘that traffic
management measures impact as little as possible on the special character of the area’ (pg12)
(E.12b attached). However, in the NGT Main Statement (para 7.159) a description of the
impact of loss of greenspace and trees within Conservation Areas is followed by the conclusion
that it will have (only) ‘moderate adverse effect on Otley Road between St.Chad’s Drive and
St.Chad’s Parish Church’. We contend that the impact is major because of the significance of
the streetscene to the special character of the Conservation Area and the particular
significance of the mature trees. We note that the NGT non-technical summary (A.08a),
summarising the environmental impact of the scheme overall, recognises in para 8.57 that
Otley Road (St.Chad’s) (N10) is among the ‘character areas that have significant negative
residual effects….. where there is not the opportunity to provide sufficient mitigation
measures’. However, it is not accepted that the so called ‘plaza’ outside the Three Horseshoes
pub which will accommodate the NGT stop and a bus stop can be regarded as a ‘positive
addition’ (para L.401 in A-08e-1).

s.  The Headingley Hill, Hyde Park and Woodhouse Moor Conservation Area Appraisal and
Management Plan (2012) (see our attached appendix E.13) (describing an area which has
since been added to English Heritage’s ‘Heritage at Risk’ Register 2013 (attached as our
appendix E.05) states that ‘The streetscape of Headingley Lane is central to the character of
the area’ (pg 10) (E.13a attached). ‘Any proposal under the NGT scheme, or similar Public
Transport schemes, should respect the particular character of the streetscape of Headingley
Lane, notably stone boundary walls, and take advantage of opportunities for
enhancements’(pg17) (E.13b attached). However, the NGT Main Statement (para7.156),
having described the impact upon listed structures within Conservation Areas, concludes that
it will have a ‘moderate adverse effect for Rose Court’ and minor impacts for three other
Grade II listed buildings. We contend that the cumulative impact is severe as the streetscape is central to the special character of the Conservation Area and note again that the NGT non-technical summary (A.08a), identifies the stretch from Shaw Lane to Hyde Park Corner (By-pass and Headingley Lane) (N12-16) as being among the ‘character areas that have significant negative residual effects..... where there is not the opportunity to provide sufficient mitigation measures’. In addition, the Landscape/Townscape Appendix (A-08e-1) recognises that the ‘streetscape is permanently wider’ (para L.598) and the impact remains significant (para L.597). In respect of the route across Woodhouse Moor there appears to be a serious mistake in the Historic Environment Statement A-08c-7 in para 3.66 which states ‘the Moor is not protected by any heritage designations’ when it is clearly within the Headingley, Hyde Park and Woodhouse Moor Conservation Area. This mistake is repeated in the Appendix A-083-1 where in Table L.84 (para L.674) the Townscape sensitivity is only medium when it should be high and the significance should be major adverse. In addition the whole of the Moor is ‘Protected Greenspace’ (policy N1) in the approved Leeds Unitary Development Plan (E.06d attached).

There is no detailed Conservation Area Appraisal for the Headingley Conservation Area but the Headingley and Hyde Park Neighbourhood Design Statement (2010) (see our attached appendix E.14) states in para10.5.1 that ‘The implementation of the NGT scheme, or other public transport proposals, would have an impact on the area, particularly if they involved a by-pass of the Headingley Centre. Any such proposal should be sensitively undertaken to create a ‘green corridor’ with accompanying pedestrian and cycle ways, so minimising impact on the mature landscape of the area’. (pg21) (E.14a attached). It further states in para 11.5.4 that ‘any proposal under the NGT scheme within the boundaries of the Conservation Area should be in keeping with the character of the area and seek to enhance the setting of the area’ (pg 24) (E.14b attached). The NGT Main Statement (para 7.159) clearly states that the ‘off highway corridor between Headingley Lane and Alma Road will result in the severance of the small paddock areas and hedgerows between Oakfield, Headingley Castle and St. Columba’s Church, a loss of trees within the swathe of woodland corridor, which forms part of the character and special interest of the area, providing an important background setting for many of its significant buildings (moderate adverse effect) and severance of local side roads’, and yet the statement concludes that ‘The significance of the effects of these cumulative impacts on Headingley Conservation Area is considered moderate adverse’. We contend that the cumulative impact is severe and note yet again that the NGT non-technical summary (A.08a), identifies the stretch from Shaw Lane to Hyde Park Corner (By-pass and Headingley Lane) (N12-16) as being among the ‘character areas that have significant negative residual effects..... where there is not the opportunity to provide sufficient mitigation measures’. Appendix A-08e-1 also states in para L.556 ‘that the introduction of the NGT scheme will have permanently changed the character of the area’.

The Far Headingley, Weetwood and West Park Neighbourhood Design Statement 2013 (Currently under review following formal public consultation in the autumn of 2013) (see our attached appendix E.15) observes that ‘The design of its (NGT) route, stops and key junctions must recognise the function of Otley road in distributing local vehicles, cycles and pedestrians around the area and must also respect and contribute positively to the character of the three Conservation Areas it lies within or alongside. The Otley Road corridor through Far Headingley and West Park is an attractive and historic route into the city characterised by wide verges and mature trees and its unique non-urban character must be respected’ (page 18) (E.15a
attached). ‘Otley Road is attractively lined by mature trees, including in the central reservation’ (page 64) (E.15b attached). The TWAO proposals clearly conflict with the spirit of the Neighbourhood Design Statement. We note that the NGT non-technical summary (A.08a) recognises in para 8.57 that Otley Road (Bodington Park and Ride to West Park) (N04) and Otley Road (St.Chad’s) (N10) are among the ‘character areas that have significant negative residual effects..... where there is not the opportunity to provide sufficient mitigation measures’.

4 We consider that it would be wholly wrong and unsafe to grant the TWAO given the failure of the proposals to meet the aims, objectives and constraints set out for them in TWAO literature and in the Business Case. For example:

a. Document A-01-02 para 3.3 states that part of the NGT Vision is to create an ‘integrated transport system for Leeds’. This aspiration was also identified in the WYLTP. However, the NGT proposals actually represent a move away from integration because:

i. Passengers will be faced with two alternative systems, each with their own set of stops and will have to choose between them before making their journey – rather than being able to access all services from a single stop.

ii. Interchange with other buses at the bus station will necessitate a significant walk from the nearest NGT stop.

iii. Passengers may be faced with different fare structures on NGT and on bus (paragraph 15.136 of Document C-1 states that “NGT fares will use a two stage fare system and will offer a fare broadly equal to the conventional bus network for the majority of passengers. The exception to this is passengers who currently make short distance trips and currently pay the lowest bus fare; any such passengers who choose to use NGT will pay more, as the lowest fare stage is not replicated”).

b. Paragraph 3.100 of Document C-1 indicates that the investment should “Enhance the public transport service on offer” (Paragraph 1.7 of Document C-1 – refers to the need for a “step change” improvement in the provision of public transport). However, the overall impact on the quality of the public transport offer is modest at best and, arguably, even negative. For example, compared to the Do minimum scenario:

i. Passengers will, on average, have to walk further to reach their nearest stop because NGT stops are further apart than the existing bus stops.

ii. Passengers will, on average, have to wait longer for a bus/ trolleybus to arrive because the average frequency at any given stop will be one vehicle every six minutes whereas it currently averages one every three minutes (in this context we draw attention to the erroneous claim in section 13.16 of document C-1 that “Passengers switching to NGT will benefit from a .... more frequent ... service....”).

iii. More passengers will have to stand (seating will be available only for about one passenger in three at peak times).

iv. Door-to-door Journey times by bus are actually predicted to increase (even if it were correct, the predicted reduction of 1.3 minutes in the am term time peak and of 1.2 minutes at other times quoted in Table 4.1 of document C-1-13 for the southbound journey from Bodington to the city is misleading because it relates only to in-vehicle time; the overall door-to-door journey times would all show increases because the average waiting time will increase by 1.5 minutes due to the reduced frequency).
v. Even setting aside the concerns we have expressed as to the accuracy of the predicted run times (see objection 2aiv and v), and ignoring the fact that bus journey times are likely to be reduced by reducing the boarding times, it can be shown (see our attached appendix G) that the journey from Bodington to the city centre would be only 8 minutes quicker by NGT in the morning peak and only 2 minutes quicker in the interpeak - during which period many more trips are made. Furthermore, if the usual weightings are applied to the various elements of journey time it can be shown that the perceived journey time by NGT is up to 5 minutes longer than that by the Do Minimum bus.

vi. The anticipated increase in overall bus journey times is much more important than any improvement offered by NGT for those people who are effectively captive to bus services. For example, those who:
- have an origin or destination is on a bus route not served by NGT (e.g. along the northern extremities of the #28, #1, #93 or #97 routes, to the east of the city centre or via a connection at the bus station)
- have walking difficulties and whose nearest stop is a bus stop rather than an NGT stop, or
- would be unable to stand for the duration of the journey.

c. Another aspiration (WYLTP key indicator, quoted in Table 7.3 in section 7.11 of Document C-1) was that NGT would achieve a modal shift in favour of public transport. However, we note that, compared to the Do Minimum scenario:

i. The proposals are predicted to result in a reduction in overall public transport passenger kms (Table 9 in Document C-1-9 gives annualised predicted passenger kms for all public transport modes in 2031 and shows that the figure for NGT (1,212,556) is lower than that for the NBA(1,217,491) and than that for the LCA (1,233,825). No figure is given for the Do Minimum case but, given that the DM buses are predicted, e.g. in Document C-1-13, to have the same journey times as the LCA but will offer a higher frequency service at any given stop, we can assume that public transport in the DM scenario would be at least as attractive as in the LCA and so we can assume the reduction in total public transport passenger kms to be even greater when compared with the Do Minimum scenario).

ii. The proposals are predicted to result in an increase in total car kms (see table 58 of document C-1-8).

iii. The majority of the predicted Trolleybus patronage is simply transferred from public transport (from table 12.4 in document C-1 it can be seen that, after weighting for the number of hours in each time period, over 75% of NGT users are predicted to have transferred from public transport).

d. The first and second objectives for NGT listed in Table 3.8 of Document C-1 were, respectively, to “maximise the growth of the Leeds Economy by enhancing its competitive position and by facilitating future employment and population growth” and to “support and facilitate the sustainable growth of Leeds, recognising the importance of its city centre to the future economy of the Leeds City Region”. However, the proposal results in:

i. increased costs for local businesses (see Table 13.1 of Document C-1 or table 7 in document C-1-9)

ii. significant disruption to trade during the construction period
iii. damage to the local ambience which is a positive feature for retail businesses along the A660

iv. loss of parking spaces, particularly off peak, for use by business customers.

e. Paragraphs 3.15 and 3.16 of document C-1 note that the WYLTP identifies improved connectivity as an important contributor to the economic growth objective. However, as noted above, the proposals are predicted to result in increases in overall journey times by car, by bus and, for some journeys, even by NGT. It is difficult to see how this could be characterised as an improvement in connectivity.

f. In the context of the economic growth objective we note that the NGT route is not well aligned with the proposed growth areas (Figure 3.3 of Document C-1 2, attached for convenience as our appendix F2, identifies the areas for large scale land use change and it is clear that the proposed Southern Route touches only one small part of the area and the Northern route links in only via the City Centre). Much greater penetration into the designated development areas is clearly required and we contend that, realistically, this can only be achieved via conventional buses including some cross-city services and others connecting with other services in the city centre.

g. The third objective for NGT listed in Table 3.8 of Document C-1 was to “support and facilitate targeted regeneration initiatives and economic growth in the more deprived areas of Leeds”. Paragraph 1.24 and Table 1.1 of The NGT Main Statement (A-08b) summarise Leeds’ transport problems and opportunities and, under the heading Social Equity, refer to the particular need for public transport to assist regeneration in south and east Leeds and to serve households in central, south and east wards. Figure 3.2 of Document C-1 2 (attached for convenience as our appendix F3) identifies the areas of deprivation. The lack of any match between the location of deprivation and the location of the Northern Route of NGT is stark and the decision to prioritise this route over others seems quite unjustified.

h. The fourth objective for NGT listed in Table 3.8 of Document C-1 was to ‘Improve efficiency of city’s Public transport and Road networks’. The Promoters claim to have interpreted efficiency as if it were the same thing as the “conventional DfT value for money” but what they actually report in Table 7.2 of Document C-1 (where they assess the NGT scheme against the efficiency objective) falls far short even of that because it only reports the public transport passenger journey time benefits (which, by their definition, include perceived quality improvements), revenue surplus and perceived punctuality benefits - it takes no account at all of costs or of disbenefits to other road users!

The correct way to measure transport system efficiency is to consider the total inputs (traveller time, vehicle operating costs, public transport operating costs, infrastructure costs and the costs of externalities such as accidents, noise and pollution) per unit output (e.g. per trip made). The inclusion of intangible (“perceived”) benefits is acceptable provided that perceived disbenefits are also included. Revenues and taxes are a transfer and should not be included in the calculation of system efficiency. Unfortunately the figures required to calculate this measure have not been released but, since the NGT proposals are predicted to result in an increase in private vehicle trip lengths and an increase in congestion (as measured by average highway speeds detailed in table 7 of Document C-1-9) there is prima-facie evidence of reduced efficiency in the highway network. Also, even according to the unduly optimistic figures in Tables 17.1 and 17.4, the £701m in public transport passenger travel time savings over the appraisal period needs to be reduced by at least £440m (to remove the value of the
perceived boarding penalty – see Objection 1j), by £274m of investment, by £120m of increased public transport operating costs, by £14.7m of increased private vehicle operating costs, by £12.2m of increased private vehicle occupant travel time and by £25.4m increased accident costs. The result, less £6.4m in reduced GHG, is a negative £178.9m. In other words, the NGT scheme causes a reduction in system efficiency.

The cause of this reduction in efficiency seems clear; it is the attempt to fit two public transport systems, each with its own set of stops and each used by only ten vehicles per hour, into a tight corridor which is currently served by a single public transport system used by around 20 vehicles per hour.

i. The fifth objective for NGT listed in Table 3.8 of Document C-1 was to ‘Reduce transport’s emissions of CO2 and other GHG’. However, Table 7.3 in Document B-1 indicates that, although carbon intensity is expected to fall, total carbon emissions are predicted to increase as a result of NGT.

j. The sixth objective of NGT listed in Table 3.8 of Document C-1 was to “promote the quality of life through a safe and healthy natural environment”. However, we note that the proposals will result in:

i. Increased congestion (as measured by average highway speeds detailed in table 7 of Document C-1-9 and as noted in the final line of the Appraisal Summary Table - Table 17.12 in Document C-1)

ii. Increased distances driven(see table 58 of document C-1-8)

iii. Increased number of accidents (as noted in the Appraisal Summary Table - Table 17.12 in Document C-1)

iv. Increased time spent driving (see table 59 of document C-1-8 or table 7 in document C-1-9)

v. Deterioration in local air quality (increases in the ambient concentrations of NO2, PM10 and PM2.5 emissions are indicated in table 4.9 of Document B-2 and reflect the forecast increase in fuel consumption which is indicated by the increased fuel consumption referred to in Section 16.26 and Table 16.1 of Document C-1)

vi. Increased traffic noise (see paragraph 2.5.24 of Document B-8)

vii. Adverse impacts on the local environment, streetscape and historic heritage (see Objections 41 and 5 below for more detail).

viii. A less convenient bus service for many users (see objection 4a,4biv above)

ix. Threats to the viability of local businesses (see objections 41 and 6 below)

x. Adverse impacts on landscape, townscape, heritage and the water environment (Table 14.2 of Document C-1 indicates outcomes for several of these as “neutral” but careful reading of the preceding text shows them to be adverse rather than positive).

xi. Reduced use of active modes (the September 2013 documentation indicated that 6.6% of trolleybus patronage would be people who previously used active modes. The January 2014 documentation refers to this transfer but does not quantify the figure). Interestingly, the proposers do still claim, in Document B-8, that NGT will promote physical exercise but the claim looks rather desperate ( paragraph 5.58 says “The Leeds NGT scheme will improve city-wide public transport and therefore access to football, cricket and rugby facilities will also be improved. Enjoying watching sport serves as a recreation activity in itself but can also inspire participation and therefore physical activity”).

26
k. The seventh objective of NGT listed in Table 3.8 of Document C-1 was to “contribute to the quality of life by improving the access for all to jobs and services”. However, we note that the proposals will result in:
   i. Increased door-to-door journey times for many users of public transport
   ii. Increased journey times, and journey lengths, for car users (see Tables 58 and 59 of document C-1.8)
   iii. A less convenient bus service for many users (see objection 4a, 4biv and 4bvi above).

Paragraphs 5.33 et seq of Document B-8 claim that access to healthcare facilities will be improved because the journey times by trolley bus will be faster than those (currently) achievable by bus. However, the analysis appears not to have taken account of the greater average walking distance, the longer average waiting times, the increased likelihood of having to stand while on the vehicle or the likelihood of decreased frequency of buses serving places not on the NGT route.

l. The first constraint identified in paragraph 3.101 of Document C-1 was that “the promoters must be able to fund the scheme capital costs from its own and third party sources”. We suggest that this constraint is at risk of being broken because:
   i. Although the PEBC was accepted DfT, thus allowing the project to proceed to the present stage, the revised business case submitted in January 2014 has a lower BCR and is based on entirely new forecasts and analysis which has not yet been approved by DfT.
   ii. It is understood that neither Leeds nor the Integrated Transport Authority have made any allowance for the budgetary consequences of any increase in the capital costs of the proposed scheme beyond the contingency already allowed for (the response to the FOI request was that “As with any other project the scope, quality and budget for the scheme can be controlled so to date there has been no requirement to report budgetary consequences as none have been identified. Once the project team has gone out to the market and if budgetary consequences are identified then at that point they will be reported to the ITA”)
   iii. Leeds City Council Executive Board’s agreement, in July 2009, to allocate funding to the NGT scheme was based on their understanding that it “delivered benefits to the city in line with the objectives of the strategic development fund and ultimately in line with Council priorities”. There must be a risk that, when the lack of fit with objectives and priorities becomes known, support may be withdrawn. (Interestingly, the Lines of Enquiry of DfT’s Leeds NGT Panel indicated that, if the scheme were delayed, there would be a “significant risk that (the) Leeds Deal will unravel” - see excerpt from result of FOI request attached as Appendix H1).

m. The third constraint identified in paragraph 3.101 of Document C-1 was that there should be no unreasonable barrier to future expansion of the system. We contend that the need to repay the required loan and the fragile operating surplus (see Objection 4o below) mean that high cost of any extension would be an important barrier to any further extension of the system.

n. A further aspect of the third constraint was that it was important to “avoid proprietary technology which could limit competitive procurement of vehicles/infrastructure in the future”. We contend that the decision to specify right-hand-drive trolleybus technology breaks this constraint (see objection 7b and 7e below).

o. The fourth constraint identified in paragraph 3.101 of Document C-1 indicated that revenue received must “exceed operating costs and the extent to which the resulting revenue surplus will support scheme funding/expansion is also important”. Table 11.3 of the Revised Statement of Case indicates annual NGT revenue at £20.6m and annual costs as £17.6m, yielding an annual operating surplus of £3m. However, we note that:
i. The revenue forecasts have been inflated by unrealistic modelling assumptions (See for example objections 1a, 1b, 1c, 1d, and 1e above).

ii. The revenue forecast has not allowed for the probability that commercial operators would seek to compete by offering lower fares (noting that the assumed trend in bus fares is too high and that a new operator is already offering much lower fares on some of the Headingly routes). The Proposers have not reported results of any test of the effect of a competitor offering lower fares but we note from Table 9 of Document C-1-9 that their test of the effect of charging a 25% premium on the NGT fare indicated that NGT patronage would fall by 21% so it might not be unreasonable to expect the NGT revenue to fall from £20.6m to around £17m thereby wiping out the anticipated operating surplus.

iii. The revenue forecasts are extremely sensitive to assumptions about underlying economic growth. The results in Table 8 of document C-1-9 indicate that, under the low growth scenario, patronage might be 7% lower which would reduce the operating surplus by about from around £3m to around £1.6m. (lest the low growth scenario be thought unlikely, it should be noted that DfT census data http://api.dft.gov.uk/v2/trafficcounts/countpoint/id/17374.csv and http://www.dft.gov.uk/traffic-counts/area.php?region=Yorkshire+and+The+Humber&la=Leeds) reveal that, between 2002 and 2012, the flow of traffic on the A660 at Woodhouse Moor fell by 17% while the total for all main roads in Leeds remained almost constant).

iv. The revenue forecasts are extremely sensitive to assumptions about the operating costs. The possibility of increases in the costs of energy or of leasing must be a particular concern.

v. In the not unlikely case of low economic growth combined with increased costs and aggressive competition from bus operators, the operating surplus becomes a large and potentially unfundable deficit.

p. Further on the question of the fragility of the revenue forecasts, we note that the fifth constraint mentioned in paragraph 3.101 of Document C-1 identified the importance of deliverability “in terms of the level of influence which the Promoters would have in delivering the outputs and outcomes” and that the outcomes identified in 4oii -4oiv above are outwith the control of the promoters.

q. The sixth constraint, identified in paragraph 3.101 of Document C-1 was that “Irrespective of whether funding is provided by DfT or locally, any scheme needs to provide the best value for money of all reasonable/relevant alternatives”. However, we note that:

i. The PEBC claimed a BCR of 3.86 (Table 1.1 in Document C-2). The Revised Business Case claims a BCR of 2.98 (which is below the 3.5 barrier imposed in Spending Round 10) and there are serious reasons for believing that even this result is overly favourable to NGT – see for example objections 1di,1f, 1g, 1j, 1k, 1o and 1p above.

ii. The examination of reasonable and reasonable alternatives has been far from adequate (see objections 2a-f above).

iii. The analyses reported in Section17 of Document C-1 indicate that the BCR is extremely sensitive to assumptions about economic growth (see Table 17.5), achievable frequencies (Table 17.6), relative fare levels (see Table 17.7), and achievable run times (Table 17.8) – each of which assumptions are open to question.

The extent to which NGT represents value for money is further explored, from the perspective of someone with long experience of VFM auditing in the public sector, in the statement of case submitted by Janet Matthews (TWA/13/APP/04/OBJ/365).

r. The NGT Urban Design and Access Statement summarises the NGT Design Objectives and Principles in Table 1-01 as:

i. ‘Promote a network that respects and enhances the existing and distinctive character of the areas through which it passes’. There should therefore be an appropriate response
to the existing character of the route not an imposed concept requiring significant changes to that character as is the case of the Northern route.

ii. ‘NGT should minimise its impact on buildings/boundaries, spaces and features that have cultural and/or historical significance’. This aspiration is clearly not achieved in Far Headingley, along Headingley Lane and across Woodhouse Moor. (See the report on the historical environment attached as our appendix D).

iv. ‘Minimise clutter often associated with transport infrastructure’. Whereas OLE poles with no guarantee of combining them with lighting columns, wire attachments to listed buildings, duplication of stops, additional traffic signals, etc., all demonstrably add to clutter.

v. ‘Grass verges and landscaping should be maintained or introduced wherever possible to soften the transport corridor and create buffer zones’. The proposal results in precisely the opposite with the loss of trees and grass verges outbound in Far Headingley, the loss of trees in the central reservation both sides of the Lawnswood roundabout, the creation of a segregated track behind Headingley Centre and across Monument Moor, and general road widening elsewhere with loss of trees and green frontages to properties (for further detail see Objection 5 below).

s. We note that Table 7.1 of Document C-1, addressing the strategic fit of NGT outcomes to local level plans and policies, contains a number of statements which could be considered to be misleading. For example:
   i. In claiming that the NGT scenario has the lowest net emissions (but neglecting to point out that they are higher than in the do minimum scenario)
   ii. In claiming delivery of mode shift from private car (but neglecting to point out that total car miles will increase while total public transport passenger kms will decrease).

5 We consider that it would be wholly wrong and unsafe to grant the TWAO given that the proposed system will seriously detract from the amenity of North West Leeds. For example:

a. The expected reduction in frequency of public transport services from any given stop would seriously degrade the current accessibility of this area to/from central Leeds (the existing bus services currently run at an average of one bus per three minutes. It is expected that this will be reduced to one per six minutes. The trolleybus frequency is said to be “up to 10 per hour” but they will be picking up at a separate set of stops and, with the provision of trolleybus turn-back at the University and at Alma Road, there is a concern that even this frequency will not be maintained beyond Alma Road).

b. The existence of a wide range of local shops, restaurants, churches and other community facilities (including Cottage Road Cinema which is one of the oldest continually operating cinemas in the country) is a significant positive feature of the amenity of northwest Leeds but their continued existence is threatened by the proposed reductions in parking spaces.

c. The loss of over 400 mature trees will materially diminish the current attractive ambience. Their replacement by new planting will eventually be some recompense – provided they survive but the loss of the existing mature specimens will be apparent for a generation (Also, as noted in Objection 2d above, the cost of maintaining the new trees has apparently not been fully quantified and published research indicates that at least 25% of new tree planting in towns and cities perishes).
d. The lopping of an unquantified number of overhanging trees to make way for the overhead power lines associated with the Trolleybus will materially diminish the current attractive ambience.

e. The proposed works, most particularly the road widening and loss of trees and grass verges will have a marked detrimental impact on the ambience of the area and are thus at odds with the Neighbourhood Design Statements and the Conservation Area status.

f. Paragraph 7.159 of the NGT Main Statement (A -08b) states that ‘trees, gardens and soft landscaping form key elements in the special character of three conservation areas through which the North Line runs. The loss of those elements will adversely affect the character and special interest of the conservation areas’. It concludes in para 7.178 that ‘the main significant residual effects are those associated with the construction of the off highway corridor at Alma Road (Headingley Centre) and Monument Moor, and the loss of trees within the Conservation Areas (West Park to Woodhouse Moor). Whilst these impacts will be mitigated through replanting and landscaping, such mitigation will not take place until planting has matured’ (15+ years). However, yet again, we note that the NGT non-technical summary (A -08a), recognises the stretch from Shaw Lane to Hyde Park Corner (By-pass and Headingley Lane) (N12-16) as being among the 'character areas that have significant negative residual effects..... where there is not the opportunity to provide sufficient mitigation measures’). We also note that Monument Moor will be used as a major construction compound with potentially ongoing adverse effects on the historic green space.

6 We consider that it would be wholly wrong and unsafe to grant the TWAO given that the proposed system will harm the economy of North West Leeds and, potentially, that of the wider city. For example:

a. The NGT scheme threatens the commercial viability of local businesses in various ways. Several issues are identified in the Objection tabled by the Federation of Small Businesses (Reference TWA/13/APP/04/OBJ/1721) and in letters of objection from local business owners (see for example TWA/13/APP/04/OBJ/514). We draw particular attention to:

i. The loss of retail and business customer parking spaces – most particularly of off-peak parking space on Otley Road.

ii. The expected disruption to traffic during the construction period.

iii. The loss of the attractive ambience (trees, grass verges, wide pavements) which currently attracts customers to local businesses. Evidence by economic development consultant David Tuck (which has been submitted as part of the Revised Statement of Case by the Weetwood Residents Association - ref TWA/13/APP/04/OBJ/1354) includes a discussion of the substantial body of evidence linking the quality of urban public realm to economic competitiveness.

iv. The loss of “passing trade” from Headingley shops consequent on the location of the trolleybuses on a new alignment ‘behind’ Headingley Centre – this will substantially reduce the number of public-transport-using travellers passing Headingley’s retail frontages. (Paragraph 3.21 of the NGT Main Environmental Statement (doc A-08b), referring to the possible use of the Headingley by-pass alignment for general traffic, states that ‘routing cars away from the primary shopping frontage may lead to a reduction of business activity adversely impacting on socio-economic and community aspects’ but does not mention the likelihood that a similar, arguably greater, impact
would result from the proposed routing of public transport away from the primary shopping frontage).

v. The demolition of a number of relatively low-rent retail units at Hyde Park.

vi. The reduced frequency of the #28 and other bus services linking Headingley shops to customers who do not live along the NGT route.

b. The introduction of the trolleybus scheme is forecast to result in increased congestion (see final line of second column of the Appraisal Summary Table included as Table 17.12 in Document C-1). As noted by DfT in an internal meeting discussing the PEBC (see our attached Appendix H2), this will directly affect the costs of business travel and of associated commercial traffic (with HGV costs increasing by £64m while those for business cars and LGVs increase by £90m) and will also reduce Leeds’ employers’ ability to attract car-borne employees.

c. The viability of Leeds businesses will be particularly threatened during the three-year construction period during which all traffic, including public transport, will be disrupted and journey times will be increased.

d. Although the expenditure of £250m can be expected to have some beneficial impact on the local economy (e.g. via local expenditure by people employed in the construction projects), the allocation of at least £77m of local funding to the trolleybus scheme implies either that expenditure on other items is reduced or that local taxes and charges will be higher than they would otherwise be.

7 We consider that it would be wholly wrong and unsafe to grant the TWAO given the inappropriateness of the proposed technology. For example:

a. The trolley bus routes could not be extended without significant infrastructure expenditure. Examples of extensions which have been suggested include:
   i. new demand points in the city centre – such as the proposed Victoria Gate Development
   ii. St James Hospital
   iii. The deprived communities of East Leeds

b. Commitment to the use of specialist fleet of unique-in-Britain vehicles brings great risks for ongoing maintenance and access to spare parts and severely limits the possibility of replacing the vehicles as they grow old (standard bus industry practice is to continually renew the fleet, allocating the newest and best vehicles to the most important routes and cascading the older vehicles onto progressively less important routes or selling them into the second-hand market). The likely result is that, by 2031, the Leeds trolleybuses would be much older than the buses which would otherwise have plied the route.

c. The trolleybus concept is incompatible with the idea of express services from the park and ride sites.

d. The introduction of vehicles which require a kerb height at boarding/alighting points which is different from that required by conventional buses is a serious source of inefficiency and an
obstacle to the provision of an integrated public transport service. It leads to the requirement for separate stops for the two types of vehicle and thus to frustration for passengers, inefficient use of road space and kerb space and additional expense to duplicate the at-stop facilities.

e. No other major city (in Europe or worldwide) is currently installing a trolleybus system ab initio and many of those that have one want to, or are actively, getting rid of them because of inflexibility, maintenance cost and impact on quality of streetscene. This argument is well documented in Section II of the Statement of Case by Christopher Todd (ref TWA/13/APP/04/OBJ/171).

f. Several alternatives to overhead powered trolleybuses have been developed recently and the relevant technologies are progressing rapidly. This argument is again well documented in Section II of the Statement of Case by Christopher Todd but it may be helpful to quote some particular examples:
   i. hybrid versions of high capacity double-decker buses are already available and a hybrid version of the NBL (New Bus for London, aka BorisBus) is being developed.
   ii. battery-powered buses are being introduced in many cities and large-capacity batteries are being developed. China’s BYD electric bus, which can run for 250 kilometres on a single charge, is a particularly strong contender and is being tried out in London. European Union News, January 1, 2014; M2 PressWIRE, January 3, 2014.
   iii. flash-powered midibuses are being trialled in Milton Keynes (http://m.bbc.co.uk/news/technology-25621426)
   iv. flash-powered articulated buses are being developed in Geneva (http://www.tosa2013.com/#/)
   London is one of the cities seriously investigating this technology (‘Toyota joins Mayor’s London hydrogen partnership’, States News Service, March 25, 2013); while Aberdeen has taken delivery of 10 buses built by Van Hool NV and powered by Ballard fuel cells.

A progression from overhead power to a more advanced power source which does not require overhead wires would result in significant additional expenditure (new vehicles, sale of the right-hand-drive trolley vehicles into an uncertain second-hand market, scrapping of the overhead wires) and would leave the scar of lopped trees and defaced buildings.

h. The use of articulated, rather than double-decker, buses is inappropriate because:
   i. They require longer boarding/alighting bays (necessitating more space and loss of trees/verges/footpath area)
   ii. They cause more congestion on what are already narrow and congested roads
   iii. They are a hazard to cyclists – with whom they are to share lanes
   iv. They require greater curve radii and thus use up more valuable road-space.
   
As noted by Christopher Todd, these arguments have led to the reintroduction of double-deckers in New Zealand- namely: (Michael Forbes, ‘New buses will be going back to the future’, The Dominion Post Wellington, June 1, 2013, p.3) and in Australia (Henry Budd, ‘New double deckers promise to lift capacity’, The Daily Telegraph, August 24, 2012, p.9; ‘Double vision for bus run’, The Daily Telegraph, June 8, 2013, p.13; ‘Sydney welcomes double-decker buses’, Hill Shire Times, June 11, 2013, p.11). Chris Todd also notes that in Edmonton, Canada,
where trolleybuses were abandoned in 2009 (‘Trolleys reach end of the line’, *The Edmonton Journal*, June 19, 2008) double-deckers are now being introduced (Keith Gerein: ‘Double-decker buses offer room with a view’, *Edmonton Journal* (Alberta), August 27, 2013, p.1). The main argument for articulated buses was that they achieved high capacities and had multiple doors thereby achieving rapid boarding and alighting. However, these are now achievable with large double-decker vehicles. We are aware of the high capacity double-deckers in use in Berlin and that hybrid versions of high capacity double-deckers are available from WrightBus in Ballymena and from Alexander Dennis at Falkirk and Scarborough.

i. Prioritised frequency cannot be increased beyond 10 per hour because the traffic control signals cannot offer more than 10 priority events per hour without seriously compromising the movement of general traffic. Given that the trolley is forecast to be at 80% of its peak capacity in the first year of operation, this leaves very little room for increased demand unless the proposed articulated vehicles were to become bi-articulated (an eventuality which has been considered by Metro but which they have since said is “not being planned for”). Interestingly, if the increased employment predicted by the Proposers as a positive impact of the NGT did occur, the new workers would more than fill the new capacity of the proposed trolley system.

j. Prioritised frequency cannot easily be adjusted to precisely match demand (for maximum efficiency, it must be a multiple of the signal cycle times).

To avoid any doubt, we should make it clear that, although we identify serious shortcomings in the proposed technology, we would not regard the NBA (NGT without the overhead wires) as an acceptable system. Most of our objections to the proposed system apply equally to the NBA. Most of the problems are the result of the introduction of a second system of public transport with its own set of stops and necessitating significant highway widening.

8 We consider that it would be wholly wrong and unsafe to grant the TWAO given the likelihood that the public transport services that would eventually be offered would be even less attractive than those which are described in the TWAO. For example:

a. The trolleybus frequency is intended to be of up to 10 vehicles per hour but the provision for turn-back at the University combined with the fact that the commercial viability of the trolleybus is dependent on some unsafe assumptions (see Objection 2f) gives concern that this level of service may not be offered beyond Alma Road – particularly if, as happened in Sheffield following introduction of its Tram system, a period of intensive on-road competition between the trolleybus operator and incumbent bus operators culminates in management of the trolleybus service passing to a commercial bus operator.

b. We have found no reference to any budgetary provision for the provision of facilities at those bus stops which, according to the TWAO, are to be moved. There is obviously a concern that the specification would be reduced to match the budget available.

c. The impact on the existing bus services on the A660 cannot be known in advance but is assumed to include a halving of current frequencies. The local bus operator has intimated that the more likely result is of an even greater reduction in frequency and that the extension routes (nos. 28, 97 and 1 beyond Bodington) may become commercially unsustainable. There
is also the possibility that loss of revenue from the profitable A660 route would force reductions in service elsewhere in the city region. The loss or curtailment of services which are not served by the proposed Trolleybus could seriously diminish accessibility for many people.

d. The PEBC refers to the possibility that a Bus Quality Contract might be used to protect the Trolleybus service. The meaning of this is not spelled out but presumably includes the possibility of using Bus Quality Contract powers to prevent bus operators from offering lower fares than those offered on the Trolleybus. Such action would be anti-competitive and would deprive bus users of low fares.

e. We note that the costs assumed by the Proposers in their January 2014 Business Case are higher than those in their PEBE and that the financial viability of the project is reduced. We note that there is no prospect of an increase in the grant of £173m from Central Government and are therefore concerned that, in order to increase the financial viability of the project, mitigations and improvements introduced in Design Freeze 7 would not actually be effected.

9. We consider that it would be wholly wrong and unsafe to grant the TWAO given the many deficiencies in the consultation process. For example:

a. The fact that, as indicated in A-01-03, the first objective of the Promoters’ Communication Management Strategy was to “Establish, develop and maintain active support for and understanding of, the proposed NGT project from key stakeholders, partners and ultimately the public, across Leeds and its City Region through planned, targeted, effective and consistent communications” – it was not to consult nor even to ascertain opinion (thus it seems at odds with OECD guidelines for public consultation, which state that it must be ‘a two-way flow of information’ based on proper dialogue (see http://www.oecd.org/nea/governance/36785341.pdf ) and with the First Principle of The Consultation Institute, namely that ‘The Consultant must be willing to listen to the views advanced by consultees, and be prepared to be influenced when making subsequent decisions. If the decisions subject to consultation have already been taken, it is a waste of consultees’ time and a fraud upon all participants to undertake a purposeless exercise, and breaches the principle of Consultation Integrity’ (see the Final Report of the Commission on Fair Access to Political Influence, Annex Document, October 2013, p.10, Annex C).

b. Reliance on, and frequent quoting of, an opinion survey conducted in Summer 2009 in respect of an outline proposal for a network of NGT routes including a city centre loop and a link out to St James Hospital (the briefing material promised that the scheme would “help tackle congestion and reduce pollution in Leeds”, and that “90% of the funding for NGT would come from Central Government and 10% would come from local sources”). The results of that survey (which showed 77% support for the aspirational system) have been quoted as if they indicate support for the system now defined in the TWAO (even though it related to a different scheme which was expected to reduce –rather than increase – congestion and pollution, and was to be 90% - rather than 69% - funded by Central Government). There has been no systematic attempt by the promoters to measure public response to the system now proposed but, as recently as January 2014, the proposers documents contain the claim that the scheme has public support (see for example, Document C-1-2 section 1.15 which states that “Formal public consultation on the trolleybus proposal has been undertaken at various times during the project’s development. This consultation has shown a high level of support for NGT”. The irrelevance/inaccuracy of the 2009 survey is indicated by:
i. the overwhelmingly critical reactions to the scheme expressed by members of the public at the various “information events” organised by the NGT Team.

ii. The overwhelmingly critical reaction to the scheme expressed at the Open Meeting at Leeds Civic Hall in July 2013; the event attracted well over 100 attendees of whom only one spoke in favour of the scheme.

iii. the results of a questionnaire survey conducted by NWLT in September and October 2013 (see our attached appendix I) which included the same question as was posed in the 2009 survey and revealed only 3% support for the proposal (95% of the 893 questionnaires returned showed opposition or strong opposition to the trolleybus scheme as proposed in the TWAO documents), and by

iv. the results of a poll being conducted by Yorkshire post Newspapers which (as of 11th February 2014) is suggesting that 74% of the 4594 respondents think that “the Trolleybus scheme would be a bad thing for Leeds”.

c. The TWAO documentation, as well as numerous public pronouncements by the Promoters, claims that the proposed system has the support from business community. An internal document from DfT (obtained via a FOI request, see our attached Appendix H2) suggests that DfT were surprised at the apparent support of the business community given that the direct impacts of the scheme on business were negative. DfT speculate that this may be because the consultees were not representative or that the consultees were unaware that the scheme would lead to delays. We suggest that both these explanations are likely to be valid. On the question of representativeness, we understand that a survey by the Federation of Small Businesses conducted in September and October 2013 revealed very little awareness of any consultation having taken place and widespread objection to the proposals as published in the TWAO (FSB reported that 85% of businesses in postcodes Leeds 6 and 16, and 69% across the whole city, did not think that the trolleybus was the right solution for Leeds' public transport problems. They further report that a majority (58%) of their respondents were in favour of more modern improved buses. At an FSB consultation meeting on Oct 15th there was a unanimous vote against the trolleybus). We further understand that the Federation of Small Businesses were not consulted by the promoters prior to submission of the TWAO. On the question of business consultees’ understanding of the proposals, a reading of the statements included in annex10 of TWAO Document A-01-3 suggests a high degree of misunderstanding - the statement from Jones Lang Lasalle, for example, appears to expect an easing of traffic flow and congestion - whereas the Promoter’s own forecasts clearly demonstrate an increase in congestion. A reading of the statements in annex10 of TWAO Document A-01-3 also suggests that The Promoter’s classification of them all as statements of support is disputable. The Statement from the Chamber of Commerce, for example, is simply indicating that transport is important and that local skills and experience should be capitalised on.

d. The various information events organised by Metro along the proposed NGT route were staffed by people who were unable to answer key questions (e.g. about the number of trees likely to be felled and lopped, about the height of the OHLE, precisely where certain bus stops were to be moved to, about the number of seats there would be on the NGT vehicles). Also, although written comments and questions were invited, few of them have been responded to except in most general terms. Finally it was made clear that the fundamental aspects of the design (a trolleybus route having its own stops separate from those used by ordinary buses) were non-negotiable.
e. Changes in plans between one event and another and differences between the plans shown at Information Events and those simultaneously available on line, and differences between the TWAO documentation and other information issued by the promoters in September 2013 has caused considerable confusion among the public, local Councillors and major employers. For example:

i. At the time of the Information Event at St Chads Parish Centre it was unclear where the bus stops at Far Headingley would be located (plans shown at the event did not correspond with those simultaneously available online and event staff were unable to say which was correct).

ii. The Leeds Plans Panel in July 2013 considered plans which showed West Park bus stop adjacent to the proposed NGT stop but the TWAO now shows it in a new position.

iii. Leeds Metropolitan University were led to believe that an additional Trolleybus stop would be included outside their building on Woodhouse but it is not included in publicity material “New Generation Transport for Leeds – A catalyst for economic growth” published by the promoters in September 2013 or in the Scheme diagram in Figure 2.1 of the Revised Business Case (document C-1).

f. The notices alerting the public to the TWAO have been far from prominent and barely legible. Several have been fixed high up and have been printed in what appears to be no 8 font.

g. The volume and layout of material in the TWAO submission daunted many individuals and organisations and has made it unrealistic to have expected them to digest it and respond within the available 42 day period (8000 pages in 6 weeks approximates to 190 pages per day or 22 pages per hour of library access). Some key aspects of the material were very difficult to find and, even when found, were not expressed in terms easily understood by lay people (for example, delays at junctions are expressed in terms of degree of saturation or number of vehicles queuing rather than in terms of minutes of delay). Daunted by the volume and format of the TWAO material, many people will have relied on the headline claims made by the promoters (see i below). The submission by the promoters of a revised business case and statement of case in January 2014 has further disadvantaged the interested public because it has added a very significant volume of material with a new set of predictions and, although they are not fully documented, new modelling assumptions and procedures.

h. The Promoter’s published material has headlined several misleading claims which, because most people will not have taken the time to examine the claims in more detail, will have reduced the volume of objection and are likely to have encouraged some organisations and individuals to support the proposals because. For example:

i. The claim, very widespread in the promoter’s publicity material, that public transport will be improved by the introduction of a trolleybus system is misleading. The current claim, documented in section 4.23 of Document B-1 is that “…the introduction of NGT would save up to thirteen minutes for commuters during the morning peak….” for a journey from Bodington park and ride to the city centre. This claim is misleading because it excludes the walking and waiting components of the journey, assumes no improvement in bus boarding times and is based on a journey to a destination - City Square - which buses can only access via a tortuous route. A fairer comparison (attached as our Appendix G) still based on the promoter’s own forecasts and assumptions, reveals that NGT has a journey time advantage of only 8 minutes in the morning peak and of
only two minutes in the inter peak (when more journeys are made). Interestingly, application of standard behavioural weightings to the various components of travel time to reflect the different perceptions of time spent walking, waiting, sitting and standing indicate that the perceived generalised cost of the journey referred to would actually be five minutes greater by NGT than by the do minimum bus in the interpeak period.

ii. The Promoters’ widely repeated claim that the introduction of the Trolleybus is a step towards a more integrated transport system is bizarre. The proposal involves introduction of a new system with its own stops and brand image. The result being that Public transport will be less integrated. The promoters’ claim is particularly difficult to understand given that, on page 16 of Appendix 37 of the Programme Entry Business Case they quite rightly stated that “It is not desirable to split services operating on the same corridor between two similar routes with the same catchment area.”

iii. The claim, very widespread in the promoter’s publicity material, that the trolley bus would be the first stage in a rapid transit network for Leeds is misleading. Not only because, at an average speed of 25kph, it scarcely qualifies as “rapid”, but because the further extension to create a full network is likely to be prohibitively expensive.

iv. The claim, very widespread in the promoter’s publicity material, that traffic conditions will be improved because car drivers will switch to the new trolleybus is misleading because, even using the promoter’s forecasts, it is clear that the net effect on general traffic will be to increase congestion delay and rat-running which, if acknowledged in the general publicity, would doubtless have led to more objections from residents on those roads.

v. The suggestion, inherent in much of the Promoter’s literature and explicit in their rejection of the Low Cost Alternative considered in the Programme Entry Business Case, that real improvement in public transport is not achievable without the proposed trolleybus is misleading. Analysis of existing conditions reveals that the key problems for public transport on the A660 are the long dwell times at bus stops (which could be reduced by improvements to ticketing, boarding procedures and bus specification) and the unreliability of services (associated with bunching caused by long dwell times) and that significant further savings in bus journey times could be made without major investment (see our attached Appendix A on The NWLTF Alternative Approach).

vi. The claim, widespread in the Promoter’s publicity material, that NGT will benefit the Leeds economy and create new jobs (a very precise figure of 4260 is quoted) is partly based on the assumption that it will improve connectivity. Given that it will lead to an increase in congestion and arguably deterioration in the quality of the public transport on offer, this claim cannot be substantiated.

vii. The claim that the trolley bus will provide approximately 250 jobs connected with its operation and maintenance does not allow for the loss of employment associated with the reduced frequency of bus services.

viii. The claim, recorded in the Executive Summary of Programme Entry Business Case (PEBC p2/87, §1.4) and often voiced by the Promoters, that the scheme will ‘offer significant local environmental benefits’ is clearly at odds with the conclusions summarised in Table 14.2 of Document C-1 which now claims beneficial impacts only in respect of biodiversi ty.

ix. The claim, often repeated by the Proposers, that the scheme has public support (see Objection 10b above).

x. The claim, widely repeated by the proposers, that the DfT funding could not be used for a scheme not involving a trolleybus will have discouraged opposition to the scheme –
but is undermined by the inclusion, in Section A-11 of Document C-1-1, of the statement that “In order to deliver a major investment in Leeds transport infrastructure it is absolutely critical that any option promoted is sufficiently close (or better) in transport and value for money performance so as to be able to convince DfT that the current funding approval should stand.”

i. The promoters’ published material has contained several misleading claims which, because most people would not have the wherewithal to challenge them, will have reduced the volume and vehemence of objection and may have encouraged some organisations and individuals to support the proposals because. (We note that some of these claims are no longer made in the Revised Statement of Case or other core documents published in January 2014 but their deletion or amendment came after the deadline for submission of objections). Examples of these misleading claims include:
   i. The claim (in A-08h-6, p170) that large increases in accessibility are due to, among other things, the fact that “NGT typically provides more frequent services” is misleading (current frequency averages one bus per 3 minutes. Proposed frequency at any given stop will be up to one vehicle per 6 minutes).
   ii. The claim (in A-08h-6) that “walking distances to nearest stop have not altered significantly in most residential areas” is misleading (it is not made apparent that walking distances will be significantly greater in some areas – e.g. St Anne’s Road and Beckett Park where, following removal of one stop and the relocation of another, the distance between northbound public transport stops will approach 500 metres. The reduction in the number of bus stops along the A660 in both directions has not been highlighted in the proposals but is clearly a cause for concern.
   iii. The analysis of access is misleading in that it mentions widening of pavements (para 4.14 of A-08h-6) but not the proposed narrowing or the inevitable increase in street furniture. (Interestingly the documentation issued in January 2014 – after the date at which objections could be lodged – now does mention the pavement narrowing).
   iv. The claim, in A-01-11 p21, that access will be improved because there will be more access points is misleading because it doesn’t mention reduced frequency, delays to general traffic or loss of existing bus services.
   v. The claim (in A08h6 p174) that the impact on parking in Far Headingley will be a reduction of 12 permanent spaces offset by 5 new permanent spaces in front of the shops on Otley Road is misleading. Investigation of the proposed TROs and observation of the current situation reveals that the loss of permanent spaces will be closer to 20 than 12 and that the main impact on local businesses will be the loss of upwards of 30 off-peak spaces along Otley Road. (Interestingly, the documentation issued in January 2014 now admits to a larger loss in spaces in Far Headingley - but this admissions came too late to influence people’s decision on whether to object to the scheme).
   vi. The claim (in the FAQ section of the NGT website) that trolleybus frequency might be increased above 10 per hour is misleading because such increases would be beyond the capability of the traffic control system to provide priority (it should have been made clear that any increase in frequency above 10 per hour would not offer the same journey times).
   vii. The claim, in the AST, that the impact on Air Quality is slightly beneficial due to the reduced number of diesel buses, is misleading because legislation will by then have required a reduction in the emission of particulates. (Interestingly, the documentation issued in January 2014 no longer claims that the impact on air quality will be positive -
but this admission comes too late to influence people’s decision on whether to object to the scheme).

viii. The claim, in the AST, that the impact on Physical Activity is *slightly beneficial* is misleading because any increase in walking associated with the forecast which from car to trolleybus is outweighed by the promoters’ own forecast that 6.6% of trolleybus users would otherwise have used active modes.

ix. The claim, in the AST, that the impact on Journey Quality is *positive* is misleading because it considers only the hoped-for conditions for trolleybus users and ignores the fact that NGT users would have longer walking times, longer waiting times and an increased likelihood of having to stand. It also ignores the clear deterioration in journey time which would be imposed on bus users and car occupants.

x. The claim, in the AST, that the impact on Access to Services is *beneficial* is misleading because it only considers the speed of trolleybus journeys, not the overall journey time (including waiting and walking) or effect on access by bus or by car.

xi. The claim, in section 4.3 of document B-9 and widely quoted in public meetings, that the NGT scheme will reduce car journey times from Bodington to the City Centre "by three minutes" is misleading because it is widely taken to indicate that driving conditions on the A660 will improve. In fact, even accepting the results of the junction modelling reported in Section 5 of Document B-9 at face value - and thus ignoring the likely effect of blocking back discussed in our objection 1b, it is notable that the maximum queue of southbound traffic in the morning peak is predicted to be greater in the with-NGT case than in the without-NGT case at almost all the junctions down the A660 (for example, with reference to data on page 71 of the Annex to Document B-9 and looking at traffic heading south down the A660 where it intersects the Outer Ring Road, the maximum queues in the Do Something case are 19, 31 and 21 for traffic from the North, East and West respectively while the equivalent figures for the Do Minimum case are only 5, 3 and 6 respectively). The claimed three minute reduction in journey times for drivers heading to the city centre comes not from faster journey times but from a supposed reduction in time spent searching for (and accessing) parking spaces in the city centre (estimated using a search time model which, according to its authors was “not designed to model significantly and consistently over-crowded car-parks”) which was in turn dependent on the predicted success of the P&R facility - a prediction whose basis we question in Objections 1gv and 1i).

j. The promoters’ literature has failed to draw attention to negative features of the proposed system which might well be thought important in allowing people to come to an informed opinion on the strengths and weaknesses of the proposed scheme. For example:

i. The fact that the scheme is predicted to result in *increased* congestion, delay, rat running, fuel consumption and emission of greenhouse gases but to a *decrease* in total public transport passenger miles.

ii. The fact that the introduction of a second mode of public transport with its own stops results in a halving of the effective frequency (and thus a doubling in average wait times) at any given stop.

iii. The fact that the choice of an overhead power source will necessitate severe lopping of numerous trees (over and above the published number that are to be felled).

k. The videos and photo montages which have played a prominent role in the promoter’s publicity material conjure the impression that introduction of the trolleybus will result in
uncongested roads. This is not consistent with the forecasts but may have misled the public. (see for example montage M4931308 on page 18 Document B-7-2 which purports to show the view at the southern end of the new alignment in Headingley but omits the traffic signals, stop lines and other road markings - and incidentally shows all the trees in leaf whereas the “now” montage on the previous page shows a winter scene!).

I. The case for the trolleybus, as presented in the Promoter’s literature and in publicity given out via printed and broadcast media has been based on analysis which is incomplete or of questionable quality (see Objection 1 above) and may therefore have misled the public, the business community and elected representatives.

Finally, if, despite the arguments put forward by objectors, the Inspector were minded to recommend that the application be granted, we contend that conditions should be imposed to safeguard features of the scheme which go some way, all be it not very far, to limit its harmful effects. We argue that, unless special conditions were imposed, the TWAO would give the promoters power to revise their plans so as to remove some of the mitigations and additional features which were introduced in response to objections from local businesses, residents and other interested parties but which tend to reduce the commercial prospects of the NGT operation. For example, the revision which allowed buses access to key stretches of priority lanes which, in previous designs, were available only to NGT vehicles, is a significant mitigation which must not be allowed to be withdrawn.

**List of Appendices:**

A. NWLTF’s proposed Alternative to NGT
B. Map of Walk links and Centroid connectors
C. Arboricultural Report by Sam Turner
D. Historic Environment Report by Archeo-Environment Ltd
E. Extracts from various Policy Documents
F. Maps extracted from Proposers’ Documents
   i. Map of Conservation Areas (copy from TWAO documentation)
   ii. Areas of future growth (fig 3.3 from Doc C-1)
   iii. Distribution of Multiple Deprivation in Leeds (fig 3.2 from Doc C-1)
G. Comparison of Journey Times
H. DfT material obtained via FOI request (DfT ref E0009120):
   i. Extract of DfT response (15/05/12) to issues raised by Treasury Approval Point Panel
   ii. Slides on business impacts presented to Permanent Secretary (22/06/12)
I. NWLTF’s Survey of Public Opinion