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Mayor John Biggs AM
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28 April 2016

Dear John

London Assembly Budget and Performance Committee – 8 March 2016

I would like to thank you for inviting Mike Weston and I to explain TfL's recent decision to purchase a further 195 New Routemasters at the London Assembly's Budget and Performance Committee on 8 March.

Attached with this letter is KPMG's New Routemaster Business Case Review which analysed and considered the reasonableness of our draft financial case and conducted analysis of identified social benefits for these vehicles.

KPMG's review of our initial set of assumptions helped refine the financial case and add more positive weight to the benefit-cost ratio (BCR) as laid out in the attached spreadsheet. The KPMG report shows a slightly different figure as it was engaged at an earlier stage of the business case process and helped challenge the assumptions adopted. Its recommendations informed our final version of the benefit-cost ratio. We have provided a synopsis of the main changes in the table below to illustrate this in simplified form.

All figures NPV (£m)	Draft version (reviewed by KPMG)	Final version (including KPMG recommendations)	Explanation of Key Changes
Financial cost impacts	(37.7)	(24.9)	Increased savings for vehicle ownership; purchase price reductions for the buses, reduced prices for batteries for all 1,000 buses.
Revenue impacts	(3.1)	(4.1)	Initial estimate of average revenue per bus updated.
Social impacts	(9.7)	(1.7)	Removal of safety dis-benefits, which in the KPMG report had been overstated. A subsequent review identified that the classifications used was incorrect.
Total	(50.5)	(30.7)	

VAT number 756 2769 90

Purchase of the latest 195-vehicle quotient completes the contract with Wrightbus for up to 1,000 New Routemasters.

Yours sincerely

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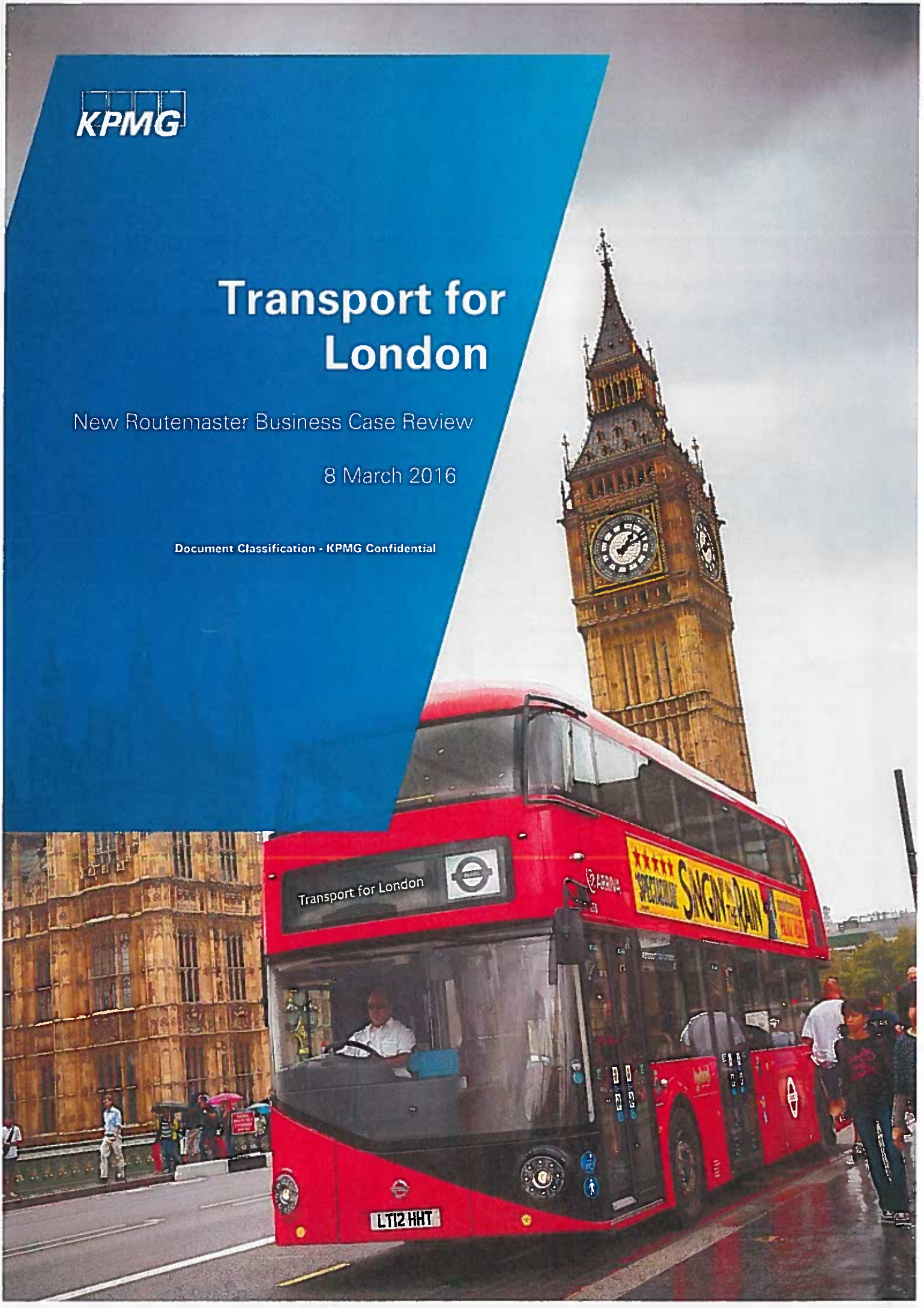
KPMG

Transport for London

New Routemaster Business Case Review

8 March 2016

Document Classification - KPMG Confidential



Important notice

This report has been prepared on the basis set out in our engagement contract addressed to Transport for London ('the Client') dated 14/01/2016 (the 'Services Contract') and should be read in conjunction with the Services Contract.

Nothing in this report constitutes a valuation or legal advice.

We have not verified the reliability or accuracy of any information provided to us in the course of our work.

This report is for the benefit of the Client and only to enable the Client to give consideration to the findings available based on fieldwork carried out up to the date set out in the report and for no other purpose.

This report has not been designed to be of benefit to anyone except the Client. In preparing this report we have not taken into account the interests, needs or circumstances of anyone apart from the Client, even though we may have been aware that others might read this report. We have prepared this report for the benefit of the Client alone.

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In particular, and without limiting the general statement above, since we have prepared this report for the benefit of the Client alone, this report has not been prepared for the benefit of any other party nor for any other person or organisation who might have an interest in the matters discussed in this report including for example bus operators or those who provide goods or services to those who operate in the bus sector.

Contents

1 Executive summary

1.1 Introduction

TfL has requested that KPMG analyses and considers the reasonableness of TfL's draft business case for the proposed purchase of a further 195 New Routemasters ("NRMs"), which has been prepared in line with TfL's Business Case Development Manual ('BDCM').

Our scope of work is limited, and attention is drawn to these limitations in section 4 below. Our work has focused on three areas:

- A review of the discounted cash flow analysis prepared by TfL setting out the financial cost and revenue implications of the proposed purchase;
- A review of the identified social benefits that have been identified and quantified by TfL as part of the proposed purchase: and
- Commenting if there are any other benefits or disbenefits which may be included in the business case.

1.1.1 Structure of the business case

The NRM business case prepared by TfL has been presented on an incremental basis over a base case scenario. The base case is assumed to be TfL continuing to procure the latest standard hybrid buses of the same passenger capacity through the existing route concession contract procurement process.

1.1.2 TfL business case development

TfL provided us with a version of the business case model and record of assumptions on 21 January 2016 as set out in section 3.2.1, the versions of which are the subject of this report. We have provided comments to TfL based on these versions both in terms of the assumptions which were used and the structure of the business case that was being developed.

We understand that both the model and the supporting assumptions have been updated in response to our comments, however TfL has not requested that we perform any work on any subsequent versions of the business case model or record of assumptions.

1.1.3 Business case components

TfL has broken down the NRM business case into four components:

- Financial cost impacts (section 5);
- Revenue impacts (section 6);
- Social impacts (section 7); and
- Other potential impacts (section 8).

1.1.4 Summary business case outputs

A summary of the outputs from TfL's business case is presented below.

Business case element	NPV, £'m	Report section
Financial cost impacts	(37.7)	5
Revenue impacts	(3.1)	6
Social impacts	(9.7)	7
Total	**(50.5)**	

Throughout our report, values in brackets are negative, and represent adverse financial impacts or disbenefits in the business case. Positive values represent cost savings, or benefits in the business case.

All numbers shown in this report have been provided by TfL.

1.1.5 TfL responses to issues identified

During the course of our work we have identified a number of issues or errors that have been communicated to TfL for consideration, and have been incorporated into the model and business case received from TfL on 21 January 2016.

Where there are outstanding issues that have not been updated into this version of the model, TfL responses to the issues we have identified have been documented throughout this report and highlighted in italics.

1.1.6 Conclusion

We note that each of the elements of the business case as set out in section 1.1.4 shows a negative impact on the overall business case. In arriving at this position, TfL has prepared the business case on a mid-point basis. As part of our scope of our work, we have not been requested to look at sensitivity or break-even analysis against this mid-point business case to understand the likely range of outcomes.

We have been informed that the issues and points for consideration documented in this report are not material to the overall business case, however we have not been requested to perform any further work on these or comment on materiality.

The business case analysis presented by TfL focuses on the 'financial costs and savings' estimated for the whole life of the assets. It also includes 'monetised social benefits' in terms of projected safety savings, environmental impacts and changes to timetable-related service quality (defined by TfL as the composite of travel, waiting, access and interchange times). We have been informed that other social benefits, including those related to 'journey ambience', have been appraised by TfL, and the supporting assumptions subsequently documented. These are defined by TfL to include: appearance; ride quality; noise; and perceived security.

TfL has commented that the business case has been prepared under the guidance given in their Business Case Development Manual (BCDM) to include all non-financial considerations that may impact on the business case. However, no formal market research has been performed on the existing NRM fleet in operation which may highlight some additional economic benefits compared to the comparator vehicles. Given the expected volume of passengers per vehicle and the economic life of the vehicle, relatively small estimates of customer willingness-to-pay for improved journey ambience would likely have a significant impact on the business case.

The presentation of the business case does not include consideration of the wider impact of the "iconic design" of the NRM on the perceived attractiveness of public transport and on London's image and "brand value". TfL has considered that both of these issues are not in line with guidance given in the BCDM and therefore have not been monetised.

We have noted some other areas for consideration which have not been included in the TfL analysis, together with TfL's response to these in section 8.2.

2 Scope of work

2.1 Context

2.1.1 Background

Wrightbus Limited (Wrightbus) was awarded a contract to supply Transport for London (TfL) with up to 1,000 New Routemaster (NRMs) vehicles (including an initial eight prototypes) on 23 December 2009, following a competitive process.

In September 2012 following the introduction of the eight prototype NRMs into service that year, TfL agreed to purchase 600 NRMs, with the final NRM due to be delivered by March 2016.

On 5 November 2014, the TfL Board approved the purchase of an additional 200 NRMs, taking the cumulative total to 808 NRMs by mid-2016, although this was subsequently reduced to 805 (in line with the contract provisions) in order to match forecast route allocation.

A business case is currently being prepared by TfL to evaluate the procurement of a further c.200 buses taking the total to c.1000 buses.

2.1.2 External advisor

TfL has commissioned KPMG to analyse and comment on the assumptions underlying TfL's draft business case for the proposed purchase of a further 195 NRMs, which has been prepared in line with TfL's Business Case Development Manual ('BDCM'). The scope of this work is set out below.

2.1.3 Scope of work

In performing our work we have considered and commented on the following aspects of the NRM business case:

a) The discounted cash flow ('DCF') analysis prepared by TfL between the direct costs of purchasing NRMs versus the embedded operating lease for a conventional hybrid bus.

b) The identified social benefits which have been used by TfL along with the DCF in deriving the draft Benefit-Cost ratio.

c) Whether there are any other material monetisable, quantifiable but non-monetisable or qualitative benefits/disbenefits which TfL should consider including in the draft business case.

3 Approach

3.1 Business case and model development

3.1.1 Business case development

TfL's draft business case has been developed using the principles of the TfL Business Case Development Manual (BCDM), taking the original NRM business case from November 2013 as a starting point, and identifying and updating the assumptions where they have changed.

The version of the model and record of assumptions supporting the business case on which this report is based is dated 21 January 2016, as set out in section 3.2.1 and therefore not the final version prepared by TfL.

We have provided a number of observations around Best Practice in deriving the financial business case:

- The basis on which the business case has been prepared;
- The construction of the modelling suite; and
- Level of documentation of assumptions.

TfL has not asked us to perform any work on subsequent versions of the business case model and record of assumptions.

3.1.2 Base case

The base case has been assumed to be the 'business as usual' approach to TfL procurement of buses through the normal route concession procurement process. This assumes that the cost TfL incurs in letting a bus operating contract which includes a hybrid bus (of the same passenger capacity, emissions standard and age as the NRM) to deliver the contract, would be the comparator vehicle cost.

3.1.3 Incremental approach

The NRM business case prepared by TfL has been presented on an incremental basis over the assumed base case (the 'business as usual' case set out above).

3.1.4 Time period and discounting

The business case covers a 16 year period, which represents a phased introduction of the new NRMs from late 2016, and spans two typical seven year concession terms for each bus. Given the expected economic life of a new NRM is 14 years, TfL's draft business case covers the whole life of the investment in the NRM's.

TfL has confirmed that the inputs to the financial evaluation are in 2015/16 prices, with projected indexation at either the Retail Price Index ("RPI") or the Contract Price Adjustment ("CPA") being applied. The cash flows have been discounted using a nominal discount rate of 6.29%, based on Treasury green book guidance, to present an overall net present value of the opportunity. However, the business case model which we reviewed showed the timing of the discount rate applied assumed costs were in 2016/17 prices. This has been discussed with TfL and amended in subsequent versions to the business case model.

3.1.5 Business case components

TfL has broken down the NRM business into four components:

- Financial cost impacts (section 5);
- Revenue impacts (section 6);
- Social impacts (section 7); and
- Other potential impacts (section 8).

We look at each business case component in turn.

3.2 Sources of information

3.2.1 Model suite

The model suite prepared by TfL and commented on in this report comprises three main documents:

Document	File name	Version date this report is based on
NRM Costs model (Excel)	NRM costs model V0.1 (for BC) HYBRID OPO_Jan 16	21 Jan 2016, 20:36 via email
Business case model (Excel)	BCR v0.1 HYBRID OPO_Jan 16	21 Jan 2016, 20:36 via email
Assumptions list (Word)	NRM High level Business case summary V0.2	21 Jan 2016, 20:36 via email

We understand that both the model and the assumptions have been updated in response to our comments, however TfL has not requested that we perform any work on any subsequent versions of the business case or model.

TfL has used a number of data sources to populate the business case which includes:

- Actual NRM in-use performance data, for example for safety statistics;
- Manufacturer quotes and data; and
- Other reports commissioned from third parties.

We have reviewed the BCDM and summary manual, and have held a number of interviews with TfL staff.

We have provided a draft of this report to TfL and received confirmation that the information and assumptions we have used are accurate.

We have discussed our findings with TfL and where they considered it appropriate they have incorporated them into their business plan. We have noted any outstanding points in the relevant section below.

4 Limitations

4.1 Limitations of the scope of our work

4.1.1 High level

The scope of our work has been by its nature a high level analysis of the business case as set out in the scope section above. We have therefore relied on representations from management around the accuracy and completeness of data, and have not sought to independently verify the information or representations provided to us.

4.1.2 Not an audit

The procedures we have undertaken do not constitute an audit or review made in accordance with any generally accepted auditing standards.

4.1.3 Preparation of the business case

As set out above, the approach taken by TfL in building the business case has been to identify the assumptions which have changed from the original business case (prepared by TfL in 2013), and then set out how these would change the cash flows and benefits to TfL incrementally compared to the base case.

This has been performed only on those cost, revenue and benefit captions where TfL has identified there would be a change in assumption compared to either the original business case or the base case, and as a result TfL has not prepared a full profit and loss account for the business case or base case.

On this basis of preparation, we can only comment by exception on those costs, revenues and benefits which have been presented to us as incremental changes.

We have not examined the original business case or reviewed the reasons where assumptions may have changed since it was produced.

4.1.4 Model integrity

We have not performed a review of any model functionality, or sought to recalculate any elements of the business case to check the model logic or its arithmetic accuracy. Our work has been performed on business case models that TfL provided to us up to and including the version dated 21 January 2016. We have provided comments to TfL based on these versions both in terms of the assumptions which were used and the structure of the model that was being developed.

We understand that both the model and the supporting assumptions have been updated in response to our comments, and that a final model and record of assumptions has been documented in a standard TfL template and in line with TfL's BCDM. However, TfL has not requested that we perform any work on any subsequent versions of the business case or model.

4.1.5 TfL benefit ratio criteria

We have not been requested to look at whether the business case for the NRMs meets TfL's benefit ratio or investment hurdle rate.

4.1.6 Sensitivity analysis

We have not been asked to perform or review any sensitivity analysis. The business case that TfL has prepared is based on their expected mid-point as per TfL's Business Case Development Manual.

5 Financial cost impacts

The financial cost component of the business case has been broken down by TfL into three categories, and the values summarised below:

- Capital outlays;
- Incremental operating costs; and
- Base case costs not incurred as a result of the NRM purchase by TfL.

Financial cost impact	NPV, £'m
Capital outlays	(65.5)
Incremental operating costs	(37.5)
Base case costs not incurred	65.3
Total	**(37.7)**

5.1 Capital outlays

5.1.1 Summary of capital outlays

The total net present value of capital outlays associated with the purchase of the NRMs is projected by TfL to be:

Capital element	NPV, £'m
New NRMs	(61.1)
NRM refurbishment	(2.1)
Ticketing equipment	(2.3)
Total	**(65.5)**

5.1.2 New NRMs

The capital outlays associated with the NRMs has been based by TfL on the following assumptions:

- A fixed price per vehicle of £325,000 in line with the existing contract provision;
- A requirement for 15% vehicle spares, compared to 12% for the hybrid comparator (assumption based on existing NRM fleet in use);
- 195 NRMs to be procured over a two year period; and
- TfL to buy the vehicles.

On these assumptions TfL has calculated that the total discounted net present value of new NRM investment would be £61.1m.

5.1.3 NRM refurbishment

TfL has assumed that it will pay for the refurbishment of the NRM fleet, as follows:

- £18,000 per vehicle for refurbishment;
- Refurbishment occurs seven years after roll-out; and
- No indexation has been applied to the cost of vehicle refurbishment in later years.

On these assumptions TfL has calculated that the total discounted net present value of refurbishment would be £2.1m.

5.1.4 Ticketing equipment

The NRMs require investment in ticketing systems prior to introduction, based on the following TfL assumptions:

- Incremental ticketing and iBus equipment costs of £6,000 per NRM;
- For the additional spare buses required (i.e. those which are not incremental) ticketing and iBus equipment costs of £12,000 per NRM; and
- Capital is incurred by TfL at the point of NRM introduction.

On these assumptions TfL has calculated that the total discounted net present value of this investment in the fleet would be £2.3m.

5.1.5 Points for discussion on capital outlays

We have raised and discussed the following points with TfL.

Issue identified	TfL response
1. Omission of indexation on refurbishment costs	*TfL has addressed each of these issues and made changes in a subsequent business case model (post version dated 21 January 2016).* *As a result, TfL has clarified which form of indexation is used for each element in the model and record of assumptions.* *TfL also confirms that unless otherwise specified, costs are all based from 2015/16.*
2. Confirmation of correct pricing point for refurbishment costs (model and narrative not consistent)	
3. Confirmation of pricing point for ticketing and iBus costs (model and narrative not consistent)	

5.2 Incremental operational costs

5.2.1 Summary of incremental operating costs

The projected net present value of incremental operating costs associated with the purchase of the NRMs by TfL is:

Incremental NRM operating costs	NPV, £'m
Vehicle maintenance	(13.1)
Additional cleaning costs	(4.8)
One-off CCTV costs	(1.3)
Negotiated settlement with existing operators	(1.9)
Battery replacements	(16.4)
Total	**(37.5)**

5.2.2 Vehicle maintenance

The NRMs annual vehicle maintenance costs are greater than the hybrid comparators, and have been included in the DCF using the following TfL assumptions:

- Annual maintenance costs for each NRM are £28,650. This has been taken from a sample of most recent tenders and sense checked against prices quoted by Wrightbus;
- The hybrid comparators have a cost of £22,800 per annum which is based on an average of comparable tenders received from operators in the last six months;
- The difference between these two values is included as an incremental cost over the base case in the business case; and
- This difference in cost has been indexed using the CPA rate reflecting the assumption that these costs would ordinarily be procured through the concession contract. The costs have been indexed from 2011/12 prices.

On these assumptions TfL has calculated that the total discounted net present value of the incremental vehicle maintenance costs would be £13.1m.

5.2.3 Additional cleaning costs

Due to their design, the NRMs are more expensive to clean than the hybrid comparator fleet, and therefore incremental costs have been included in the business case based on the following TfL assumptions:

- An annual incremental cost of £2,150 per NRM;
- These costs have been based on the costs incurred by operators in NRM running to date; and
- This cost has been indexed using the CPA rate, reflecting the assumption that these costs would be procured through a concession contract. The costs have been indexed from 2011/12 prices.

On these assumptions TfL has calculated that the total discounted net present value of the incremental additional cleaning costs would be £4.8m.

5.2.4 One-off CCTV costs

The NRMs require a one-off CCTV installation before they can be entered into service. This is procured by the operator and paid for by TfL through the concession payment. This is incremental to the hybrid comparator, where these costs would be included in the cost of vehicle ownership that would be passed to TfL through the concession charge. The basis of the assumptions is:

- A cost of £7,000 per NRM payable when the vehicle enters service;
- This is based on the cost of tenders received from operators in the last six months; and
- The costs have not been indexed.

On these assumptions TfL has calculated that the total discounted net present value of the CCTV one-off costs would be £1.3m.

5.2.5 Negotiated settlement with existing operators

The NRMs will be introduced into service over a two year period in line with the profile of manufacture from late 2016 to early 2018. Depending on the timing of delivery and the route that the NRMs are allocated to, the vehicles will either be introduced at the start of a new concession period, or during the period of an existing concession, and therefore in the latter case displace existing vehicles.

NRMs will be leased to operators for a nominal rental sum, and operators will not be reimbursed for any cost of vehicle ownership (i.e. lease costs or depreciation) through the concession contract. Therefore where an existing vehicle is displaced an operator may seek compensation for an onerous lease on a bus which cannot be redeployed.

Where the introduction aligns with a concession start, operators will be mandated to provide bids based on the operation of the NRMs for that route. Where the NRMs are introduced mid-concession there will be a negotiated settlement with the operator to introduce the NRM in place of the vehicle currently used on that route.

The value of any negotiated settlement will reflect the loss that the incumbent operator may face in not being able to redeploy the existing vehicles elsewhere. It has been calculated based on the following TfL assumptions:

- 50% of the NRMs will require a negotiated settlement to be introduced into service during an existing concession;
- The value of the settlement to the operator will be based on one year's lease charge of the existing vehicle; and
- The assumed lease charge is £20,000 per annum for the existing fleet, which has not been indexed.

On these assumptions TfL has calculated that the total discounted net present value of the vehicle write-offs would be £1.9m.

5.2.6 Battery replacement

The NRMs will require their batteries to be replaced throughout their life cycle. The TfL assumptions for the battery replacement costs are:

- The base case vehicle costs include all elements of running costs of the hybrid vehicles that the NRMs are being compared to, including battery replacement cycles;
- The NRM battery life span is three years, which has been based on advice from the manufacturer;
- The cost of each battery replacement is £26,000 per vehicle, and has been based on manufacturer quotation; and
- The base price has been input in 2015/16 prices and indexed in line with CPA, reflecting that this cost would be procured through the concession contract with the operator.

On these assumptions TfL has calculated that the total discounted net present value of the battery replacement would be £16.4m.

5.2.7 Points for discussion on incremental operating costs

We have raised and discussed the following points with TfL.

Issue identified	**TfL response**
1. Vehicle maintenance costs pricing point and indexation to confirm (as model and narrative are different)	*TfL has addressed each of these issues in a subsequent version of the business case model (post-dated 21 January 2016).* *TfL has also clarified which form of indexation is used for each element in the model and record of assumptions.* *TfL confirm that unless otherwise specified, costs are all based from 2015/16.*
2. Cleaning costs pricing point and indexation to confirm (as model and narrative are different)	
3. One-off CCTV costs have not been indexed	
4. The value of vehicle write-offs will be highly dependent on which routes the NRMs are introduced to and may impact more or less than the 50% of the fleet currently assumed.	*TfL agrees that this is a risk, but one that can be managed as part of the overall risk of bus network costs.* *TfL has therefore not made any changes to the business case or model in this respect.*
5. Given the NRM fleet is relatively new in service it is not possible to tell if the battery life will be in line with the manufacturer guidance. Therefore the assumed life of three years may not be accurate. We note however that the batteries have a two year warranty, which would limit the downside risk.	*The battery risk is reflected in the counterfactual values, TfL has now included a 10% risk on the cost price of the batteries to address this point in a subsequent version of the business case model (post-dated 21 January 2016).*

5.3 Base case costs not incurred as a result of TfL's NRM purchase

5.3.1 Summary of base case costs which would not be incurred as a result of the NRM purchase

The total net present value of base case costs which would not be incurred as a result of the purchase of the NRMs is estimated by TfL as follows:

Operating cost element (hybrids)	**NPV, £'m**
Operator cost of ownership	62.2
Operator operating profit	3.1
Total	**65.3**

5.3.2 Operator cost of ownership (hybrids)

When the NRMs are deployed they will replace equivalent hybrid vehicles that would otherwise be delivered through a concession contract (as set out in 5.2.4 above). Therefore TfL will not incur the element of concession cost that relates to the operator cost of ownership of the vehicles in a tendered bid submission.

The TfL assumptions which have been used to derive this cost element not incurred are as follows:

- The cost of operator ownership for a first term concession have been estimated based on an average of concession bids that have been received by TfL (for comparable routes) in the last six months, and is £35,000 per vehicle per year;
- The cost of operator ownership for a second term concession have been estimated to be £22,500 per vehicle per year, reflecting the fact that many operators have different profiles of depreciation or residual risk appetite on the vehicles. The second term charges are assumed to include any refurbishment costs;
- The number of vehicles in the base case that would otherwise be procured through a concession contract is less than the number of NRMs, due to the NRMs having a requirement for 15% spares, compared to 12% for the hybrid vehicles; and
- The cost saving has been indexed in line with CPA reflecting that the operator cost base would increase year on year on this basis.

On these assumptions TfL has calculated that the total discounted net present value of the operator cost of ownership savings would be £62.2m.

5.3.3 Operator operating profit

Reflecting the fact that the operator cost base throughout the concession would change as a result of the NRM deployment (as reflected in the incremental cost impacts set out above) the

corresponding operator profit on these elements of cost would also be removed from the contract. The TfL assumptions which have been used to calculate this element are:

- Profit margin of 7.5% has been applied to the net decrease in cost impact to the concession operator, reflecting the calculation of profit on net operating cost through a TfL concession; and

- The increased incremental cost of batteries has been excluded from this calculation based on the assumption that these costs would be funded by TfL at cost.

On these assumptions TfL has calculated that the total discounted net present value of the profit net contract cost change savings would be £3.1m.

5.3.4 No impact assumptions

As set out in our scope, we have only commented on the assumptions which TfL has identified as varying as a result of the potential purchase of the NRM buses. There are several assumptions which TfL has made which imply that there is no impact from the introduction of the NRMs, and therefore we have not commented. In summary these are:

- TfL assume the NRMs have a comparable fuel economy to the hybrid comparator. This is despite the NRMs having published test data showing fuel economy some 57% better than the comparator buses, but the 'real world' observed operation has not delivered the claimed economy;

- TfL has assumed no reduction in journey times or dwell times as a result of the additional door on the NRM. This is based on a report which TfL commissioned into the performance of the NRMs in service; and

- There are no changes in the numbers of staff deployed on the NRM in service compared to the hybrid comparator.

5.3.5 Points for discussion on base costs not incurred as a result of the NRM purchase

We have raised and discussed the following points with TfL.

Issue noted	TfL response
1. The 2016/17 first term operating costs rate is hard coded in the model to be £40,000 per vehicle, rather than the assumed £35,000 per vehicle input assumption.	*TfL confirms that this has now updated in a subsequent latest version of the business case model (post-dated 21 January 2016).*
2. The assumption that all NRMs introduced into service will not incur operator cost of ownership at the highest first term concession rate of £35,000 per vehicle per year assumes that all NRMs are introduced either into new concessions or concessions with only new hybrid comparator vehicles. It would be more likely that some NRMs (when introduced) will replace older second term diesel vehicles, which would avoid costs at a much lower rate (and also impact on corresponding maintenance costs, including battery replacements). This assumption is also potentially inconsistent with TfL's assumption on the negotiated settlements with operators that 50% of vehicles will be introduced mid-way through a concession. The phasing of this will impact on the NPV of the cost saving.	*TfL confirms that this has now been re-profiled to reflect the fact that some of the new NRMs will replace old buses when first introduced, and therefore generating savings at a lower rate compared to that of a new bus.* *Conversely the savings in the second term have also been re-profiled to reflect that these will now be at the higher rate of new equivalent buses.*

6 Revenue impacts on business case

6.1 Revenue impact to TfL

6.1.1 Revenue decrease due to fares anomalies

Since their operation, TfL has observed that the NRMs without additional conductors have had a fares shortfall of 3.1% compared to equivalent non-NRM routes of 1.2% where there is no additional member of staff on board. This equates to an absolute 1.9% difference in fares income. This is perceived to be due to the difficulty that a driver has in monitoring all three sets of doors. This results in a net loss of revenue to TfL which has been estimated as follows:

- An average of £236,000 passenger revenue (including travelcard allocations) is earned per PVR per annum, based on analysis of comparable routes;
- There is an observed 1.9% absolute fares shortfall compared to the comparator hybrid buses; and
- 50% of the fares loss is opportunistic rather than endemic.

On these assumptions TfL has calculated that the total discounted net present value of the revenue impact to TfL would be £3.1m.

6.1.2 Points for discussion

We have raised and discussed the following points with TfL.

Issue identified	TfL response
1. If the observed fares shortfall on NRMs is 1.9%, then it might be more appropriate for 100% of this be taken into account in the business case.	*TfL believes that 50% is the right assumption for this business case as it is a central position, and is consistent with other TfL work. Whilst TfL recognises that this number could end up being more or less, using a different number would only have a minor impact on the final business case. Therefore no changes have been made to the business case or model in this respect.*
2. The 50% assumption of fares evasion may be incorrect, however this would have little impact on the overall fares loss.	

7 Social impacts

The social impacts considered by TfL include safety and environmental impacts. A summary of these is as follows:

Social impact	NPV, £'m
Safety disbenefit	(7.9)
Environmental disbenefit	(1.8)
Total	**(9.7)**

7.1 Safety impacts incremental to base case

7.1.1 Safety disbenefit

TfL has observed that the NRMs have a different profile of accident rates compared to the hybrid comparators, which might result in a non-financial but quantifiable social impact. Based on the analysis undertaken, overall the NRMs have a lower rate of road user injuries per million passenger journeys compared to the comparator hybrid vehicles. However, the proportion of major to minor injuries is greater than the corresponding hybrid comparator. The TfL assumptions which have been used to assess this impact are:

- Accident statistics over the period since NRM introduction have been obtained, together with corresponding statistics for comparable route and depot hybrid comparator vehicles. However, this is a limited sample size, and therefore may not be representative of actual performance of the NRMs in wider use;
- The accident rates for minor and major injuries have been normalised for route miles and per 1,000,000 passenger journeys;
- The social impact of a minor injury has been assumed to be £18,000 per instance, and a major injury £180,000 per instance in line with Treasury guidance. However there is potentially an issue between how these definitions correlate to the statistics recorded by TfL (see TfL response in 7.1.2).
- The values of the impacts are assumed to increase in line with RPI over the period of the business case; and
- An assumed safety improvement plan would be put in place to bring the NRM major incident rate down over a period of four years.

On these assumptions TfL has calculated that the total discounted net present value of the safety disbenefit would be £7.9m.

7.1.2 Points for consideration

We have raised and discussed the following points with TfL.

Issue identified	TfL response
1. The performance improvement plan may not yield the results forecast, which may lead to either a greater proportion of major injuries and a higher disbenefit, or it may have a greater impact than forecast in which case the disbenefit may be overstated.	*TfL has identified that there is a difference in the classification of major injuries (as recorded in TfL's IRIS system) and the definition of serious (which means 'lasting') used to derive the financial impact. Many of what TfL class as major are likely to be classed as 'slight' from a financial perspective.*
2. There is a potential political and public relations impact of the NRMs being introduced in the knowledge that the accident rate of major injuries is worse than the comparator bus.	*Given the overall level of injuries is the same, TfL believe it is now safest to assume that there is no measurable difference between NRMs and the counterfactual for this business case.* *The business case and model have been subsequently updated to reflect TfL's change in assumptions.*

7.2 Environmental impacts incremental to the base case

7.2.1.1 Emissions impact compared to Euro VI hybrid

The NRMs have a different emissions profile of CO_2, NO_x and particulate matter (PM) compared to the hybrid comparator vehicles, and each of these elements will have a social impact, which has been quantified using the following TfL assumptions:

- Unit costs of the impact of each of CO_2, NO_x and PM emissions have been used based on DEFRA estimates;
- The official emissions data for the NRMs has been used to calculate the impact of NO_x and PM emissions on a unit per mile basis;
- Comparator emissions figures have been based on an assumed fleet profile of 50% Volvo and 50% ADL manufactured buses. The Volvo buses have a very low level of NO_x emissions which drives the disbenefit of the environmental impact compared to the NRMs;
- The CO_2 emissions have been calculated based on official emissions data, but proportional to the fuel consumption which has been observed in the NRM fleet in operation to date. This is due to the observed fuel consumption in operation being substantially lower than officially tested information; and
- The average mileage per NRM.

On these assumptions TfL has calculated that the total discounted net present value of the environmental disbenefits would be £1.8m.

7.2.2 Points for consideration

We have raised and discussed the following points with TfL.

Issue identified	TfL response
1. The 'real world' performance of the NRMs and the hybrid comparator with respect to NO_x and PM emissions may be different to officially published test figures, and therefore the impact of these elements may be greater than stated.	*TfL has noted this comment, however given it is not possible to monitor actual in-use performance of these emissions, the published data has been used.* *No change to the business case or model has been made in this respect.*
2. The 'real world' performance of the NRMs will vary greatly according to the geography of the route to which they are deployed. This may give rise to a different value than the average of the comparators which has been used.	*TfL has noted this comment, however it is not known at present which routes the NRMs would be introduced on therefore using an average of the comparators is reasonable.* *No change to the business case or model has been made in this respect.*
3. The composition of the comparator fleet will have a considerable impact on the calculated disbenefit of the NRMs. In particular this is caused by the very low level of NO_x emissions produced by the Volvo comparator vehicle.	*TfL has undertaken sensitivity testing in this respect and concluded that if an entire ADL fleet were used as a comparator, there may be a very slight benefit associated with the NRMs. However, TfL has concluded it is appropriate to use a mix of comparator vehicles including the Volvo given current fleet procurements.* *No change to the business case or model has been made in this respect.*

8 Other potential impacts

8.1 Economic appraisal

8.1.1 TfL Business Case Development Manual Guidance

The Public Service (Social Value) Act 2012 requires a contracting public authority to consider how a proposed procurement might improve the social, economic and environmental well-being of its area. To that end, TfL has produced a manual to guide the development of business cases to support procurement decisions.

The Manual notes that the appraisal process should quantify all of the costs and benefits arising from the project, including:

- Financial costs and savings;
- Monetised social benefits; and
- Wider social and economic benefits.

The business case analysis presented by TfL centres on the 'financial costs and savings' estimated for the whole life of the assets. It also includes 'monetised social benefits' in terms of projected safety savings, environmental impacts and changes to timetable-related service quality (defined by TfL as the composite of travel, waiting, access and interchange times). These costs and benefits have been appraised following the guidance set out in TfL's Business Case Development Manual.

At the date of our fieldwork the consideration of other social benefits, including those related to 'journey ambience', has not been documented. These are defined by TfL to include:

- Appearance;
- Ride quality;
- Noise; and
- Perceived security.

The potential impact of each of these aspects should be described and where possible quantified within the presentation of the business case. As these aspects do not have a market value, if they are thought to be material to the business case, their value may be determined via market research.

Given the expected volume of passengers per vehicle and the expected economic life of the vehicle, relatively small estimates of customer willingness-to-pay for improved journey ambience would likely have a significant impact on the business case. At the date of our field work TfL's consideration of the potential impact has not been documented.

Finally, the presentation of the business case does not currently include consideration of the wider impact of the "iconic design" of the NRM on the perceived attractiveness of public transport and on London's image and "brand value". At the date of our field work TfL's consideration of the potential impact has not been documented.

8.1.2 TfL management comments on BCDM guidance and the economic appraisal

TfL has assessed the impact on ride quality, noise, perceived security and appearance.

It is TfL's view that because of the advances in technology, there is no measurable overall difference for noise and ride quality between different types of the latest hybrids. Personal taste may mean that some prefer the NRM set up, i.e. running with the engine off for longer than a conventional hybrid, whilst others may prefer the very low level constant load engine running in a conventional hybrid rather than the stop/start of the NRM engine. It is not something TfL has researched specifically between hybrid types, because overall all hybrids are a significant improvement on diesel buses. Therefore the assessment attributes nil value to these elements.

Furthermore, both buses operate in One Person Operated (OPO) mode at all times, so there is no difference in the level of staffing. All buses have almost identical CCTV systems, with full coverage of the interior. There is no evidence that people feel any safer or less safe between NRMs and other double deck buses. Therefore the assessment attributes nil value to these elements.

In terms of appearance, whilst noting KPMG's comments on the potential to assess the value of the 'iconic status' TfL's BCDM states that the business case should not attempt to quantify and monetise this aspect of design. Therefore an assessment of the 'iconic status' has not been included in the business case. There is an argument that the benefits of the iconic design don't change materially with an increase in the fleet from 805 to 1,000 buses, as in central London they are already very visible.

TfL does not have the research or data to support adding a value based on willingness to pay for NRMs and for how long the effect would last. TfL's BCDM states that a value should not be placed on forecast changes in customer satisfaction surveys (CSS). However as a benchmark to show the scale of Willingness to Pay, it gives a value of 1.5p between reasonably clean and very clean (bus).

8.2 Other assumptions not included in business case

8.2.1 Cost of capital

We would expect a typical business case to include an assessment of cost of capital, which has not been included in this business case.

The comparator business cost line which is shown as a saving of operating vehicle costs, is likely to include a cost of the operator's (or the leasing company's) cost of capital, and therefore this business case may not represent a true like for like comparison.

We note that TfL has estimated an opportunity cost of capital of c£20m based on the typical return on investment that TfL would seek when investing in a project, however this has not been included in the business case.

TfL management response

TfL considers that its cost of capital has been adequately reflected through the use of an appropriate discount factor of 3.5% in line with its BCDM.

8.2.2 Risk and contingency

There has been no inclusion for any amount of risk or contingency in the business case. The potential investment in the NRMs will result in the risk of vehicle ownership sitting with TfL, rather than being transferred to the private sector as would normally be the case if the vehicles were procured by an operator and reimbursed through a concession payment by TfL.

It is likely that operators would include a premium for risk and contingency in the bid costs they provide to TfL for running the concessions, particularly where the vehicles specified are a relatively new technology and the performance over the longer term is not known.

TfL management response

TfL has noted this comment, and provision for risk has now been included in the business case through an additional allowance of 1% on the capital purchase price of the NRMs, which is based on the level of contingency in previous orders.

In addition there is an element of risk now built into the battery replacement cost, especially beyond the capped periods.

8.2.3 Taxation impacts

The business case has not included any impact on the tax status of either TfL or the operators that might result in the NRMs and associated investments being made by TfL.

Given the size of the investment and depending on how it might be structured, the capital allowances available may have a material impact on the business case, however reviewing the tax assumptions is not included in our scope of work.

TfL management response

Consideration of taxation impacts for suppliers are not part of TfLs standard business case development manual. In this case, the potential overall net taxation impacts for the public purse are not considered significant to the business case.

8.2.4 Increase in TfL management time

It is likely that TfL management will need to spend more time dealing with the enlarged NRM fleet given they will be responsible for any issues that need resolving. No estimate has been included of the likely impact on management time for this.

TfL management response

It is difficult to predict the level of additional management time that will be required to manage the incremental order of 195 buses compared to the existing order for 805 over the life of the vehicles. However, it is likely to be a small fraction of an FTE, and it is assumed this will be covered within the existing organisational structure so not included in the business case.

KPMG

Notes

Notes:

Handed over to TC 15/3/16

Change Log

15/02/2016	1. Emissions changes now based on Ext. Buses vehicle numbers of PJs
16/02/2016	2. Vehicle delivery profile updated in Settings, including rephasing of batteries, refurbishment and withdrawal
16/02/2016	3. Safety figures set to the same as Hybrids - data from IRIS not considered to be robust or comparable with value definitions
16/02/2016	4. 1% risk allowance added to capital cost of buses
04/03/2016	5. Battery replacement cost updated to match MOLI: to have lowest cost for first 500 buses, capped cost for next 1,500 buses. Additional rows added in Settings and Financial effects. Formulae aligned in Financial Effects

NRM roll-out model

[illegible]

Capital Inputs

NRM Premium

	NRM	Hybrid	Diesel	Source
Purchase price £,000	318,000	312,000	205,000	TC Dec 15
Refurbishment cost £,000	18,000	18,000	18,000	
Management contingency	1.0%	n/a	n/a	
Technical risk	0.0%	n/a	n/a	
[illegible]	-3,000	n/a	n/a	
[illegible]	100	n/a	n/a	

Equipment Costs (per bus)

	NRM	Hybrid	Diesel	Source
[illegible]	8,000	n/a	n/a	Revised 2015
[illegible]	12,000	n/a	n/a	For proposed purchases
[illegible] spares required Year 1	3	n/a	n/a	TC
[illegible] spares required Year 2	3	n/a	n/a	TC
Original Battery cost	36,000	n/a	n/a	
Battery cost on new vehicles	30,000	n/a	n/a	Wrights revised proposal 15 2 16, at cost for first new vehicle replacement
Revised Battery cost for 2 cycles existing vehicles, 2nd cycle new	22,500.0	n/a	n/a	Wrights revised proposal 15 2 16, cost + 12.5% handling with maximum £25k

Extra Spare Vehicles

	NRM	Hybrid	Diesel	Source
Overheads	1,630	n/a	n/a	Historical data
[illegible]	0	n/a	n/a	
Maintenance	22,800	n/a	n/a	TC Use Hybrid to prevent double counting
Annual cost of one extra bus	24,430			

Operational Inputs

Route, Vehicle Statistics

	NRM	Hybrid	Diesel	Source
Average PVR per route	26	n/a	n/a	TC
% spare vehicles	10.0%	12.0%	n/a	
Average TVR per route	24.3	n/a	n/a	
Annual Mileage PV	31,165.2	32,000	32,000	[illegible]
Annual km PV	50,179	51,520	51,520	
Average daily service [illegible] PV	17	17	17	
Open platform [illegible] PV	0	n/a	n/a	Unused
[illegible]	364	364	364	Unused [illegible] e-mail 29/03/11
Average service hours pa PV	6,188	6,188	6,188	Unused [illegible] e-mail 29/03/11
Open platform hours pa PV	0	n/a	n/a	Unused
[illegible]	14	14	14	Unused
[illegible]	n/a	n/a	n/a	Unused
Number of bus stops	6,000	6,000	6,000	
Number of traffic signals	19,993	19,993	19,993	
% traffic signals [illegible]	80%	80%	80%	
[illegible]	0%	n/a	n/a	
Dwell Time as % Total Journey Time	20%	20%	20%	
Average Journey Time [illegible]	15	15	15	

Passenger Statistics

	NRM	Hybrid	Diesel	Source
Total Pax p.a. - Open Platform	64,582,700	n/a	n/a	TC
Avg Pax PV p.a - Open Platform	230	n/a	n/a	TC
Avg Pax [illegible] p.a - [illegible] Zone 1	227,000	n/a	n/a	TC
Avg Distance from Bus stop [illegible]	40	40	40	TC
Avg Walking Speed [illegible]	1.20	1.20	1.20	TC
% Pax who feel benefit from journey time improvement	40%	40%	40%	TC
# of stops before benefit from journey time improvement realised	8	8	8	TC
Average stops [illegible]	11	11	11	TC

Running Costs

	NRM	Hybrid	Diesel	Source
[illegible]	n/a	n/a	n/a	Unused
Ownership cost per vehicle 1st term	n/a	30,000	25,700	Based on sample of tenders submitted Nov 15 - Jan 16
Ownership cost per vehicle 2nd term	n/a	22,500	15,000	Assumption based depreciation [illegible]
Fuel Consumption miles per gallon	6.5	6.5	n/a	TC Dec 15
Fuel Consumption litres/100 miles	66.9	66.9	n/a	
Fuel Consumption litres/100 km	41.5	41.6	n/a	Unused
Fuel pump price (p/l)	108.0	108.0	n/a	AA Nov 15
Fuel exc VAT (p/l)	87.5	87.5	n/a	Unused
Bulk fuel price (p/l)	79.8	79.8	n/a	Unused
[illegible] (p/l)	n/a	n/a	n/a	Abolished
[illegible] (p/l)	n/a	n/a	n/a	Abolished
Add. Maint costs p.a PV	6,800.0	0.0	0.0	
Maintenance costs p.a PV	36,800.0	22,800.0	19,200.0	Tender bids
TfL Damage liability PV	n/a	n/a	n/a	Unused Not sure what this was for
Warranty Saving in Year 2	-[illegible]	n/a	n/a	Revised proposal from WB 23/1/16
Add. cleaning costs	2,180.0	n/a	n/a	
[illegible] CCTV & warranty cost	7,000.0	n/a	n/a	TC/HI
Vehicle [illegible] for 60% of buses [illegible] - 5 years lease costs	n/a	20,000.0	n/a	
[illegible]	n/a	n/a	n/a	Unused

Safety standards

	NRM	Hybrid	Diesel
Current Fatal incidents m/PJ	0.00	0.00	n/a
Current Major incidents m/PJ	0.62	0.62	n/a
[illegible] Major incidents m/PJ	-0.04	0	n/a
Future Major incidents m/PJ	0.62	0.62	n/a
Current Minor incidents m/PJ	2.06	2.06	n/a
[illegible] Minor incidents m/PJ	0.04	0	n/a
Future Minor incidents m/PJ	2.06	2.06	n/a

Euro VI Hybrid emission standards

	NRM	Hybrid	Diesel	Source
CO2 (g/km)	932.7	932.7	n/a	
NOx (g/km)	0.496	0.286	n/a	
PM (g/km)	0.0030	0.0075	n/a	
[illegible] (g/km)	0.341	0.486	n/a	Unused

Financial Inputs

Cost of emissions

	2011/12	2012/13	2013/14	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Source
CO2 (£/tonne)	£63.34	£64.31	£65.27	£66.25	£67.24	£68.00	£69.00	£71.00	£72.00	£73.00	£74.00	£75.00	£76.00	£77.00	£77.00	£77.00	TC DECC Non Traded Central 2015
NOx (£/tonne)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	TC DEFRA Valuing impacts on air quality Sept 15 Table 2 Transport Inner London Central Uplifted by 2% from 2015 prices
PM (£/tonne)	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	TC DEFRA 2015 central estimate for Inner London Transport, uplifted by 2% per annum from 2015

Value

	NRM	Hybrid	Diesel
[illegible]	0.02	n/a	
[illegible]	0.13	n/a	
[illegible] Air Conditioning /PJ	0.04	n/a	
[illegible] Opening Windows /PJ	0.04	n/a	
[illegible]	0.04	n/a	
[illegible]	0.04	n/a	
[illegible] Fatal incident [illegible]	£1.82 m	n/a	n/a
Avg. [illegible] PVR p.a.	226,000	n/a	n/a
[illegible] on NRM	3.1%	1.2%	n/a
[illegible] PV [illegible]	90.0%	n/a	n/a

[illegible]

Financial Costs

	All	
[illegible] Profit	7.5%	
TfL Cost of Capital	3.5%	Unused
[illegible] Cost of Capital	8.0%	Unused
Discount Rate	6.38%	

Undiscounted (15/16 Current Prices)	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	Total
Subtotal: Second Crew Member Safety & Security	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00
Subtotal: Reduced dwell time	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00
Subtotal: Individuals' Journey time improvements	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00
Subtotal: Ambience vs. Diesel	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00
Subtotal: Emissions vs. Hybrid	-£64,178.74	-£177,024.86	-£183,366.69	-£187,054.42	-£190,795.51	-£194,611.42	-£198,503.65	-£202,473.72	-£206,523.20	-£210,653.66	-£214,866.73	-£219,164.07	-£223,547.35	-£228,018.30	-£144,318.04	-£7,299.39	-£2,852,419.77
Subtotal: NRM DPD safety	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00
Total: Net Social Benefit (Undiscounted)	-£64,178.74	-£177,024.86	-£183,366.69	-£187,054.42	-£190,795.51	-£194,611.42	-£198,503.65	-£202,473.72	-£206,523.20	-£210,653.66	-£214,866.73	-£219,164.07	-£223,547.35	-£228,018.30	-£144,318.04	-£7,299.39	-£2,852,419.77

Discounted (15/17 Current Prices)	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	
Discount Factor	0.9371	0.8782	0.8229	0.7712	0.7227	0.6772	0.6346	0.5947	0.5573	0.5222	0.4894	0.4586	0.4298	0.4027	0.3774	0.3537	Total
Second Crew Member Safety & Security	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Reduced dwell time	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Individuals' Journey time improvements	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ambience vs. Diesel	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Emissions vs. Hybrid	(60,142)	(155,456)	(150,913)	(144,249)	(137,879)	(131,790)	(125,971)	(120,406)	(115,091)	(110,009)	(105,151)	(100,508)	(96,070)	(91,829)	(54,464)	(2,581)	(1,702,509)
NRM DPD safety	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NET SOCIAL BENEFIT (DISCOUNTED)	-£60,141.80	-£155,455.51	-£150,912.64	-£144,248.84	-£137,878.91	-£131,790.45	-£125,970.85	-£120,406.23	-£115,091.24	-£110,009.04	-£105,151.26	-£100,508.00	-£96,069.78	-£91,827.51	-£54,464.02	-£2,581.44	-£1,702,509.43

Undiscounted (15/16 Current Prices)

NRM Rollout (Buses & Equipment)	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24
Subtotal: NRM Purchase Costs	£49,617,270.00	£13,209,780.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00
Subtotal: NRM Refurbishment	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£3,790,813.28
Subtotal: Other capital costs	£842,000.00	£264,000.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00
Capital saving on remaining existing purchase order PV	(3,000)	(3,000)	(3,000)	(3,000)	(3,000)	(3,000)	(3,000)	(3,000)
Remaining existing purchase order	100	0	0	0	0	0	0	0
Subtotal: Existing order discount	-£4,300,000.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00
Total: NRM Rollout (Buses & Equipment)	£50,258,260.00	£13,473,780.00	£0.00	£0.00	£0.00	£0.00	£0.00	£3,790,813.28

NRM Rollout (Buses & Equipment)	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	Total
Subtotal: NRM Purchase Costs	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£62,827,050.00
Subtotal: NRM Refurbishment	£1,050,101.76	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£4,840,915.04
Subtotal: Other capital costs	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£1,106,000.00
Capital saving on remaining existing purchase order PV	(3,000)	(3,000)	(3,000)	(3,000)	(3,000)	(3,000)	(3,000)	(3,000)	(48,000)
Remaining existing purchase order	0	0	0	0	0	0	0	0	100
Subtotal: Existing order discount	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	-£4,300,000.00
Total: NRM Rollout (Buses & Equipment)	£1,050,101.76	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£68,582,795.04

NRM Operations	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24
Subtotal: Development Buses	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Subtotal: Additional Crew Member	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Subtotal: Tender price adjustment	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Subtotal: Drop-off Costs	£2,671,545.18	£735,945.71	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00
Subtotal: Additional vehicle maintenance	£430,644.40	£1,205,293.17	£1,288,867.28	£1,317,249.78	£1,369,270.78	£1,418,848.31	£1,488,177.82	£1,522,273.12
Subtotal: 3rd year warranty	£0.00	£0.00	£0.00	-£707,971.66	-£72,472.60	£0.00	£0.00	£0.00
Cost of battery for new vehicles PV - 1st cycle	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000
Cost of battery for new vehicles PV - 2nd cycle	22,980	23,767	24,863	25,000	25,000	25,000	25,000	25,000
Cost of battery for new vehicles PV - further cycles	22,980	23,767	24,863	25,600	26,580	27,573	28,812	29,987
RPI inflation vs. 15/16	2.0%	5.8%	9.8%	13.8%	18.1%	22.5%	27.2%	31.9%
New vehicles requiring battery replacement	0	0	0	154	41	0	154	41
Subtotal: Battery cost for new vehicles	£0.00	£0.00	£0.00	£3,900,000.00	£1,025,000.00	£0.00	£3,953,000.00	£1,225,000.00
Existing vehicle battery cost - first 800	26,532	27,453	28,490	29,582	30,702	31,862	33,083	34,306
Value of cheaper battery for existing vehicles PV - 1-800	(6,532)	(7,453)	(8,490)	(9,582)	(10,702)	(11,862)	(13,083)	(14,306)
Value of cheaper battery for existing vehicles PV 801-2000	(3,572)	(3,886)	(3,839)	(4,562)	(5,702)	(6,862)	(8,083)	(9,306)
RPI inflation vs. 15/16	2.0%	5.8%	9.8%	13.8%	18.1%	22.5%	27.2%	31.9%
Existing vehicles requiring battery replacement - 1-800	0	181	300	0	0	0	0	0
Existing vehicles requiring battery replacement 801-2000	0	0	239	66	181	346	86	0
Subtotal: Battery saving for existing vehicles	£0.00	-£1,473,509.18	-£3,343,094.94	-£303,380.07	-£1,069,134.81	-£3,740,426.00	-£572,775.13	£0.00
Subtotal: Additional cleaning	£158,271.03	£442,837.35	£480,703.36	£484,115.84	£502,115.38	£520,721.29	£539,954.28	£559,835.42
Subtotal: Revenue Decrease to TfL	£139,850.00	£388,234.50	£407,843.15	£423,441.29	£438,481.83	£454,083.80	£473,296.83	£481,061.26
Subtotal: Operator Fuel Saving	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Subtotal: Avoided Operator cost of ownership	-£2,067,515.87	-£6,212,870.30	-£7,259,300.07	-£7,875,367.20	-£7,980,738.44	-£9,765,772.94	-£7,996,211.80	-£6,767,565.29
Subtotal: Additional spares	£75,896.75	£157,284.46	£162,170.98	£168,756.71	£175,851.75	£182,058.83	£188,781.15	£195,733.28
Subtotal: Operator profit	-£105,195.82	-£437,302.87	-£678,198.33	-£470,248.06	-£530,065.46	-£742,238.38	-£474,781.77	-£330,278.60
Total: NRM Operations	£1,303,294.40	-£5,143,821.86	-£9,312,889.58	-£7,466,786.14	-£8,145,019.73	-£10,182,689.85	-£2,481,838.51	-£3,323,941.97
Net Financial Effect (Undiscounted)	£51,562,554.40	£8,329,968.34	-£9,312,889.58	-£3,466,765.14	-£8,145,019.73	-£10,182,689.85	-£2,481,838.51	£466,871.31

NRM Operations	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	Total
Subtotal: Development Buses	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	£0.00
Subtotal: Additional Crew Member	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	£0.00
Subtotal: Tender price adjustment	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	£0.00
Subtotal: Drop-off Costs	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£3,407,490.89
Subtotal: Additional vehicle maintenance	£1,579,191.32	£1,636,983.86	£1,698,744.55	£1,754,206.74	£1,832,354.36	£1,898,361.82	£1,214,079.81	£62,373.10	£21,857,073.86
Subtotal: 3rd year warranty	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	-£780,444.26
Cost of battery for new vehicles PV - 1st cycle	20,000	20,000	20,000	20,000	20,000	20,000	20,000	20,000	-
Cost of battery for new vehicles PV - 2nd cycle	25,000	25,000	25,000	25,000	25,000	25,000	25,000	25,000	-
Cost of battery for new vehicles PV - further cycles	30,800	31,862	33,144	34,377	35,864	36,976	38,344	38,780	-
RPI inflation vs. 15/16	36.9%	42.0%	47.3%	52.8%	58.5%	64.3%	70.4%	76.7%	-
New vehicles requiring battery replacement	0	154	41	0	154	41	0	0	790
Subtotal: Battery cost for new vehicles	£0.00	£4,920,535.23	£1,358,966.77	£0.00	£5,480,767.82	£1,516,016.05	£0.00	£0.00	£23,058,285.88
Existing vehicle battery cost - first 800	35,581	36,822	38,290	39,725	41,201	42,728	44,308	45,945	-
Value of cheaper battery for existing vehicles PV - 1-800	(15,581)	(16,822)	(18,290)	(19,725)	(21,201)	(22,728)	(24,308)	(25,945)	-
Value of cheaper battery for existing vehicles PV 801-2000	(10,581)	(11,822)	(13,290)	(14,725)	(16,201)	(17,728)	(19,308)	(20,945)	-
RPI inflation vs. 15/16	36.9%	42.0%	47.3%	52.8%	58.5%	64.3%	70.4%	76.7%	-
Existing vehicles requiring battery replacement - 1-800	0	0	0	0	0	0	0	0	800
Existing vehicles requiring battery replacement 801-2000	0	0	0	0	0	0	0	0	1,110
Subtotal: Battery saving for existing vehicles	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	£0.00	-£10,[illegible]
Subtotal: Additional cleaning	£580,386.63	£601,630.36	£623,588.60	£646,288.54	£669,754.17	£694,209.57	£449,196.83	£22,673.[illegible]	£7,858,437.0[illegible]
Subtotal: Revenue Decrease to TfL	£500,454.18	£520,600.29	£540,227.21	£560,870.27	£580,757.60	£601,910.21	£393,358.17	£22,771.[illegible]	£6,992,277.7[illegible]
Subtotal: Operator Fuel Saving	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	£0.00
Subtotal: Avoided Operator cost of ownership	-£5,915,305.48	-£6,131,883.74	-£6,395,080.87	-£6,587,056.16	-£6,826,219.30	-£7,073,424.15	-£4,547,718.20	-£233,634.04	-£96,[illegible]
Subtotal: Additional spares	£202,917.26	£210,344.58	£218,073.19	£225,996.56	£234,162.35	£242,642.83	£167,800.79	£43,411.88	£3,052,489.83
Subtotal: Operator profit	-£296,465.28	-£278,210.82	-£288,300.06	-£296,777.48	-£307,405.46	-£318,831.52	-£203,967.82	-£7,868.56	-£5,738,8[illegible].17
Total: NRM Operations	-£3,308,877.46	£1,430,808.86	-£2,186,528.71	-£3,684,266.51	£1,873,080.58	-£2,430,416.57	-£2,530,284.42	-£89,026.33	-£48,820,293.76
Net Financial Effect (Undiscounted)	-£2,258,775.71	£1,430,808.86	-£2,186,528.71	-£3,684,266.51	£1,873,080.58	-£2,430,416.57	-£2,530,284.42	-£89,026.33	£19,762,491.78

Discounted (16/17 Current Prices)

	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24
Discount Factor	0.9371	0.8782	0.8229	0.7712	0.7227	0.6773	0.6346	0.5947
NRM Purchase Costs	46,488,334	11,600,262	0	0	0	0	0	0
NRM Refurbishment	0	0	0	0	0	0	0	2,254,224
Other capital cost	862,746	231,833	0	0	0	0	0	0
Other capital cost	(291,130)	0	0	0	0	0	0	0
Subtotal: NRM Rollout (Buses & Equipment)	47,097,953	11,832,096	0	0	0	0	0	2,254,224
Development Buses	0	0	0	0	0	0	0	0
Additional Crew Member	0	0	0	0	0	0	0	0
Tender price adjustment	0	0	0	0	0	0	0	0
Drop-off Costs	2,503,002	646,276	0	0	0	0	0	0
Vehicle maintenance	403,557	1,058,356	1,046,000	1,015,808	987,303	958,485	932,344	905,009
3rd year warranty	0	0	0	(202,877)	(52,481)	0	0	0
Battery cost for new vehicles	0	0	0	2,999,861	740,719	0	2,443,218	909,583
Battery saving for existing vehicles	0	(1,250,058)	(2,615,577)	(233,191)	(787,098)	(2,546,553)	(337,880)	0
Additional cleaning	148,316	388,868	394,080	373,330	362,868	352,631	342,856	332,926
Revenue Decrease to TfL	130,781	340,931	335,705	326,540	317,583	308,850	300,336	292,021
Operator Fuel Saving	0	0	0	0	0	0	0	0
Avoided Operator cost of ownership	(1,937,465)	(5,455,853)	(6,000,035)	(5,918,926)	(5,752,848)	(5,500,738)	(5,074,414)	(4,021,596)
Additional spares	71,209	138,118	134,277	130,825	126,863	123,280	119,801	116,399
Profit - Net Contract Cost Charge @ 7.5%	(98,579)	(384,020)	(558,101)	(362,671)	(383,093)	(502,643)	(301,298)	(196,409)
Subtotal: NRM Operations	1,221,317	(4,517,050)	(7,663,775)	(1,932,267)	(4,440,716)	(6,805,880)	(1,575,044)	(1,964,807)
Net Financial Effect (Discounted)	£48,319,269.78	£7,315,015.09	-£7,663,774.78	-£1,932,267.35	-£4,440,715.71	-£6,805,880.34	-£1,575,043.51	£289,416.47

	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	Total
Discount Factor	0.5573	0.5222	0.4894	0.4586	0.4298	0.4027	0.3774	0.3537	
NRM Purchase Costs	0	0	0	0	0	0	0	0	58,088,596
NRM Refurbishment	590,216	0	0	0	0	0	0	0	2,844,440
Other capital cost	0	0	0	0	0	0	0	0	1,114,881
Other capital cost	0	0	0	0	0	0	0	0	(291,130)
Subtotal: NRM Rollout (Buses & Equipment)	590,216	0	0	0	0	0	0	0	61,774,487
Development Buses	0	0	0	0	0	0	0	0	0
Additional Crew Member	0	0	0	0	0	0	0	0	0
Tender price adjustment	0	0	0	0	0	0	0	0	0
Drop-off Costs	0	0	0	0	0	0	0	0	3,149,780
Vehicle maintenance	880,052	854,863	830,351	808,447	783,186	760,477	458,180	22,054	12,303,225
3rd year warranty	0	0	0	0	0	0	0	0	(255,158)
Battery cost for new vehicles	0	2,599,636	660,011	0	2,358,885	610,630	0	0	12,987,3[illegible]
Battery saving for existing vehicles	0	0	0	0	0	0	0	0	(8,070,2[illegible])
Additional cleaning	323,438	314,186	305,172	296,396	287,828	279,481	169,301	8,907	4,8[illegible]
Revenue Decrease to TfL	283,911	276,022	268,231	260,774	253,449	246,211	148,617	8,497	4,098,4[illegible]
Operator Fuel Saving	0	0	0	0	0	0	0	0	0
Avoided Operator cost of ownership	(3,296,315)	(3,202,234)	(3,110,345)	(3,020,805)	(2,933,573)	(2,848,808)	(1,716,228)	(82,625)	(60,051,8[illegible])
Additional spares	113,082	109,846	106,685	103,634	100,632	97,717	63,353	15,383	1,679,4[illegible]
Profit - Net Contract Cost Charge @ 7.5%	(149,460)	(144,249)	(140,195)	(136,079)	(132,147)	(128,396)	(76,981)	(2,783)	(3,702,0[illegible])
Subtotal: NRM Operations	(1,844,536)	779,071	(1,074,939)	(1,689,649)	719,012	(982,401)	(954,901)	(31,484)	(37,818,677)
Net Financial Effect (Discounted)	##########	£779,070.79	##########	-£1,689,648.78	£719,012.84	-£982,401.69	-£954,901.14	-£31,484.28	£23,955,810.08

Discounted NFE NSB Summary

BCR	-0.059 : 1

Discounted (16/17 Current Prices)

		2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	Total
DISCOUNTED Social Benefit	Second Crew Member Safety & Security																	
	Reduced dwell time																	
	Individuals Journey time improvements																	
	Ambience vs. Diesel																	
	Emissions vs. Hybrid	-£60 k	-£155 k	-£151 k	-£144 k	-£138 k	-£132 k	-£126 k	-£120 k	-£115 k	-£110 k	-£105 k	-£101 k	-£98 k	-£93 k	-£54 k	-£3 k	-£1,793 k
	NRM OPO safety																	
	Subtotal: Net Social Benefit	-£60 k	-£155 k	-£151 k	-£144 k	-£138 k	-£132 k	-£126 k	-£120 k	-£115 k	-£110 k	-£105 k	-£101 k	-£98 k	-£93 k	-£54 k	-£3 k	-£1,793 k
	Check	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

		2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	Total
DISCOUNTED Financial Effect	NRM Purchase Costs	£46,486 k	£11,603 k															£58,087 k
	NRM Refurbishment								£2,294 k	£500 k								£2,844 k
	Other capital costs	£882 k	£233 k															£1,115 k
	Existing order discount	-£281 k																-£281 k
	Development Buses																	
	Additional Crew Member																	
	Tender price adjustment																	
	One-off Costs	£2,504 k	£646 k															£3,150 k
	Additional vehicle maintenance	£404 k	£1,258 k	£1,049 k	£1,216 k	£987 k	£958 k	£932 k	£808 k	£880 k	£853 k	£830 k	£808 k	£755 k	£780 k	£458 k	£22 k	£12,759 k
	3rd year warranty				-£203 k	-£52 k												-£255 k
	Battery cost for new vehicles				£2,986 k	£741 k		£2,443 k	£810 k		£2,570 k	£888 k		£2,380 k	£611 k			£12,887 k
	Battery saving for existing vehicles		-£1,250 k	-£2,918 k	-£233 k	-£787 k	-£2,547 k	-£338 k										-£8,070 k
	Additional cleaning	£140 k	£380 k	£364 k	£373 k	£363 k	£353 k	£343 k	£333 k	£322 k	£314 k	£305 k	£298 k	£288 k	£279 k	£160 k	£8 k	£4,600 k
	Revenue Decrease to TfL	£131 k	£341 k	£336 k	£327 k	£318 k	£308 k	£300 k	£292 k	£284 k	£276 k	£268 k	£261 k	£253 k	£246 k	£149 k	£8 k	£4,096 k
	Operator Fuel Saving																	
	Avoided Operator cost of ownership	-£1,837 k	-£9,458 k	-£9,088 k	-£9,919 k	-£5,753 k	-£5,981 k	-£5,074 k	-£4,022 k	-£3,297 k	-£3,207 k	-£3,110 k	-£3,021 k	-£2,914 k	-£2,840 k	-£1,716 k	-£83 k	-£69,052 k
	Additional spares	£71 k	£138 k	£134 k	£131 k	£127 k	£123 k	£120 k	£116 k	£113 k	£110 k	£107 k	£104 k	£101 k	£98 k	£83 k	£15 k	£1,871 k
	Profit - Net Contract Cost Change @ 7.8%	-£90 k	-£364 k	-£958 k	-£383 k	-£384 k	-£903 k	-£301 k	-£209 k	-£140 k	-£144 k	-£140 k	-£136 k	-£132 k	-£128 k	-£77 k	-£3 k	-£3,700 k
	Subtotal: Net Financial Effect	£48,319 k	£7,315 k	-£7,884 k	-£1,902 k	-£4,441 k	-£8,986 k	-£1,576 k	£280 k	-£1,764 k	£770 k	-£1,076 k	-£1,080 k	£716 k	-£862 k	-£866 k	-£31 k	£28,956 k
	Check	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Undiscounted (16/17 Current Prices)

		2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	Total
UNDISCOUNTED Social Benefit	Second Crew Member Safety & Security																	
	Reduced dwell time																	
	Individuals Journey time improvements																	
	Ambience vs. Diesel																	
	Emissions vs. Hybrid	-£64 k	-£177 k	-£183 k	-£187 k	-£191 k	-£195 k	-£199 k	-£203 k	-£207 k	-£211 k	-£215 k	-£219 k	-£224 k	-£228 k	-£144 k	-£7 k	-£2,857 k
	NRM OPO safety																	
	Subtotal: Net Social Benefit	-£64 k	-£177 k	-£183 k	-£187 k	-£191 k	-£195 k	-£199 k	-£203 k	-£207 k	-£211 k	-£215 k	-£219 k	-£224 k	-£228 k	-£144 k	-£7 k	-£2,857 k
	Check	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

		2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32	Total
UNDISCOUNTED Financial Effect	NRM Purchase Costs	£49,617 k	£13,210 k															£62,827 k
	NRM Refurbishment								£3,791 k	£1,059 k								£4,850 k
	Other capital costs	£942 k	£264 k															£1,206 k
	Existing order discount	-£305 k																-£305 k
	Development Buses																	
	Additional Crew Member																	
	Tender price adjustment																	
	One-off Costs	£2,672 k	£735 k															£3,407 k
	Additional vehicle maintenance	£431 k	£1,295 k	£1,279 k	£1,317 k	£1,356 k	£1,417 k	£1,459 k	£1,523 k	£1,578 k	£1,637 k	£1,697 k	£1,759 k	£1,822 k	£1,888 k	£1,214 k	£52 k	£21,857 k
	3rd year warranty				-£283 k	-£73 k												-£356 k
	Battery cost for new vehicles				£3,850 k	£1,025 k		£3,850 k	£1,025 k		£4,021 k	£1,258 k		£5,404 k	£1,516 k			£21,030 k
	Battery saving for existing vehicles		-£1,424 k	-£3,543 k	-£302 k	-£1,209 k	-£3,780 k	-£572 k										-£10,851 k
	Additional cleaning	£158 k	£443 k	£467 k	£464 k	£502 k	£521 k	£540 k	£560 k	£580 k	£602 k	£624 k	£646 k	£670 k	£694 k	£446 k	£27 k	£7,958 k
	Revenue Decrease to TfL	£140 k	£388 k	£400 k	£423 k	£439 k	£456 k	£473 k	£491 k	£509 k	£529 k	£548 k	£568 k	£590 k	£612 k	£394 k	£24 k	£6,993 k
	Operator Fuel Saving																	
	Avoided Operator cost of ownership	-£2,098 k	-£8,213 k	-£7,288 k	-£7,879 k	-£7,881 k	-£8,758 k	-£7,880 k	-£6,763 k	-£5,815 k	-£6,133 k	-£6,350 k	-£6,587 k	-£6,828 k	-£7,073 k	-£4,548 k	-£234 k	-£98,001 k
	Additional spares	£79 k	£157 k	£163 k	£168 k	£178 k	£183 k	£188 k	£198 k	£203 k	£210 k	£218 k	£226 k	£234 k	£243 k	£166 k	£43 k	£3,053 k
	Profit - Net Contract Cost Change @ 7.8%	-£105 k	-£437 k	-£679 k	-£470 k	-£531 k	-£742 k	-£475 k	-£336 k	-£288 k	-£276 k	-£288 k	-£287 k	-£307 k	-£319 k	-£204 k	-£8 k	-£5,730 k
	Subtotal: Net Financial Effect	£51,505 k	£8,320 k	-£9,313 k	-£2,467 k	-£8,145 k	-£10,183 k	-£2,462 k	£467 k	-£2,251 k	£1,465 k	-£7,197 k	-£3,684 k	£1,473 k	-£2,438 k	-£2,530 k	-£88 k	£18,782 k
	Check	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Vehicle, Route profiles

	2016/17	2017/18	2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30	2030/31	2031/32
Vehicles in service at end of year (inc. Spares)	154.0	195.0	195.0	195.0	195.0	195.0	195.0	195.0	195.0	195.0	195.0	195.0	195.0	195.0	56.0	0.0
Vehicles purchased in year	154	41	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Spares	21	26	26	26	26	26	26	26	26	26	26	26	26	26	8	0
Vehicles in service at end of year (exc. Spares)	133	169	169	169	169	169	169	169	169	169	169	169	169	169	48	0
Cumulative Equivalent Vehicles (inc. Spares)	71.0	192.0	195.0	195.0	195.0	195.0	195.0	195.0	195.0	195.0	195.0	195.0	195.0	195.0	121.0	6.0
Spares	10	28	29	29	29	29	29	29	29	29	29	29	29	29	16	0
Cumulative Vehicles (exc. Spares)	61	164	166	166	166	166	166	166	166	166	166	166	166	166	103	6
Equivalent vehicles in first contract term operating in year	36	130	195	195	195	195	159	65	0	0	0	0	0	0	0	0
Equivalent vehicles in second contract term operating in year	35	62	0	0	0	0	36	130	195	195	195	195	195	195	121	6
Equivalent routes in first contract term operating in year	2	7	7	7	7	7	5	2	0	0	0	0	0	0	0	0
Equivalent routes in second contract term operating in year	0	0	0	0	0	0	2	5	7	7	7	7	7	7	5	5
Vehicles refurbished in year	0	0	0	0	0	0	0	154	41	0	0	0	0	0	0	0
New Vehicles requiring battery replacement in year	0	0	0	154	41	0	154	41	0	154	41	0	154	41	0	0
Existing Vehicles requiring battery replacement in year	0	191	548	66	191	548	66	0	0	0	0	0	0	0	0	0
Number of buses from 1st 500 at lowest rate	0	191	309	0	0	0	0	0	0	0	0	0	0	0	0	0

Inflation

Bus Network - CPA																
Annual	3.3%	3.1%	3.4%	3.4%	3.4%	3.4%	3.4%	3.4%	3.4%	3.4%	3.4%	3.4%	3.4%	3.4%	3.4%	3.4%
Index	1.16	1.19	1.23	1.27	1.32	1.36	1.41	1.45	1.50	1.55	1.61	1.66	1.72	1.77	1.83	1.90
Bus Network - Tender Price																
Annual	4.4%	3.5%	4.0%	4.5%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	0.0%
Index	1.24	1.28	1.33	1.39	1.43	1.47	1.52	1.56	1.61	1.66	1.71	1.76	1.81	1.87	1.92	1.92
Bus Network - CPA labour inflation																
Annual	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%	4.0%
Index	1.19	1.23	1.28	1.33	1.38	1.44	1.50	1.56	1.62	1.69	1.76	1.83	1.90	1.98	2.06	2.14
Surface Transport - RPI																
Annual	1.9%	3.2%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%	3.5%
Index	1.11	1.15	1.19	1.23	1.27	1.32	1.37	1.41	1.46	1.51	1.57	1.62	1.68	1.74	1.80	1.86
Surface Transport - Tender Price Inflation (Used for materials)																
Annual	4.7%	4.7%	4.7%	4.7%	4.7%	4.7%	4.7%	4.7%	4.7%	4.7%	4.7%	4.7%	4.7%	4.7%	4.7%	4.7%
Index	1.19	1.24	1.30	1.36	1.43	1.49	1.56	1.64	1.71	1.80	1.88	1.97	2.06	2.16	2.26	2.36