Transport for the North

Long term investment programme funding framework

Technical report

Final
14 February 2018

Basis of preparation

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Executive summary

Introduction

Transport for the North (TfN) is developing a long term investment programme setting out connectivity priorities across the North that will help transform the economic performance of the region and materially narrow the productivity gap between the North and the country as a whole. Reflecting this need, the programme is wide-ranging, with an investment requirement that is likely to be significant (multiple tens of billions) over an extended period (30 years).

The long term investment programme forms part of the Strategic Transport Plan (STP), which TfN is developing as a statutory requirement of it becoming a Sub-national Transport Body. The STP requires TfN to set out the means by which the long term investment programme will be funded.

The scale and nature of the investment required, allied with TfN's unique geographical scope and stakeholder environment, require an appropriate funding framework that recognises that how a TfN programme is funded will affect the outcomes it delivers and that the outcomes targeted are about both absolute and relative performance – i.e. the North compared to the country as a whole. This means that it is difficult to see TfN funding in isolation from arrangements in other parts of the country, or as independent of the funding approach adopted for other, local programmes in the North with material implications for rebalancing outcomes. An approach is required that recognises the distinct objectives of TfN as an organisation, together with those of its partners, and the constraints they face.

Amongst other things, this recognition of the constraints TfN's partners face means the approach has to acknowledge the fiscal climate within which it is being formed. Budget 2017 made clear how close to the National Infrastructure Commission's (NIC's) fiscal remit in terms of the ratio of gross economic infrastructure spend to GDP the country is expected to be by the end of this Parliament – forecast spend rising to 1% of GDP by 2022/23 compared to a long term fiscal remit of 1% to 1.2%. At current GDP levels, the maximum remaining headroom (0.2% of GDP a year) translates into less than £3.5bn per annum across England as a whole.

The approach also needs to recognise the funding opportunities and challenges that will accompany technological change in the transport sector, particularly the electrification of the road vehicle fleet and the implications of this for road taxation and thus the way the country pays to access the road network. These are national level tax and transport policy questions, but the national level response is likely to affect the funding and financing options available for 'TfN-type' programmes across the country well within the timeframe covered by TfN's investment programme.

Accordingly, TfN's emerging funding framework needs to be bespoke and ambitious, but also, credible and flexible – comprising a solution that is realistically deliverable in a Northern context today as well as looking towards what might be possible in the future. The framework must seek to make best use of funds that can be directed from central sources (based both on 'traditional' funding flows and proposals for new ways of allocating funds to the region). It also

needs to identify approaches that proportionately tap into the value that the interventions will generate on a local and regional level, to support local contributions to the solution.

TfN investment in context

The *Northern Powerhouse Independent Economic Review* (NPIER) identified the scale of the productivity challenge facing the North, with a 'business as usual' forecast of a 1/3 gap in GVA per capita compared to the national average (excluding London) by 2050, up from 15% today. Closing a gap of this size is a major undertaking, particularly when it is defined in terms of per-capita GVA, which means that it is about productivity and labour market participation rather than simply relocating employment, and recognising that progress in the North will take place alongside connectivity improvements in other parts of the country which will intensify the competition the North faces for the most productive businesses and people.

Halting and then reversing the North's relative decline in GVA per capita will need genuinely transformational change in a number of areas, including significant and sustained improvements across strategic, regional and local transport networks, so that economic mass/connectivity across the North can sustain materially higher levels of productivity and wages. Other things being equal, these improvements in the North's economic mass/connectivity will need to outpace those in the currently better performing parts of the country, otherwise the North will find it difficult to attract and retain a larger share of the country's most productive people and businesses.

The implications of underlying trends, including demographic, which look set to improve the connectivity and economic mass of other parts of the country, mean this improvement in relative performance will be no easy task. Accordingly, TfN has begun to identify a series of enhancements to the strategic rail and road networks within the long term investment programme capable of intervening at the necessary scale. Once further work has been completed on the Strategic Development Corridors and other programmes of work, further local schemes may also be added in addition to, or in place of, those that are already included.

Although TfN's strategic interventions and programmes will account for some of the largest projects with the longest lead-times, they represent only part of the investment the North needs if it is to halt and then reverse its relative decline in GVA per capita. Realising the ambitions for economic growth and rebalancing will also depend on significant investment in critical local transport, infrastructure and services. These local programmes will significantly enhance the 'reach' and overall benefit created by strategic 'TfN-type' schemes, and – at the same time – will themselves be able to unlock greater economic value for the North as a result of being integrated with the strategic schemes.

Local programmes will require further material investment, both in absolute terms and as a portion of the core capital funding requirement for the TfN investment programme. They are not currently funded at the necessary level, which means that the overall investment funding challenge that the North faces is greater than for TfN's programmes alone.

Elements of a funding framework

The principal financial challenge in respect of delivering the long term investment programme relates to funding, rather than financing – in other words, how the infrastructure necessary to

deliver on the North's economic potential is ultimately paid for over time, rather than from whom (public or private sector) or how (via what procurement model) the cash is raised (i.e. borrowed) to meet the costs of its construction as they arise.

This is not to say that there will not be financing challenges, nor that value for money procurement will not be essential, it is rather that these issues only really become relevant once the funding challenge has been overcome.

In this context, the emerging funding framework consists of three 'building blocks':

- Principles – which underpin a deliverable and appropriate funding arrangement.
- Potential funding sources – from which revenues could ultimately flow.
- Structures to enable the funding to be directed to TfN programmes, and the rules and governance frameworks required to manage risks and ensure equitable and efficient funding flows, and unlock otherwise difficult to access sources of funding.

A. Principles

The emerging funding framework is underpinned by a set of key guiding principles identified in the Strategic Transport Plan. These principles are based on a number of fundamentals about the scale of the rebalancing challenge (including the fact that it is wider than TfN's programmes) and the limitations of current funding models, which necessitate the consideration of new approaches and innovative thinking, with wider relevance than TfN's programmes, and indeed wider infrastructure investment in the North.

Principle	Key considerations
1 Funding is a shared challenge requiring a shared solution	A future funding framework for TfN must recognise the ways by which funding can be raised locally from the ultimate beneficiaries of the investment programme. This includes through commercial revenues, user charges and the range of existing taxation mechanisms. The role of local contributions from within the North should also be consistent with funding strategies that are being developed for programmes elsewhere in the UK, and there will be a need for someone to 'keep score' over time. However, the nature of the conditions in which TfN will seek to deliver the long term investment programme means a large majority of funding for TfN's programmes is likely to be from central sources.
2 TfN and its partners will argue for demonstrable fairness between places and regions	The long term investment programme needs to deliver the necessary contribution to headline growth whilst also balancing the many diverse needs of TfN's partners and stakeholders. Ensuring fairness and consistency between stakeholders - and with other parts of the UK - will be critical to developing sustainable propositions, as will an understanding of how risks and rewards are allocated and managed.

3	**New sources of revenue need to proportionately tap into the financial benefits generated by the investment**	Growth-focused investment, in particular that which promotes productivity, generates additional national-level growth. New sources of revenue may be needed to tap into the resulting financial benefits, to the extent they are not captured by the existing tax system. In developing a case for access to new revenue, clarity about the baseline funding position and demonstrable fairness between places and regions will be essential.
4	**The differences between places, and in any one place over time, point to the need for a 'whole programme' approach**	Different individual initiatives and places will demonstrate different levels of potential to generate value and funding at different times. It is also likely that, in particular locations, value will be created by a combination of TfN and local investment, and in principle this could be used to part fund either or both, but can only be 'spent once'.

B. Sources and quantum of funding

Meeting the significant investment requirement while recognising the individual characteristics of different TfN investments will necessitate drawing upon a funding 'toolkit' rather than a single measure. These funding mechanisms – both individually and as part of a package – need to credible, deliverable, and able to make a difference to the significant funding requirement of the long term investment programme. They will therefore need to reflect:

- the likely range of the overall funding requirement that would be needed to deliver the investment programme in strategic infrastructure needed across the North,
- how funding is currently raised for strategic transport infrastructure, and
- the ability to raise new forms of funding leveraging incremental value created by the investment in the North.

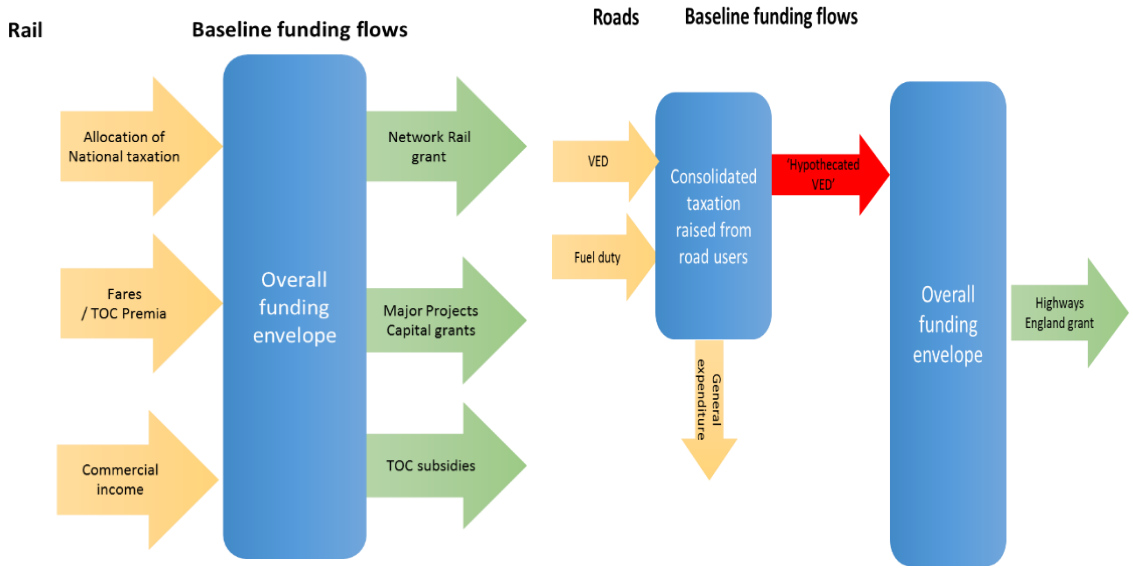
The eventual composition of a future TfN investment programme is likely to primarily comprise investment in transformational rail enhancements and both the Strategic and Major Roads Networks (SRN and MRN), with the vast majority of local transport infrastructure investments continuing to be delivered by the relevant combined authorities and local authorities.

From preliminary work to develop its Strategic Transport Plan, TfN has identified an indicative programme of rail and road interventions, with an estimated cost of £60-70 billion (in current prices) over 30 years. With the addition of supporting transport capacity schemes to cater for growth around the major urban conurbations and make complementary contributions towards the rebalancing agenda this may push the funding requirement for strategic and related transport infrastructure closer to £100 billion over this period.

Existing funding arrangements

Strategic rail and road infrastructure investment is currently delivered by Network Rail (NR) and Highways England (HE) through funding channelled through the Department for Transport (DfT) and allocated as part of the High Level Output Specification (HLOS)/Statement of Funds Available (SoFA) for each Control Period settlement and Road Investment Strategy (RIS) period.

Half of rail expenditure is raised directly from passengers, and another third from consolidated government budgets funded through a combination of taxes and duties.



Currently and historically the taxes and duties levied directly on road users significantly exceed the equivalent expenditures. In 2017, fuel duty alone raised over £27 billion, while vehicle excise duty (VED) accounted for around £6 billion. Recently it has been announced that from 2020 onwards, VED revenues will be hypothecated towards expenditure on the SRN and MRN.

Beyond these sources of funding, more recently 'project level' contributions have been sought for specific investments such as Crossrail, where particular beneficiaries are anticipated to gain from transport investment. These incremental forms of funding have been raised predominately through additional local taxes for local transport projects, rather than SRN/MRN or Strategic Road Investment (SRI) programmes.

A future funding framework

Consistent with current arrangements, the emerging funding framework for the TfN long term investment programme consists of two elements or 'tiers' of funding – central and local/project-specific. Within each category there will be both existing mechanisms and options for new ways of raising/allocating funding. Each would require a range of structures to enable the funding to be directed to TfN programmes, and rules and a governance framework to manage risks and ensure equitable and efficient funding flows.

The two categories of funding have been individually explored in the context of the TfN long term investment programme and are described in turn below.

1) ‘Tier 1’: alternative approach to centrally-derived rail and road funding

The nature of the programmes that TfN is sponsoring and the centralised transport funding regime within which they are being developed means a large majority of funding for the long term investment programme is likely to continue to be from central sources.

This is consistent with the approach to transport funding today, with allocations made to delivery authorities and strategic programmes from budgets that are themselves funded in the main part by centrally-collected taxation and user revenues. While existing arrangements may be appropriate for the first phase of the TfN investment programme and work well in many areas, moving forward, there are opportunities to explore a different funding framework, and also an element of additional new funding.

This future funding framework for the North should be well-understood, provide increased certainty around levels and timing of investment, work at a pan-Northern level for SRI and SRN/MRN investment and incentivise the cost-effective delivery of the long term investment programme.

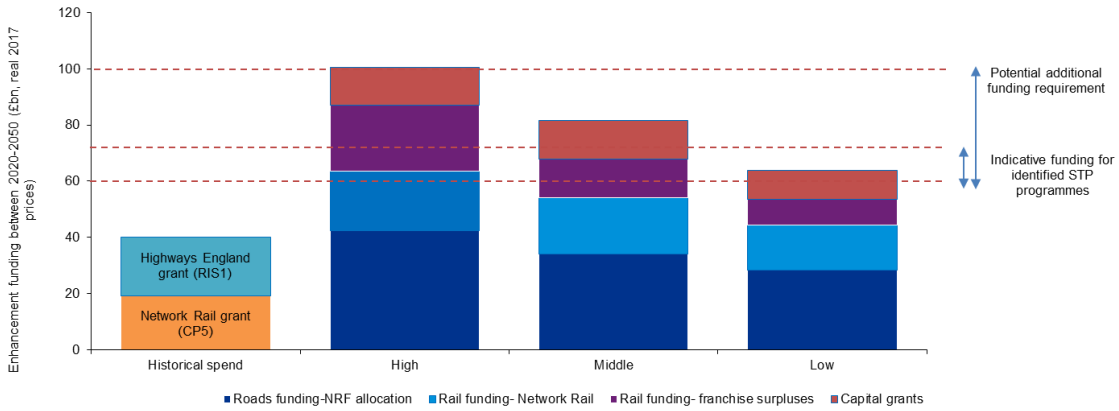
Beyond being a core source of investment, directing centrally-collected funds to the long term investment programme in this manner can provide a baseline, without which it is difficult to demonstrate what extra is being bought through any additional funding being raised locally, whether through value capture or in response to opportunities generated by national policy – e.g. in response to technological change.

The table below outlines the components of the alternative approach to transport enhancement funding that have been considered, and an initial assessment of their potential contribution to a long term investment programme. These numbers are presented not as an “ask” of Government in respect of a programme of grant funding, but instead to demonstrate the order of magnitude of centrally-originated funding under varying growth and reform scenarios.

Source	Description	Potential quantum (real in 2017 prices)
Alternative approach to allocation of roads and rail enhancement funding		
VED revenues- National Roads Fund (NRF)	Today, investment in the SRN is funded by an allocation made by the Government to Highways England, as well as capital grant programmes for specific projects and schemes. The recent Transport Investment Strategy suggested a shift in this structure, with the Government confirming its commitment to direct VED revenues to pay for improvements to the roads network. Although the details are still under development, given the linkage now being made at the national level between VED revenue and Highways England investment, the allocation of at least a proportion of	Preliminary analysis suggests that the allocation of VED revenues on a regional basis could contribute £28-43bn to the programme over 30 years, compared to around £19bn under ‘business as usual’ projections.

	VED on a regional basis may be an appropriate component of the future devolved TfN funding framework.	
Rail capital enhancement programmes	Capital grants are an important source of funding for major rail upgrades and enhancements, funded via the Network Rail regulatory process or specifically to major projects such as HS2 or Crossrail.	Historical funding for rail enhancements in the North has been around £700m p.a (equivalent to around £21bn over 30 years).
NPR major project grant	Arguably, there has been an historical underspend in the funding allocated for enhancements in the North. Therefore, in addition to allocations for Network Rail consistent with historical trends, it is anticipated that a form of capital grant for Northern Powerhouse Rail (NPR), the largest rail scheme in the long term investment programme, will be available.	Assuming grant funding is received equivalent to the capital cost of the Leeds-Manchester component of NPR, this could represent a further £9-13bn.
'New' rail enhancement funding		
Hypothecation of rail franchise surpluses	A potential additional source of funding for the TfN SRI programme could be derived from the hypothecation of future surpluses generated by the Northern and TPE franchises. This would be supported and incentivised through the optimisation of demand management, investment in the railway, and potentially reforming the fares structure to align to future needs of the network.	Preliminary analysis suggests that future surpluses could contribute £9-23bn to a TfN programme over 30 years. Much of these surpluses would be back-ended, which would reduce their capital 'buying power' as a funding stream. Equally, the higher-end scenarios implicitly require extra capacity investment not currently assumed within the emerging TfN investment programme.

For each funding source, preliminary modelling has been undertaken to derive a high, medium and low indicative range of funding that they might contribute. On this basis, a preliminary assessment of the potential range of contribution of a new grant funding framework to the long term investment programme is shown below.



In an illustrative scenario in which all four potential sources of funding were allocated to the TfN investment programme, then under the 'middle' and 'high' scenarios, the core capital funding requirement can be fully met by 'Tier 1' sources, while under the 'low' scenario, the contribution is around 90%. This suggests that, with the necessary reform to funding flows and allocation arrangements, central funding for the long term investment programme can support the investment levels required.

However, it is recognised that this entails a level of funding significantly higher than under 'business as usual', and assumes that all four funding sources would be available. If all the identified future funding sources were available, then the funding anticipated even by the 'low' scenario is almost double the amount of 'business as usual'. Under the 'high' scenario, the quantum of funding is 2.5 times as large. However, currently only two of the four sources exist - Network Rail and capital enhancement grants. VED revenues for the NRF are planned from 2020 onwards and the redirection of rail franchise surpluses are not yet a committed source of funding.

While this analysis is illustrative only and does not represent an "ask" of Government, it does highlight that delivering the required levels of investment will require engagement amongst all stakeholders and Government at the earliest possible opportunity to ascertain the required level of reform, the appetite for it, and the steps to be taken to move forward the elements of the proposed framework.

Furthermore, it is important to remember that it is not simply a question of 'getting to the line'. The analysis in this report is focused on overall funding levels, expressed in today's prices – they do not represent buying power (which is a function of timing and financing as well as funding). The estimated funding streams (with the exception of the spike in the 2020s representing an assumed capital grant for NPR) grow over time, with significant growth in some scenarios towards the end of the programme. The profile of spend required for the TfN investment programme has not yet been fully developed, but when it is known, any mismatches in timing will need to be addressed through an appropriate financing framework.

2) 'Tier 2': incremental local or project/location specific funding sources

While the starting hypothesis is that the majority of funding will be centrally-derived, the need for local contributions to support the programme, in particular the local elements of it, is also

acknowledged. TfN has therefore sought to identify and quantify 'Tier 2' funding – being those funding sources that are project-related and/or derived at the local level for specific schemes and interventions, reflecting the benefit they will provide to local areas and meeting local needs. They could include:

Category	Funding source
Targeted grant funding	• Specific grants (beyond transport)
Redirection of project-generated revenues	• Incremental commercial revenues and income • Long term savings and efficiencies unlocked by projects and additionally aligned programmes
New charges and levies	• Land Value Capture (LVC)[1] • Project or programme based user charges

To develop an understanding of what type and quantum of project-related and locally-derived funding might be considered as a reasonable assumption for the overall funding framework, a number of case study interventions have been identified and analysed individually.

Based on this preliminary analysis, the role of 'Tier 2' funding sources is assessed as being relatively limited in the context of 'TfN-type' investment and the overall quantum of funding required:

- For small and medium-sized interventions (such as station upgrades and individual road schemes), project-related and locally-derived funding has the potential to make an important contribution to the additional 'local infrastructure' elements, and in some cases a very modest contribution to the capital costs of the strategic assets.
- For the very large projects – such as Northern Powerhouse Rail – the absolute potential of 'Tier 2' funding is greater (reflecting the significant potential for wider value creation), but in the context of the very considerable capital costs of such schemes, the overall relative contribution (both in terms of quantum and timing) is in fact smaller.

This reflects the fact that although local contributions can form a part of the framework, in the context of the TfN investment programme, the challenges associated with them are sizeable.

In respect to new mechanisms (such as LVC), there are limits to their applicability and deliverability in a Northern context and particularly to the nature of the strategic infrastructure sponsored through the TfN investment programme. Although innovative alternative local funding models have been used in London and the South East, these are not necessarily always applicable in the North and in relation to all of the schemes within the TfN investment programme, because:

[1] LVC refers to capturing project-specific land value uplift (derived from new development opportunities and/or incremental growth in the value of existing land and property) through targeted local mechanisms, provided that the required powers are available and the revenue-raising mechanisms are approved and implemented at the local level.

- The economic impacts of inter-urban interventions are more diffuse, reflecting the larger and more diverse geography. Comparing the impacted footprint of an inter-city scheme like NPR to an intra-city scheme like Crossrail 2, for example, gives an indication of the potential impact of 'TfN-type' interventions. Crossrail 2 can be considered to impact 1.1 sq km per km of route (based on analysis of 1km radii around each proposed station), compared to 0.1 for NPR, suggesting that Crossrail 2 will impact a land area ten times greater than NPR.[2] This is primarily due to the fact that Crossrail 2 comprises 13 stations on a shorter route compared to an assumed 3 stations for NPR (based on the Leeds-Manchester component, assuming 1 intermediary station yet to be confirmed). This greater impact implies a greater potential for development and therefore contribution from LVC mechanisms to the funding requirement of the scheme.
- Base levels of productivity, wages and land values are significantly lower than other parts of the country, as well as there being significant differences within the North itself.
- 'The North' does not exist as a democratically-accountable tier of Government, nor does it have revenue raising powers.

Finally, the role of parallel city region and local transport infrastructure programmes in the North, either under way or in development, must be recognised. These programmes, which are most unlikely to be funded under current arrangements at the level necessary to rebalance the North's economy, are also crucial in supporting the transformational change required and will naturally have the 'first call' on any local funds that can be incrementally raised from investment in transport infrastructure. This constrains the ability of such funds to contribute to the core strategic costs of the TfN investment programme. In this context it is perhaps significant that the NIC's recommendations in the context of East West Rail along the Oxford to Cambridge corridor, whilst acknowledging the potential for significant LVC receipts along the corridor, anticipate these being reserved to help pay for the supporting local works necessary, in addition to strategic investment, to deliver up to a million additional homes by 2050.

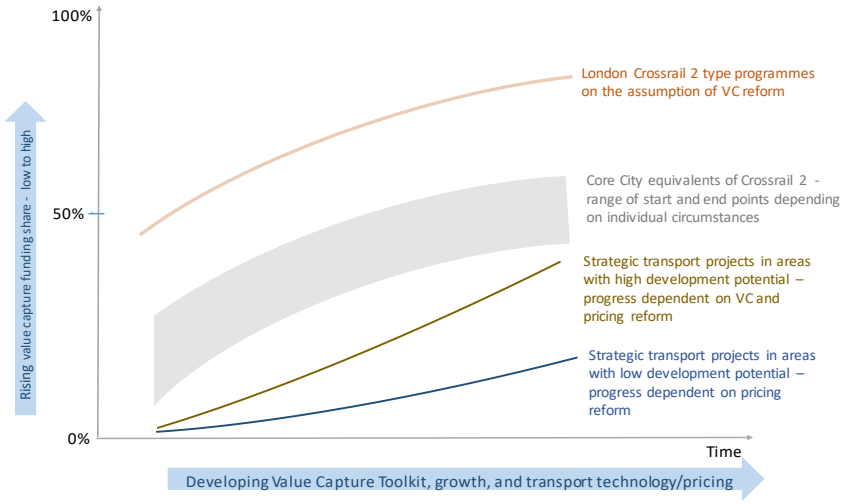
3) 'Tier 1' and 'Tier 2': an evolving relationship

While the contribution of 'Tier 2' funding is currently assessed as being significantly smaller than the requirement for central investment, this does not always have to be the case.

Different schemes and programmes will have different levels of potential for local value generation (and capture), and there will also be important differences between places at any one time and in any one places over time. Initiatives and places can be considered on a 'continuum' in terms of the realistic potential for local uplift and funding. The continuum runs from 'low/none' at one end to potentially 100% at the other and each type of investment and each place can be expected to progress along that continuum over time.

[2] Formula for impacted footprint around station: $Footprint = \frac{\pi r^2 \, X \, number \, of \, stations}{length \, of \, route}$ assuming here that r=1km. Assume for NPR a length route of 69km. Assume 38km of tunnel length for the central section of Crossrail 2.

Strategic programmes, especially those with a rebalancing mission such as the TfN long term investment programme, will start very far down the continuum, with progress likely to be slow and potentially dependent on transport pricing reforms – as is implicit in the 'majority central funding' hypothesis and the evidence of the potential contribution of 'Tier 2' funding sources to the identified case study interventions.



However, in the context of a successful programme of rebalancing investment and the implementation of tools that allow places to tap into value over time (and not just at the point of development, where – in many locations – viability issues may limit their effectiveness), there is potential to move along the continuum and reduce the reliance on centrally-derived funding. In this context, as the diagram illustrates, the opportunities opened up by potential national initiatives in response to technological change could be particularly significant.

C. Funding flows, rules and governance

The funding framework for the TfN investment programme is at an early stage of its development - as is the programme itself. As it develops, key issues of governance, implementation and financial management will need to be considered in order to move towards a practical framework that is deliverable and sustainable.

This will include identifying and evaluating options for the mechanisms and 'rules' which achieve the optimal balance between central government funding (whether from existing flows or new arrangements) and new local or pan-regional funding instruments, what TfN's role in terms of budgeting and revenue raising will be, and options for the efficient and accountable flow of funds to the interventions for which they are required.

There is a likely to be broad spectrum of ways in which this could be achieved, ranging from a purely strategic role for TfN (with no funding resource or remit) but with a sponsorship and 'score keeping' role to a much more autonomous role as a budget holder, able to shape future investment and incentivised to deliver greater reforms. Some potential scenarios are outlined below. Further investigation and evaluation of options will be required as the funding framework is further developed.

Scenario 1: Continuation of existing arrangements. If existing funding arrangements for rail and road – delivered via the respective five year regulatory processes – were to continue, TfN's role would likely be limited to an advisory role and strategic planning, providing input into national process such as Network Rail's and Highways England's business planning, and keeping score in terms of baselines and comparisons between places and regions in

expenditure on 'TfN-type' programmes. This option would require minimal changes to funding arrangements and governance structures.

Scenario 2: Separate mode-specific regulatory settlements for the North. Alongside the five-year funding settlements for Network Rail and Highways England, HS2, London etc., the North would have a separate five-year, or longer, baseline plan for its rail and road enhancements – like a Northern HLOS and RIS, similar to the current Scottish HLOS. A separate baseline funding envelope for the North would provide greater certainty of funding, with options for establishing the size of the envelope on a formula basis, for example using a percentage of GVA as recommended by the NIC, potentially reflecting the implications of rebalancing objectives for these ratios in different parts of the country, and the kind of match-funding deals implied by the funding ratio continuum diagram in the section above. This option would still see separate envelopes for different modes, but by providing baselines for each, it would provide the kind of clarity around additionality and consistency between places and regions without which it will be difficult to make a case for discretionary additional local or regional funding. It would require the development of an agreement between TfN and its partners on rules to ensure a fair allocation of funding across regions and a long-term pathway to maximising value generation to support funding future projects.

Scenario 3: Combined regulatory settlement for the North. This version would involve a single pooled funding envelope for transport enhancements (across all strategic modes) in the North, aligned with TfN's multi-modal long term investment programme. This unique funding envelope for the North would give greater autonomy and discretion to TfN on the allocation and sequencing of investments between modes. It would otherwise be similar to scenario 2 in terms of the incentives provided to address what could be achieved through additional local/regional contributions over time.

Scenario 4: 'Budget holder'. In the most 'radical' vision of the future, revenue from all funding sources for strategic investment would be directed to a devolved TfN budget, set against a long term baseline and with 'Barnet style' or match funding rules aligned to the achievement of rebalancing objectives. Such arrangements would necessitate mechanisms to ensure that central government (and, where relevant, locally-derived) money is spent on value for money projects and would require both mechanisms to manage risks, and enhanced governance arrangement for TfN to support democratic accountability at the regional/local level given that TfN's remit would extend into the delivery as well as design of its programmes.

These scenarios are illustrative and preliminary in nature and will require further development and evaluation as the framework is developed. As these issues are explored in more detail, the considerations that will be crucial in evaluating which arrangements for funding are likely to be best suited to TfN's future state include the degree of autonomy/devolution, certainty of funding, alignment with existing arrangements, appropriate incentives, and governance implications.

Regardless of the eventual funding model adopted, incremental 'stepping-stone' arrangements would probably need to be established for short-term funding. This could be achieved through recognition of current arrangements planned for CP6 and RIS2, with levels of investment to reflect the rebalancing objective, potentially moving to more autonomy in future.

1 Introduction

1.1 Context

Transport for the North (TfN) was established in 2015 to transform the transport system across the North of England, providing the infrastructure needed to drive economic growth. Its stated vision is "of a thriving North of England, where modern transport connections drive economic growth and support an excellent quality of life."

TfN has been established as a statutory Sub-National Transport Body comprising 19 Constituent Authorities. As part of its statutory governance arrangements TfN has established a Board made up of representatives of the 19 constituent authorities, as well as business leaders from all 11 Northern Local Enterprise Partnerships, and representatives from Highways England, Network Rail, High Speed Two (HS2) Ltd, and the Department for Transport.

One of TfN's requirements was the development of a Strategic Transport Plan. Other functions TfN will be responsible for will be the coordination of regional transport activities and the co-management of the Trans Pennine Express and Northern rail franchises. The latter function has involved the incorporation of Rail North Limited as part of TfN, enhancing the North's ability to speak with a single voice.

TfN's objective is not to replace or replicate the work of existing local transport bodies, but rather to add strategic value by ensuring that funding and strategy decisions about transport in the North are informed by local knowledge and requirements.

Accordingly, TfN is in the process of developing a long term investment programme setting out connectivity priorities across the North that will help transform the economic performance of the region. The programme is wide-ranging, with an investment requirement that is likely to be significant (multiple tens of billions) over an extended period (30 years).

The long term investment programme will form part of the Strategic Transport Plan, which requires TfN to set out the means by which the long term investment programme will be funded.

The importance of the interventions that are proposed across the North, combined with TfN's unique geographical scope and stakeholder environment, means that an approach to funding is required that recognises the distinct objectives of TfN as an organisation, its partners and the constraints they face.

TfN's emerging funding framework therefore needs to be bespoke and ambitious, but also robust and credible – comprising a solution that is realistically deliverable in a Northern context. The framework seeks to make best use of funds directed from central sources (based both on 'traditional' funding flows and the potential implications of alternative ways of allocating funds to the region). It also identifies approaches that proportionately tap into the value that the interventions will generate on a local and regional level, to support local contributions to the solution.

1.2 KPMG scope of work and purpose of this report

KPMG has been engaged by TfN to support in the early stage development of the funding framework for the emerging long term investment programme, as part of TfN's ongoing work on the Strategic Transport Plan. In particular, KPMG's role has been to:

- Assess and document the nature of the funding challenge.
- Provide context to the baseline 'business-as-usual' situation by assessing how transport investments are currently paid for under existing policy and budgeting structures, and the implications of such processes remaining unchanged.
- Identify the underlying 'principles' for a future funding framework, which set out the scale of the investment required and the limitations of current funding models.
- Identify and scope the components of a future funding framework for TfN.
- Identify the specific funding mechanisms that could potentially support a future funding framework for the North, (i.e. which both individually and as part of a package are credible, deliverable, and able to make a difference to the significant funding requirement for the investment programme).
- Through analysis of a representative sample of case study schemes, assess the identified funding sources from both a qualitative and quantitative perspective.
- Develop a financial model to estimate the funding potential of the identified options, including testing against a range of scenarios and sensitivities.
- Develop conclusions around the different potential funding sources and how they can contribute to the investment programme.
- Consider the implications for governance structures and operational 'rules' that would enable the funding framework to be delivered and the identified revenues to be directed to TfN programmes.
- Input into the Strategic Transport Plan and other key documents as required.

This Technical Report sets out KPMG's approach to the analysis of the future funding framework for TfN's emerging long term investment programme undertaken to date, and our findings from this technical work. This includes the development of:

- The strategic and economic context.
- The component parts of a fit-for-purpose funding framework.
- Illustrative financial analysis of how the programme might be funded from a range of sources.
- Preliminary options for the 'operational rules' and governance structures which might support the strategy as it evolves.

The outcomes of the analysis described in this report provide an assessment of how the investment programme could be funded, but do not represent a policy commitment from TfN.

2 The funding challenge

2.1 Context – funding vs financing

The principal financial challenge in respect of delivering TfN's investment programme relates to generating funding, rather than financing.

It is generally accepted that the availability of finance for infrastructure investment is not a major limitation, with strong market appetite for financing appropriate structured forms of infrastructure. However, the ability of government, public authorities and project sponsors to service financing through sufficient sources of funding is the main constraint facing policymakers and project promoters, especially in times of fiscal constraint and economic uncertainty.

The critical question, therefore, is how the infrastructure necessary to deliver on the North's economic potential is ultimately paid for over time – rather than from whom (public or private sector) or how (via what procurement model) the cash is raised (i.e. borrowed) to meet the costs of its construction as they arise. In short, the fundamental problem is not how to borrow enough to pay for TfN's and other Northern Powerhouse programmes, but how to service and repay that borrowing.

This is not to say that there will not be financing challenges, nor that value for money procurement will not be essential, it is rather that these issues only really become relevant once the funding challenge has been overcome. For this reason the current work is prioritising the development of a fit for purpose funding framework, rather the details of the preferred financing and procurement model(s).

2.2 Elements of a funding framework for TfN

To provide an appropriate arrangement for delivering the TfN investment programme, it is necessary to develop a funding framework, covering:

- Principles – which underpin a deliverable and appropriate funding arrangement
- Funding sources – from which revenues could ultimately flow
- The governance, funding flows, rules and regulations needed to achieve this.

Each of these are described below and explored in greater detail within this report.

The focus of the work undertaken to date is on the first two components – reflecting the stage of development of the TfN investment programme and associated funding framework. The final element (governance, funding flows, rules and regulations), which represents a key part of delivering the framework, has been explored at a preliminary and high level basis at this stage, with more detailed analysis and assessment of options to follow once there is greater certainty as to the core building blocks of the framework.

2.2.1 Principles

A set of four guiding principles has been established within in the draft Strategic Transport Plan. They are based on a number of fundamentals about the scale of the investment required and the limitations of current funding models, which necessitate the consideration of new approaches and innovative thinking, with wider relevance than TfN's programmes, and indeed wider infrastructure investment in the North.

The principles are designed to underpin the funding strategy to ensure it is fit for purpose, deliverable, consistent with the objectives of TfN as an organisation and cognisant of the unique challenges involved with delivering major infrastructure programmes today.

2.2.2 Funding sources

Ultimately TfN will be required to draw upon a funding 'toolkit' rather than a single source of funding. These funding mechanisms – both individually and as part of a package – need to credible, deliverable, and able to make a difference to the significant funding requirement for the investment programme.

They must also link the means through which existing beneficiaries of strategic transport investment, such as the Strategic Road Network (SRN), Major Road Network (MRN) and National Rail network in the North, pay for transport and the extent this is through direct charges or indirect taxes and levies. 'New' forms of funding, which tap into 'windfall gains' for particular beneficiaries, will also need to be identified and the extent to which these can be delivered and directed towards TfN programmes will be a key consideration. Finally, the funding framework will need to consider the extent to which sources of funding are likely to grow, fall-away or be replaced over time.

2.2.3 Governance, funding flows, rules and regulations

To bring the different sources of funds together, the framework should also consider the options for how future funding will flow to TfN, the mechanisms and 'rules' which achieve the optimal balance between central government funding (whether from existing flows or new arrangements) and new local or pan-regional funding instruments, and options for the efficient and accountable flow of funds to the interventions for which they are required.

These have been considered at a preliminary and high level in this report, including considerations around the future remit of TfN as an organisation and the case for it to be given greater autonomy and accountability, linked to the emerging Strategic Transport Plan.

3 The TfN investment programme in context

3.1 Current levels of transport investment in the North

Treasury data from 2015[3] shows that, on average, between 2010 and 2015 Government has spent 20% of its passenger transport budget in the North, representing a relative underspend on 'per head' basis considering that the population of the North represents 27.7% of the English population.[4]

Public spending on Transport by region, UK, 2010-2015	
	£000, 2015 prices
North East	2,960,705
North West	9,476,971
Yorkshire and the Humber	7,462,650
England	101,872,989

In respect of the most recent regulatory settlements, in the last control period CP5 (2014-2019), Network Rail committed £3bn to rail enhancements in the North, implying an average annual spend of £600m (in 2012 prices). This represents 24% of Network Rail's budget for enhancements over CP5. Highways England (HE) has committed £2.9bn (in 2015 prices) to strategic road investment in the North for the current Road Investment Strategy (RIS) 1 period (2015-2020/21), implying an average annual spend of £580m. This represents 27% of HE's enhancement budget for RIS1.

3.2 The scale of the rebalancing challenge

The ambitions of the TfN investment programme should be considered in the context of the overall objectives for the Northern Powerhouse. These were set out in the *Northern Powerhouse Independent Economic Review* (NPIER), which identified a rebalancing objective for the North of equalling the average GVA per capita of the UK, excluding London. To reach this objective in 2050 would require generating additional GVA of £100bn per annum (at current prices) in the total GVA of the North. On a per capita basis, this is equivalent to bridging a GVA gap that stands at 15% today and which would rise to 33% by 2050 under 'business as usual'.

Increasing the North's per capita growth rate sufficiently to meet the ambitions of the Northern Powerhouse will require (amongst other things) material increases in transport investment compared to historic norms – across the region (i.e. not just in terms of TfN's programmes) and over an extended period.

A rail-based example serves to illustrate these points. Analysis undertaken by KPMG for Greater Manchester in the context of HS2 and NPR Growth Strategies[5] indicates that around

[3] House of Commons Library (November 2016), *Parliamentary debate 23/11/16: Transport in the North East*

[4] Source: NOMIS- Population estimates- local authority based by single year of age, 12 June 2017

[5] This work draws on the Northern Land Use and Transport Interaction (LUTI) model to generate national and regional estimates of connectivity (also known as economic mass) and the results of ground-breaking work by LSE's Spatial Economics Research Centre (SERC) for the Northern Way which linked differences in connectivity/mass to productivity and (critically) the ability of locations to attract and retain the most productive people and businesses. The modelling reflects the impact of HS2 and NPR (based on conditional outputs) and local programmes in the four

one third of the current GVA gap (i.e. 5% out of 15%) between the North and the national average (less London) can be explained by poorer rail and public transport connectivity between and within Northern cities compared to the country at large. This reflected a weighted average rail and public transport connectivity score for the North some 20% below the national average.

The KPMG analysis also examined future trends, finding that substantial improvements would be required first to avoid the connectivity gap widening, and then to narrow it. Overall, making a substantial difference would involve improving the North's rail/public transport connectivity score by 50% or more.

As the results of illustrative analysis undertaken by LSE's Spatial Economics Research Centre (SERC) for the Northern Way (set out in the text box below) underlines, delivering this kind of increase in connectivity is challenging. The KPMG work for Greater Manchester found that building on the connectivity benefits of HS2, this kind of improvement is possible, but requires a combined programme of Northern Powerhouse Rail (NPR) investment (assuming delivery of the conditional outputs or equivalent) and substantial improvements in intra-city region connectivity sufficient to deliver large increases in employment density, especially in regional centres and other locations well served by the North's rail network.

In funding terms, this work highlights the importance of approaches that are capable of delivering transformational change in both the North's inter-city region and intra-city region networks.

Connectivity & productivity

Research undertaken for the Northern Way by the Spatial Economics Research Centre (SERC) in 2009 suggested that up to 80% of the impact of improved connectivity on regional output per worker could be a result of the impact of connectivity on higher skills retention, learning and business/sector mix effects, with the remainder being classic agglomeration.[6]

This highlights the importance of relative performance in terms of connectivity, since not everywhere can increase its share of the most productive people and businesses at the same time.

This same research examined the impact of a number of (then) illustrative improvements, including a 20 minute rail journey time improvement across the Pennines.

This was found to deliver a little less than a 10% connectivity improvement for the city regions most directly affected, equivalent to perhaps a 5% improvement for the North taken as a whole, roundly 1/10 of the improvement the recent Greater Manchester work identified as being necessary for rail and public transport connectivity to make substantial difference to the per capita GVA gap.

largest Northern city regions and wider trends to forecast, amongst other things, the relative performance of the North in terms of productivity and skills/business retention/attraction compared to the country as a whole.

[6] A summary of this work can be found in SERC's November 2010 Paper – *Agglomeration and labour markets: the impact of transport on labour market outcomes* – Henry Overman et al.

3.3 The TfN investment programme

TfN is in the process of developing a long term investment programme setting out connectivity priorities across the North, with an investment requirement that is likely to be at least £60bn (in today's prices) over a 30 year period. This programme of strategic investments in the transport networks of the North will make a critical contribution to addressing the overall rebalancing objective of the Northern Powerhouse, as described above.

The scale of progress required to meet the considerable rebalancing challenge will need genuinely transformational change in a number of areas.

Although an infrastructure-only strategy cannot be expected to offer the most cost-effective way to close the whole of the identified GVA gap, it is likely to need to carry a significant proportion of the burden of any successful strategy. Indeed, synergies between infrastructure and other elements of a broader approach (such as skills and sector based strategies) are likely to be critical.

As part of this strategy, TfN will have a pivotal role in developing the strategic element of the transport infrastructure investment programme, which will provide a key contribution to headline growth whilst also balancing the many diverse needs of its partners and stakeholders. This need for balance across all stakeholders will almost certainly increase the scale of the investment programme required.

The process of defining the precise programme of interventions to the strategic rail and road networks (as well as multi-modal, freight, and international connectivity schemes) is currently underway as part of the development of the long term investment programme within the Strategic Transport Plan.

The current draft Strategic Transport Plan has identified a number of rail and road interventions that make up the long term investment programme. This programme consists of five work programmes: Northern Powerhouse Rail (NPR), the Long Term Rail Strategy, the Major Road Network for the North and Strategic Road Studies, Integrated and Smart Travel, and Strategic Development Corridors.

The capital spend required to deliver the long term investment programme has been estimated to be £60-70bn (in today's prices) up to 2050, with £30-35bn for NPR alone. Of the £60-70bn, £21-27 has been calculated as being 'additional' funding above the business as usual level (estimated to range between £39bn and £43bn based on current allocations in CP5 and RIS1).

Based on the upper range of the average current level of ratio of city region investment, this 'additional' funding could be expected to raise annual GVA by around £17-22bn, reducing the 2050 GVA gap by 1/5.

The TfN investment programme of transport schemes is therefore anticipated to make a material contribution to meeting the Northern Powerhouse rebalancing objectives. It will not, however, meet these objectives on its own. Not only will investment be required – as explained above – in key non-transport and non-infrastructure areas, but even within the transport space, there will be more to do.

Firstly, additional funding will likely be required once further work has been completed on the Strategic Development Corridors and other programmes of work, as further local schemes may also be added in addition to or in place of those that are already included. With the addition of supporting transport capacity schemes to cater for growth around the major urban conurbations and make complementary contributions towards the rebalancing agenda, the overall funding requirement for strategic and related transport infrastructure may be closer to £100 billion over the assessed period.

Secondly, and importantly, although TfN's strategic interventions and programmes are likely to account for the largest transport projects with the longest lead-times, they represent only part of the transport funding challenge faced by the region. In addition to the key strategic projects promoted within the investment programme, meeting the ambitions of economic growth and rebalancing across the North will also depend on a significant investment in critical local transport, infrastructure and services. These local programmes will significantly enhance the 'reach' and overall benefit created by strategic 'TfN-type' schemes, and – at the same time – will themselves be able to unlock greater economic value for the North as a result of being integrated with the strategic schemes. This will in all likelihood require further material additional investment, both in absolute terms and relative to the core capital funding requirement for the programme. Although TfN's investment programme is likely to include some of the most expensive projects, therefore, it is far from clear that it will account for the majority of the rebalancing investment required.

4 Principles of a funding framework for TfN

4.1 Introduction

A fit for purpose and deliverable funding framework will need to be underpinned by the acceptance by regional and national partners of a set of key guiding principles.

These principles are set out in the draft Strategic Transport Plan and explored in further detail below. They are based on a number of fundamentals (explored above) about the scale of the rebalancing challenge and the limitations of current funding models, which necessitate the consideration of new approaches and innovative thinking, with wider relevance than TfN's programmes, and indeed wider infrastructure investment in the North.

4.2 Funding is a shared challenge requiring a shared solution

It is anticipated that the overall funding package for the TfN investment programme will be made up of a combination of existing funding flows and an element of 'new' funding. The mechanisms that enable these funds to be allocated to the North are likely to include the redirection of existing pots of national or local revenue, as well as bespoke funding arrangements reflecting Government policy objectives around national rebalancing, or new powers for local revenue raising on the back of incremental project-related value generation.

Within this context, an appropriate and sustainable 'mix' of centrally and locally-derived funding (referred to in this report as 'Tier 1' and 'Tier 2' funding) will need to be established.

Establishing the right balance will at one level be based on a recognition that some degree of funding should be raised locally, based on identifying the ultimate beneficiaries of the investment programme. Accordingly, developing mechanisms for supporting and enabling local funding contributions is a central part of the development of the framework – including through commercial revenues, user charges, land value capture and the range of existing taxation mechanisms. The role of local contributions from within the North should also be consistent with funding packages being developed for programmes elsewhere in the UK.

However, the nature of the conditions in which TfN will seek to deliver its long term investment programme means the ability to optimise and maximise the viable contribution of new local funding is likely to be constrained by a number of factors. Although innovative alternative local funding and financing models have been successfully trialled in London and the South East, these are not necessarily always applicable in the North and in relation to the types of schemes within the TfN investment programme. Not only are the economic impacts of inter-urban interventions more diffuse, reflecting a larger and more diverse geography, but the reality is that base levels of productivity, wages and land values are significantly lower than other parts of the country, as well as there being significant differences within the North itself. Equally 'the North' does not exist as an elected tier of Government, with tax raising powers.

Accordingly, it has been recognised from the outset that the nature of the programmes TfN is sponsoring and the centralised transport funding regime within which those programmes are being developed means a large majority of funding for TfN's programmes is in fact likely to be from central sources.

Today, 'central sources' means allocations to strategic programmes from DfT's budgets (Department Expenditure Limit (DEL) and/or Annually Managed Expenditure (AME)), much of which delivered via Network Rail and Highways England (with the latter now being set with reference to total VED revenues). Funding for infrastructure that supports non-transport policy objectives is also provided by other areas of Government – such as from the grant programmes (such as the Housing Investment Fund) of the Ministry of Housing, Communities and Local Government (MHCLG) or Homes England for infrastructure projects that unlock or support the delivery of new housing. Moving forward, there may be opportunities to explore a different framework for how funding from 'central sources' might be directed to the North, and an element of additional 'new' funding (such as via bespoke arrangements reflecting government policy objectives around national rebalancing).

Importantly, directing centrally-collected taxation and user revenues to the TfN investment programme can have a number of important benefits beyond being a core source of funding – such as acting as a stepping stone towards unlocking new mechanisms and new local funds.

At the same time, it will be important to be pragmatic about what the assumption of a 'majority contribution' from central sources means in practice as the programme evolves over time, not least because although it is clear that TfN's programmes will need to be large, there is not yet agreement about exactly how large. Small differences in the size of the programme and modest changes to what is meant by 'majority' could translate into big absolute differences in what might need to be found from other sources.

4.3 TfN and its partners will argue for demonstrable fairness between places and regions

TfN is constituted to serve the interests of a wide body of stakeholders across the North, as well as having an ongoing relationship with national bodies. This pan-regional remit will have a bearing on both the make-up of the investment programme and the approach to funding. Any future funding framework needs to deliver the necessary contribution to headline growth whilst also balancing the diverse needs of TfN's many partners and stakeholders. Ensuring fairness and consistency – as well as an understanding of how risks and rewards are allocated and managed – between stakeholders and with other parts of the UK will be critical to developing sustainable propositions.

In the context of TfN's investment programme, this has two key manifestations:

City region and local programmes

A key question is the role of parallel city region and local transport infrastructure programmes in the North, either under way or in development. These programmes are crucial in supporting the transformational change required if the GVA per capita objective identified in the NPIER is to be met. Complementary city region and local schemes, when properly integrated with strategic projects, will facilitate the wider programme of 'TfN-type' investments in generating widespread benefit for Northern communities and enhance the contribution of local areas to economic growth.

A comprehensive picture of the scale and nature of the local and city region programmes that would allow TfN to deliver on the rebalancing target is still being developed as part of the

Strategic Transport Plan, but what evidence there is supports a working assumption that in aggregate these local/city region programmes are likely to involve significant incremental spend, meaning the total funding challenge is much larger than that represented in the TfN strategic investment programme alone.

These local/city regions will naturally have the 'first call' on any local contributions that are raised, and so inevitably there will be trade-offs between the two programmes and judgement calls about the dividing line.

This has important implications for TfN's funding framework especially in respect of funding sources which could be applicable to both strategic and local schemes. Not only is there a need for coordination between the two and clarity about interfaces, but a fit for purpose funding plan has to work for both. This is likely to be highly dependent on the respective parties' willingness to 'break the existing mould' in terms of both user charging and how 'beneficiary pays' funding might contribute.

Investment in other parts of the UK

Investment in the North cannot be seen in isolation. Delivering on the economic potential of the country as a whole and tackling the national productivity challenge means greater levels of investment will be required elsewhere, including in the Midlands, the West, and London and the South East.

However, investment elsewhere will have an impact on the North and on the rebalancing agenda. Other things being equal, greater than normal investment rates elsewhere will serve to widen the £100bn GVA gap by 2050, and therefore well-targeted investment in the North above current levels is required to reduce this gap.

Together, these realities mean that the infrastructure funding challenges of the North although very substantial in their own right are in practice part of a bigger challenge, one that might only be solved through a fundamentally different approach to infrastructure funding.

4.4 New sources of revenue need to proportionately tap into the financial benefits generated by the investment

Part of rising to the national infrastructure funding challenge will involve recognising that growth-focused investment, in particular that which promotes productivity, generates additional national-level growth and thus tax receipts which help address long-term costs associated with higher borrowing. But the payback of this growth through the existing tax system takes time (up to two decades) and is unpredictable.

At the same time, rebalancing cannot be delivered solely with projects that pay for themselves through additional tax. For example, any step-up in infrastructure investment during the next decade would coincide with the OBR's forecast peak pressures on public finances caused by the ageing population.

While recent budgets and the guidance issued to the National Infrastructure Commission have pointed to long-term increases in gross investment levels as a share of GDP and suggested moves towards directing this growth towards infrastructure funding, much more is required if the country is to invest at the scale necessary to rebalance the economy and address the

urgent need for productivity growth. For the levels of growth-focused investment necessary to deliver on both the rebalancing and broader productivity agenda to be affordable, this additional investment needs to generate significantly more additional revenue than at present, and it must do so at a faster rate and with greater certainty.

This is only possible if additional investment unlocks new, genuinely additional revenue sources which tap into the financial benefits generated by the investment that are not captured by the existing tax system (clearly, any funding approach that merely cannibalises revenues generated by the existing system is not addressing the fundamental need for additional investment to generate new, additional revenue).

At the same time, any new revenue raising must avoid pricing off the productivity and rebalancing benefits of the investment itself. This means a subtle approach is required based on tapping into what would otherwise be windfall gains to investment, but while minimising the risk of over-recovery and unintended consequences.

Land Value Capture (LVC) may be part of the answer, and significant work is underway across Government, local authorities and project sponsors to understand the opportunity that would be presented by a new toolkit of LVC mechanisms.

In the context of the TfN investment programme, individual schemes will doubtless generate concentrations of value for developers through land release and opportunities for new uses and higher densities. Recent LVC work in London, however, has highlighted the limitations of currently-available mechanisms that target developer gains (this has resulted in a joint London/Whitehall task force to examine the options), but also the need to look beyond the 'easier' developer/new property only approach to LVC if it is to deliver the scale of change required.[7] If this result holds for the most favourable property market in the country, then it seems highly likely that it will apply to rebalancing programmes elsewhere.

Beneficiaries also access financial gains from infrastructure investment via the transport system itself, and this raises questions about the role of **transport pricing** as a value capture mechanism. As highlighted by the 2017 Wolfson Prize and recent announcements about Government's assumptions on the pace of technological change in the road vehicle market, substantial changes in the way users pay for access to the road network will be required before long as fuel duty revenues (some £30bn pa including VAT) start to decline. In time these, inevitably Government-led, road-based charging initiatives, together with smarter approaches to public transport fares, will open up subtler ways to capture a proportion of the benefits of rebalancing investment via transport users with reduced risk of counter-productive responses.

In developing a case for access to new revenue, clarity about the baseline funding position and demonstrable fairness between places and regions will be essential. It is difficult to imagine any widespread value capture initiative being successful if it proves impossible to demonstrate

[7] The results of this work are quoted in the London Finance Commission II report and TfL has published a summary. The work concluded that one pound in three of the impact on property values of London infrastructure investment (including mega projects like Crossrail 2) would be sufficient to make the capital self-funding in present value terms (before financing), but that this required LVC to extend beyond new property unlocked by investment to also capture the uplift in value associated with existing stock.

to local and regional stakeholders (especially those who are having to surrender value) why the value capture is necessary, what it actually buys, and why the approach is fair relative to other places.

4.5 The differences between places, and in any one place over time, point to the need for a 'whole programme' approach

Ideally, funding mechanisms that tap into the incremental value created for beneficiaries would be sophisticated enough to recognise and capture a modest and proportionate amount of the gain attributable to the scheme that has or will be earned by different beneficiaries as and when that gain arises, thereby minimising the risk that the value capture oversteps in any one location or for any part of the value chain and jeopardises the outcomes targeted by the investment.

However, different individual initiatives and places will demonstrate different levels of potential to generate value and funding at different times. It is also likely that, in particular locations, value will be created by a combination of TfN and local investment (and, in principle, new funding could be used to part fund either or both, but each £ of value captured can only be spent once). There is also the considerable practical challenge of tailoring funding mechanisms to apply equitably to discrete or localised groups of beneficiaries, and designing tools that can capture value in a way that is perfectly proportionate to the incidence of the creation of the value (for example, there will always be a question of geographic boundaries).

The implication of this is that balancing equity, efficiency and practicality may mean that, in fact, new funding tools will be best deployed on a broad scale.

This, ultimately, makes it very important to consider funding strategies in totality, rather than individual mechanisms in isolation – in order to avoid 'double' dipping and excessive burdens for particular individuals or entities. It also suggests that a broader view could be leveraged by organisations such as TfN into a more holistic management of capital programmes, whereby delivery of the programmes is more directly and transparently linked to new funding arrangements.

5 Current funding arrangements for strategic infrastructure

5.1 Introduction

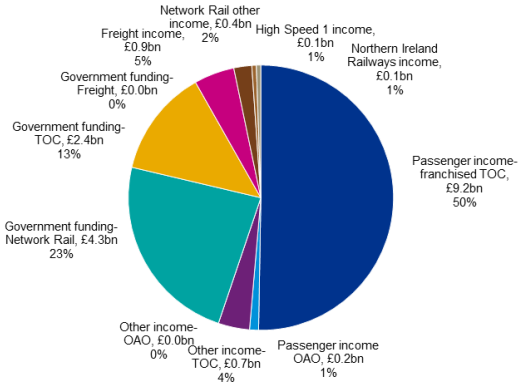
It is anticipated that the TfN investment programme will primarily comprise investment in major transformational or strategic enhancements to the rail network and both the Strategic and Major Roas Networks (SRN and MRN), with the vast majority of local transport infrastructure investments continuing to be delivered by the relevant combined authorities and local authorities.

Currently, funding for transformational or strategic transport enhancements is, generally, delivered via uni-modal arrangements between Government (DfT) and Government-owned companies Highways England and Network Rail. These industry processes currently drive prioritisation and prevent cross modal expenditure.

These arrangements are explored in more detail below, as important context for how a future funding framework for the TfN investment programme might evolve over time.

5.2 The rail network

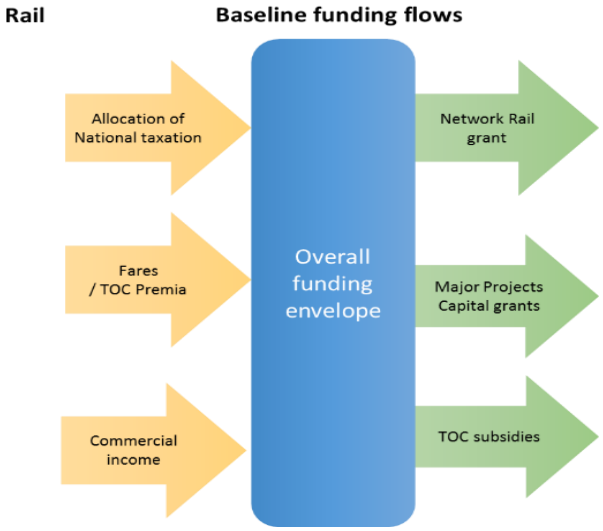
According to the Office of Rail and Road's figures for 2015/16, the rail industry is currently primarily funded by users with a 51% share of funding, followed by taxpayers (consolidated government budgets) with 36%.[8] This Government funding is split between 23% for the direct grant allocated to Network Rail and 13% for the direct subsidies to the train operating companies (TOCs). Other income sources, including retail revenues, represent 13% of funding. These figures exclude industry transfers between TOCs and Government, as well as funding for major projects like Crossrail.



Source: ORR (2017)

[8] ORR (Feb 2017), *UK Rail Industry Financial Information 2015-16*

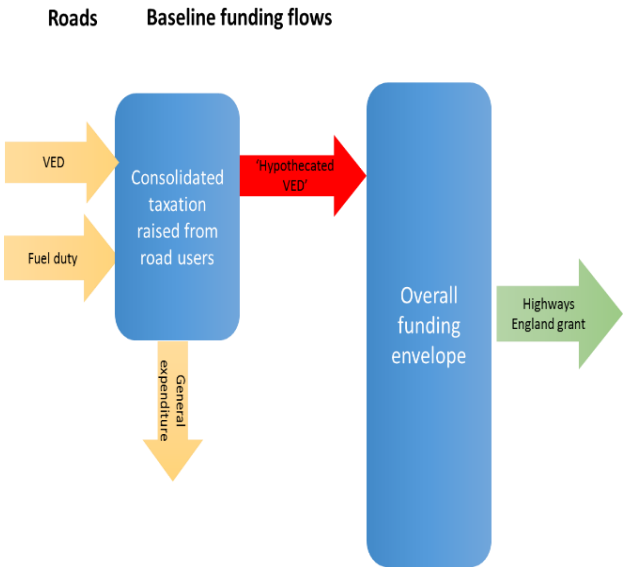
Strategic enhancements in the rail network are currently delivered by Network Rail through funding channelled through the DfT and allocated as part of the Statement of Funding Available (SoFA) for each five-year Control Period settlement. The SoFA sets the funding envelope to deliver the outputs specified in the High Level Output Specification (HLOS) which sets out the interventions that the Department, after consultation with the industry, has identified for the Control Period.



Funding contributed by passengers, taxpayers and commercial revenues are distributed to the industry though the Network Rail direct grant payment, TOC subsidies and finally capital grants for major projects.

5.3 The roads network

Strategic roads investment is currently delivered by Highways England through funding set out in the SoFA and allocated for five-year periods. The Road Investment Strategy (RIS) sets out the delivery plan for each period, by regions.



In contrast to the rail industry, the roads network is entirely funded by users via general taxation: Vehicle Excise Duty (VED) and Fuel Duty. Currently VED and Fuel Duty are consolidated into the general taxation pots which are then used for general expenditure including the funding of the SRN. Currently and historically, the taxes and duties levied directly on road users significantly exceeded the equivalent expenditures. In its economic forecast published on March 2017, the Office of Budget Responsibility forecast the revenues from fuel duty and VED for 2017/18.[9] In 2017/18 alone, fuel duty is expected to raise £27.5bn, while VED will raise £6bn. In contrast, the budget for the whole RIS1 period from 2015 to 2020/21 equals £17bn.

[9] Office for Budget Responsibility (March 2017), *Economic and fiscal outlook*

£billion	Outturn		Forecast				
	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
Fuel duties	27.6	27.9	27.5	28.0	28.5	29.2	30.0
Vehicle excise duties	5.7	5.8	6.0	6.2	6.3	6.6	6.8

Source: OBR (2017)

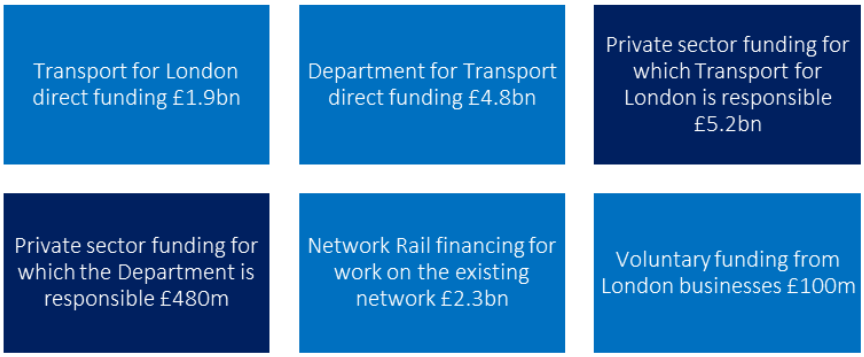
Recently, it has been announced that from 2020 onwards VED revenues in England will be hypothecated towards expenditure on the SRN and the MRN. This hypothecation would provide a clearer link between the funding raised by users of the network and the expenditure on the SRN and MRN.

However, considering future changes in car ownership along with the growing number of electric vehicles and the introduction of autonomous cars, reforms to VED and fuel duties will be necessary to sustain funding for roads. The Government has announced in December 2017 the possibility of introducing a "pay-per-mile" tax for lorries that could replace the current Heavy Goods Vehicle Levy and potentially other taxes[10]. This type of road pricing could potentially be expanded to other vehicles, including cars, in the attempt at reforming funding for roads. TfN must therefore take into account those possible changes and make its funding arrangement with the Government flexible enough to maintin the certainty of its funding.

5.4 Major projects

Funding for major projects (defined as those with capital costs above £1bn) typically sit outside the funding arrangements described above, due to their size, scale and complexity.

The funding structure for major projects varies depending on the nature of the project. For example, HS2 (a strategic inter-city project) will be almost fully-funded by Government. Other major projects such as Crossrail and Crossrail 2 include significant local contributions from London (TfL and GLA) as well as the private sector through developer and business contributions. The figure below shows the funding structure for Crossrail programme:



Source: National Audit Office (2014)[11]

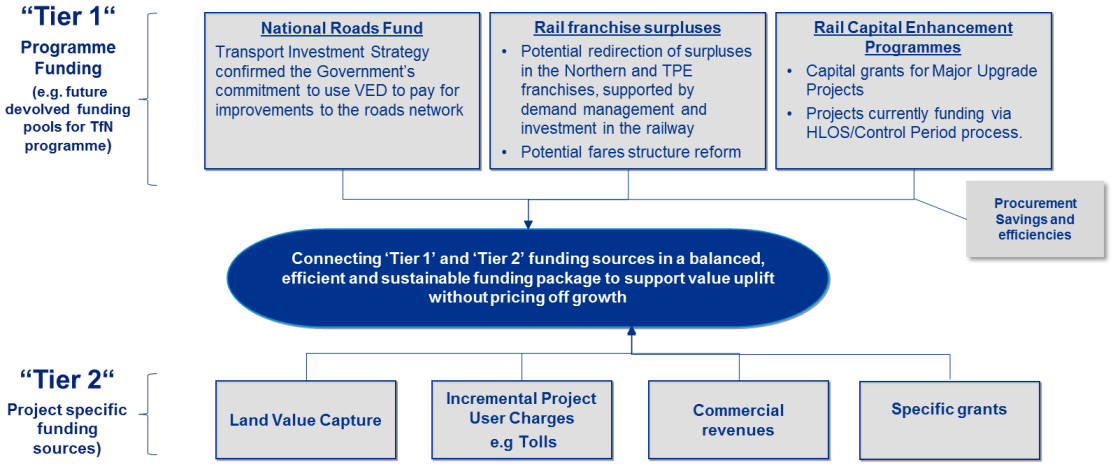
[10] http://www.telegraph.co.uk/news/2017/12/23/councils-bid-share-100-million-pot-improve-roads/
[11] National Audit Office (January 2014), *Crossrail*

Only about a third of funding for Crossrail was provided by the taxpayer through a DfT grant, while 39% was privately funded. Farebox revenues (on the back of which borrowing was raised) represent 16% of the funding, with TfL contributing the final 13%. For the proposed Crossrail 2 intra-city rail link, it is currently anticipated that 50% of funding will come from Government and 50% from London.[12]

The two Crossrail projects are intra-city rail link projects that can benefit from 'project level' contributions where particular beneficiaries (developers, businesses, landowners) are anticipated to gain from the transport investment and therefore are expected to contribute to a certain level to the funding through various forms of mechanisms (direct contributions, taxes, etc.). This contrasts to inter-city schemes such as HS2 (and NPR, for example), which may not have the same capacity to raise 'project level' funding. This is explored further below.

5.5 Overall options for funding transport infrastructure

Consistent with current arrangements, it is anticipated that the emerging funding framework for the TfN long term investment programme will consist of two broad categories, or 'tiers', of funding – central and local/project-specific. Within each category there will be both existing mechanisms and options for new ways of raising/ allocating funding. Each would require a range of structures to enable the funding to be directed to TfN programmes, and rules and a governance framework to manage risks and ensure equitable and efficient funding flows.



The two categories of funding have been individually explored in the context of the TfN long term investment programme and are described in turn below.

5.5.1 'Tier 1': centrally-collected sources of rail and road funding

The nature of the programmes TfN is sponsoring and the centralised transport funding regime within which they are being developed means a large majority of funding for the long term investment programme is likely to continue to be from central sources.

[12] http://crossrail2.co.uk/discover/funding/

This is consistent with the approach to transport funding today, with allocations made to delivery authorities and strategic programmes from budgets that are themselves funded in the main part by centrally-collected taxation and user revenues. While existing arrangements may be appropriate for the first phase of the TfN programme and work well in many areas, moving forward, there are opportunities to explore a different funding framework, and also an element of additional new funding.

This future funding framework for the North should be well-understood, provide increased certainty around levels and timing of investment, work at a pan-Northern level for Strategic Road Investment (SRI) and SRN/MRN investment and incentivise the cost-effective delivery of the long term investment programme.

Beyond being a core source of investment, directing centrally-collected funds to the long term investment programme in this manner can provide a baseline to encourage additional funding to be raised locally and support changes driven at a national level policy, technological and behavioural change.

The analysis of 'Tier 1' funding in the emerging funding framework is designed to provide an assessment of the order of magnitude of the quantum of 'baseline' investment currently provided by Government and the implications of alternative arrangements for these funds in the future. The findings of this analysis may support ongoing engagement between stakeholders, but does not at this stage represent an "ask" of Government.

5.5.2 'Tier 2': local or project/ location specific funding sources

While the starting hypothesis is that the majority of funding will be centrally-derived, the need for local contributions to support the programme, in particular the local elements of it, is also acknowledged.

TfN has therefore sought to identify and quantify 'Tier 2' funding – being those funding sources that are project-related and/or derived at the local level for specific schemes and interventions, reflecting the benefit they will provide to local areas and meeting local needs.

'Tier 2' mechanisms include targeted grant funding, the redirection of project-generated revenues, and new charges and levies such as LVC and user charges. To develop an understanding of what type and quantum of project-related and locally-derived funding might be considered as a reasonable assumption for the overall funding framework, a number of case study interventions have been identified and analysed individually.

6 ‘Tier 1’ - potential of centrally collected funding

6.1 Introduction

The nature of the programmes TfN is sponsoring, and the centralised transport funding regime within which they are being developed, means a large majority of funding for the long term investment programme is likely to be from central sources. This centrally-derived funding is referred to as ‘Tier 1’, as differentiated from ‘Tier 2’ which refers to the project-specific and locally-derived sources of funding explored in the next section.

This approach is consistent with the current arrangements for transport funding, with allocations made to delivery authorities and strategic programmes from budgets that are themselves funded in the main part by centrally-collected taxation and user revenues. These existing arrangements whereby Government provides grants and long-term funding settlements to projects and places for transport investments may be appropriate for the first phase of the TfN investment programme and work well in many areas. Moving forward, however, there are opportunities to explore a different funding framework, potentially including an element of additional new funding.

Such a future funding framework for the North should be well-understood, provide increased certainty around levels and timing of investment, work at a pan-Northern level and incentivise the cost-effective delivery of the long term investment programme. It should be developed to align incentives across partners, promote joined-up investment by TfN and local programmes, provide a baseline to encourage additional funding to be raised locally and support changes driven at a national level by technological and behavioural change.

In addition, beyond being a core source of investment, directing ‘Tier 1’ funds to the long term investment programme in this manner can provide a baseline to encourage additional funding to be raised locally and support changes driven at a national policy level, as well as technological and behavioural change.

This section sets out the possible components of a future approach to centrally-collected strategic transport funding for the North, and an initial assessment of the potential contribution of each of these components to the overall capital funding requirement of the long term investment programme.

The analysis of ‘Tier 1’ funding in the emerging funding framework is designed to provide an assessment of the order of magnitude of the quantum of ‘baseline’ investment currently provided by Government and the potential level of funding that could be raised from alternative arrangements for these funds in the future. The findings of this analysis may support ongoing engagement between stakeholders, but does not at this stage represent an “ask” of Government, but rather identifies the potential scale of revenues generated through existing central mechanisms.

Funding has, at this stage, been assessed separately for roads, rail and major enhancement projects. For each, the baseline level of enhancement funding under current arrangements has been identified, followed by options for alternative ways in which the funding might be

directed to the North as part of a future framework. Finally, for rail, the quantum raised from a potential new source of funding (based on the hypothecation of future franchise surpluses) has been assessed.

6.2 Road funding potential and approach

6.2.1 Introduction

In this section, the potential scale of revenue that could be raised from centrally collected sources and allocated as funding for road investments in the North is considered. Firstly, a notional baseline level of funding for TfN's major roads programme under a business as usual scenario is established, based on historical levels of spend. A number of scenarios for future arrangements are then considered, based on Government's intention to use the newly-established National Roads Fund (NRF), which will be funded from the hypothecation of VED revenues in England, to fund roads investment from 2020-21.

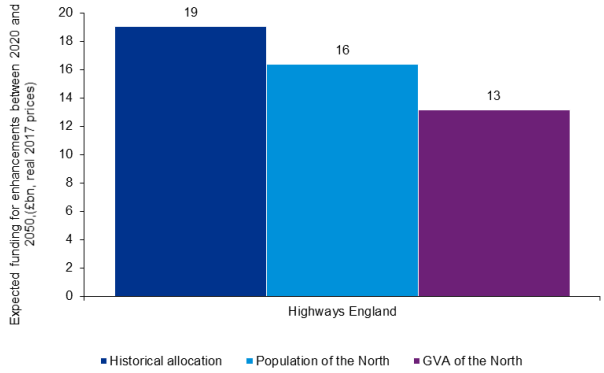
6.2.2 Baseline funding

Approach	The baseline funding analysis is based on identifying historical spending on roads enhancements by Highways England (formerly the Highways Agency) since 2010, including funding for the Road Investment Strategy 1 (RIS1) for 2015-2020/21. The actual historical allocation of funds to the North has been compared to hypothetical scenarios in which historical funds are assumed to have been allocated instead based on: ■ the share of population of the North in England (27.7%),[13] and ■ the share of GVA of the North in England (22.2%).[14]
Outcomes	On average since 2010, road enhancement investment in the North has equalled £479m/year (2015 prices).[15] This historical average is higher than would have been the case had spending on enhancements been based on the population of the North - £380m/year (2015 prices) – or the GVA of the North – £305m/year (2015 prices). Considering the enhancements budget for RIS1 (2015-2020) alone, the annual spending in the North increases to £580m/year (2015 prices). This allocation of spending is still higher than the comparator figures of allocation based on population - £499m/year - and GVA - £401m/year. Assuming a constant level of annual spending based on the RIS1 level, the amount of funding that could be available for road investments in the North between 2020 and 2050 (in real 2017 prices) is shown below,

[13] Source: NOMIS, Population estimates - local authority based by single year of age, 12 June 2017
[14] Source: ONS, Workplace based GVA1,2 NUTS1 at current basic prices, 2013
[15] Average of RIS1 annual enhancement spending in the North and spending in 2010. Source for 2010/2011 expenditure: http://www.roadusers.org.uk/chapters/uk-road-network/uk-road-network-2-2/ and source for RIS1 enhancement spending: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/408514/ris-for-2015-16-road-period-web-version.pdf

based on historical levels of spend and alternative population and GVA based shares of the overall envelope.

Spending, real 2017 prices	Per annum	2020-2050
Historical allocation	£613m	£19.0bn
Population-based	£528m	£16.4bn
GVA based	£424m	£13.1bn



This indicates that an appropriate estimate of baseline funding for strategic road investments in the North between 2020 and 2050 could range between £13 and £19bn. If future funding reflects the level of spending in RIS1, then the amount of funding will be closer to the upper bound of this range.

6.2.3 Potential Quantum available under alternative funding allocations

Approach

The National Roads Fund (NRF), announced by Government in 2014, will use the proceeds of VED raised in England from 2020 onwards to pay for future improvements in the English SRN.[16]

In July 2017, Government also announced the creation of a Major Road Network (MRN) that will be integrated into the SRN, together containing up to 8,000 miles of roads across the UK. The MRN would be a middle category between the SRN-type roads and local roads, made up of the most important local authority A-roads.[17] These roads will remain under local authority control but benefit from some of the NRF budget.

To understand the range of funding that might be made available for TfN investment in enhancements to the SRN and MRN in the North,

[16] HM Treasury (July 2015), *Summer Budget 2015,* para 2.146
[17] DfT (July 2017), *Transport Investment Strategy*

	options have been assessed for hypothecating a portion of the NRF based on: ■ The percentage of vehicles subject to VED licenced in the North – i.e. the actual VED revenues contributed by the region. ■ The share of the SRN/MRN located in the North. ■ The population of the North. ■ The GVA of the North.
Outcomes	VED revenues in the UK for 2020/21 are expected to equal £6.7bn.[18] Based on the assumption that 83% of UK vehicles are licensed in England, it is assumed that the NRF would receive around £5.6bn in funding per year (in real terms).[19] It is expected that funding for the MRN could equal £1bn per annum.[20] Assuming a constant level of funding in real 2017 prices between 2020 and 2050, we have estimated the level of funding for enhancements on both the SRN and the MRN in the North based on the four options described above. Based on the Spending Review 2013 budget for 2015-2020/21, it is assumed that 63% of funding is allocated for enhancements.[21] The outcomes of this analysis are outlined below. ■ **The percentage of vehicles subject to VED licenced in the North.** Based on the assumption that 25% of vehicles subject to VED in England are licensed in the North, £1.1bn/year of VED revenues for the SRN, and £0.3bn/year for the MRN, could be directed to the region.[22] Of this, £0.7bn/year could be allocated for enhancements on the SRN, and £0.2bn/year on the MRN. ■ **The share of the SRN/MRN located in the North.** 35% of the SRN is in the North which implies funding of £1.6bn/year of relevant VED revenues. 29% of the MRN is located in the North which implies £0.3bn/year of funding for the MRN.[23] Of this, £1.0bn/year could be allocated for enhancements on the SRN, and £0.2bn/year on the MRN. ■ **The population of the North.** The population of the North represents 27.7% of England's population, implying funding of £1.3bn/year for the SRN and £0.3bn/year for the MRN. Of this, £0.8bn/year could be allocated for enhancements on the SRN, and £0.2bn/year on the MRN.

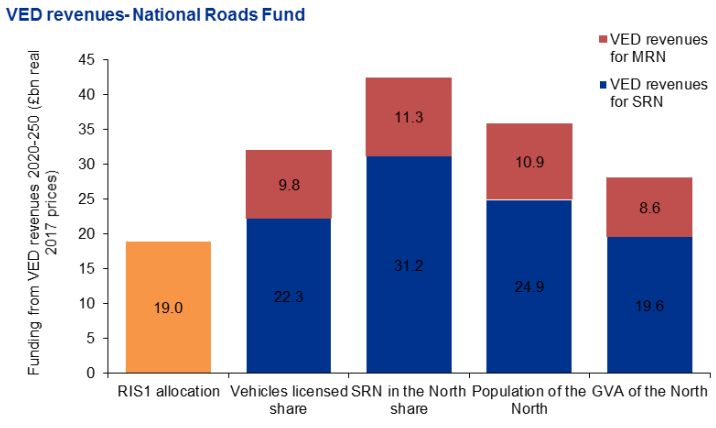
[18] House of Commons (November 2017), Briefing paper Number SN01482, Vehicle Excise Duty (VED)
[19] DfT (2017), *Vehicle Licensing Statistics*
[20] http://www.constructionenquirer.com/2017/07/05/government-plans-1bn-a-year-bypass-fund/
[21] DfT (March 2015), *Road Investment Strategy: for the 2015/16-2019/20 period*
[22] DfT (2017), *Vehicle Licensing Statistics*
[23] Jacobs for TfN (June 2017), *Initial Major Roads Report*

- **GVA of the North**. The North's GVA represents 22% of the total for England, implying funding of £1bn/year for the SRN and £0.2bn/year for the MRN. Of this, £0.5bn/year could be allocated for enhancements on the SRN, and £0.1bn/year on the MRN.

The results of this analysis are summarised in the table below. It is noted that, in this case (compared with the analysis of baseline funding above), the increases from the 'historical allocation' are driven not just by potential alternative approaches to directing funding to the North, but also by increasing the overall size of the 'pot' (due to the hypothecation of VED revenues).

Spending, real 2017 prices	Annual			2020-2050		
	SRN	MRN	Total	SRN	MRN	Total
Historical allocation	N/a	N/a	**£613m**	N/a	N/a	**£19.0bn**
Share of vehicles	£718m	£315m	**£1,033m**	£22.3bn	£9.8bn	**£32.1bn**
Share of SRN/MRN	£1,006m	£365m	**£1,371m**	£31.2bn	£11.3bn	**£42.5bn**
Share of population	£805m	£353m	**£1,158m**	£24.9bn	£10.9bn	**£35.8bn**
Share of GVA	£632m	£277m	**£909m**	£19.6bn	£8.6bn	**£28.2bn**

The figure below compares the potential quantum of funding under a 'baseline' scenario (based on the historical allocation of RIS1 funding) and the four assessed scenarios for funding for road investments (SRN and MRN) from the NRF, over the period 2020-2050.



The analysis illustrates that under the four scenarios considered, funding for major road investments would be higher than historical spending by between £9bn and £24bn between 2020 and 2050.

Assuming the same share of funding used for enhancements as in the RIS1 budget, over a five-year period, the new NRF would have a budget of £17.6bn for enhancements, compared to the current RIS1

	enhancement budget of £7.7bn. Of the £17.6bn, £14.2bn would be allocated to enhancements to the SRN, which represents twice the current budget for enhancements on the SRN in RIS1. Were VED revenues allocated to 'TfN-type' investments in this way, this would represent a significant share of the future funding required by TfN and, given Government's commitment to the hypothecation of future VED revenues to the NRF, this would provide a welcome level of certainty for the long term investment programme.

6.3 Rail funding potential and approach

6.3.1 Introduction

In this section, the potential quantum of funding available for rail investments in the North is considered. The historical spending by Network Rail during the last control period (CP5) has been assessed to determine a baseline level of funding under a business as usual scenario. A new approach, based on the redirection of surpluses from the two main franchises in the North, Northern and TransPennine Express, has then been considered.

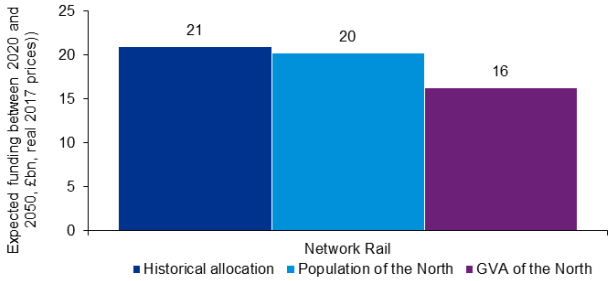
6.3.2 Baseline funding

Approach	Network Rail's enhancement budget for the North in the last control period (CP5) has been used to determine a baseline funding level for rail investment in the North. The actual historical allocation of funds to the North has been compared to hypothetical scenarios in which historical funds are assumed to have been allocated instead based on: ■ the share of population of the North in England, and ■ the share of GVA of the North in England.
Outcomes	For CP5 (2014-2019), Network Rail committed £3bn for rail enhancements in the North.[24] To date, the actual funding for rail enhancements in the North has equalled £600m/year (in 2012 prices). This amount compares to £579m/year (in 2012 prices) if the allocation had been based on the share of the population of the North, and £465m/year (in 2012 prices) based on GVA of the North. The actual spending allocated to rail enhancements during CP5 is therefore greater than these scenarios, which is consistent with the Government's objective of rebalancing the North's economy with the rest of the country. Assuming a constant level of annual spending based on CP5, the amount of funding that could be available for rail investments in the North between 2020 and 2050 (in real 2017 prices) is shown below,

[24] House of Commons Library (November 2016), *Parliamentary debate 23/11/16: Transport in the North East*

based on historical levels of spend and alternative population and GVA based shares of the overall envelope.

Spending, real 2017 prices	Per annum	2020-2050
Historical allocation	£676m	£21.0bn
Population-based	£653m	£20.2bn
GVA based	£524m	£16.2bn



This suggests that an appropriate assumption for baseline funding for rail investments in the North between 2020 and 2050 could range between £16 and £21bn. If future funding reflects the level of spending in CP5, then the amount of funding will be closer to the upper bound of this range.

6.3.3 Potential Quantum available under alternative funding allocations

Approach

The main rail franchises in the North were awarded in December 2015 to TransPennine Express (TPE) and Northern, both franchises starting in April 2016. TPE is a 7-year franchise with possible extension of 2 years, and the Northern franchise will last 9 years with a possible extension of 1 year.

By the end of their franchises, TPE is expected to generate an annual premium of £179 million and Northern will have reduced its subsidy to £92 million a year.[25] From 2024/25 to 2050, it is expected that both franchises will generate surpluses.

A potential new source of funding for TfN's investment programme would be to redirect these future surpluses to the North. To understand the indicative range of funding that this might generate for the investment programme, we have estimated a of surpluses that both franchises might generate from 2020 up to 2050 under five scenarios:[26] It should be noted that these estimates are only illustrative based on a range of top down assumptions, benchmarked against historical

[25] https://www.21stcentury-rail.com/dft-forced-to-disclose-trans-pennine-franchise-premiums/

[26] Surpluses are modelled as premiums generated by franchises. If a franchise receives a subsidy, we therefore assume a premium of zero.

precedent. A more detailed bottom-up modelling exercise would be required to provide greater confidence intervals. The five scenarios are:

(1) Baseline scenario: constant passenger demand and yield.

(2) Low scenario: assume a higher annual cost growth, respectively 3.5%/year for Northern and 4%/year for TPE in real terms.

(3) Increased fare scenario: assumes an additional 1% annual increase in fares.

(4) Northern Powerhouse Rail (NPR) scenario: assumes NPR is delivered and increases annual passenger demand by 1%.

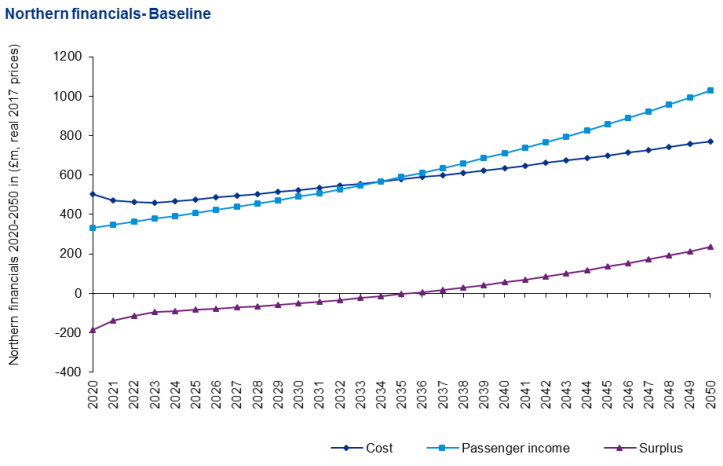
(5) NPR and increase fare scenario: combination of scenarios (2) and (3).

The outcomes of the analysis are presented below first for each franchise individually, and then in total.

Annex A contains the table of assumptions for the five scenarios. Note it is assumed that infrastructure enhancement costs needed to facilitate growth in later years is paid directly out of 'the programme' capital, rather than recouped via any new form of investment recovery charge (as current practice).

Outcomes – Northern

The figure below shows the profile of costs, passenger income and surpluses forecast to be generated by Northern between 2020 and 2050, in real terms, under a baseline scenario.



The table below shows the total surpluses estimated to be generated within the Northern franchise under each of the modelled scenarios.

Annual surplus generated, real 2017 prices	2025	2040	2050	Total 2020-2050
Baseline	-	£56m	£237m	£1.6bn
Low	-	-	-	-
Increase fares	-	£115m	£375m	£2.9bn

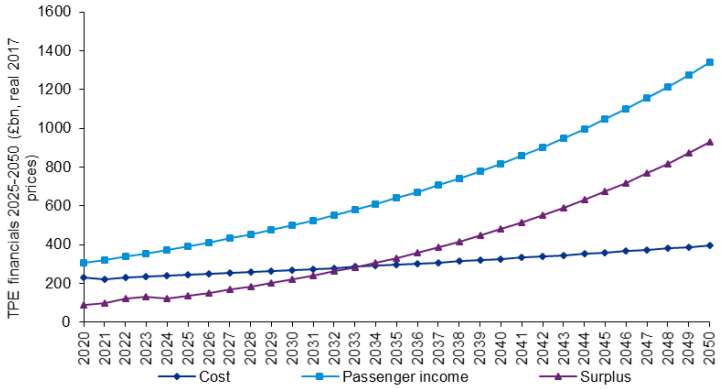
NPR	-	£178m	£532m	£4.4bn
NPR + increase fares	-	£246m	£708m	£6.0bn

The Northern franchise is only estimated to start generating a surplus around 2036, with surpluses reaching £237m/year in 2050 under a baseline scenario, and £708m/year under the most optimistic scenario. If costs were to grow higher than historically (i.e. the low scenario), the Northern franchise is not anticipated to generate any surpluses over the period.

Surpluses grow in line with increases in passenger income, noting that under the baseline scenario, passenger income increases at the same rate as historical trend. Apart from in the low scenario, costs are assumed to grow at 2%/year in real terms.

Outcomes – TPE

The figure below shows the profile of costs, passenger income and surpluses forecast to be generated by TPE between 2020 and 2050, in real terms, under a baseline scenario.



The table below shows the total surpluses estimated to be generated within the TPE franchise under each of the modelled scenarios.

Annual surplus generated, real 2017 prices	2025	2040	2050	Total 2020-2050
Baseline	£137m	£479m	£928m	£12.2bn
Low	£127m	£351m	£655m	£9.2bn
Increase fares	£140m	£546m	£1,105m	£13.9bn
NPR	£144m	£618m	£1,305m	£15.7bn
NPR + increase fares	£148m	£695m	£1,531m	£17.7bn

The TPE franchise is expected to be generating a surplus from the beginning of TfN's investment programme in 2020. In 2025, this surplus could equal £137m/year under a baseline scenario and more than triple by 2040 to reach £479m/year. The highest surpluses are observed under the NPR scenarios, with surpluses reaching £1.5bn/year in 2050 under the best case scenario where NPR is implemented along with fare increases.

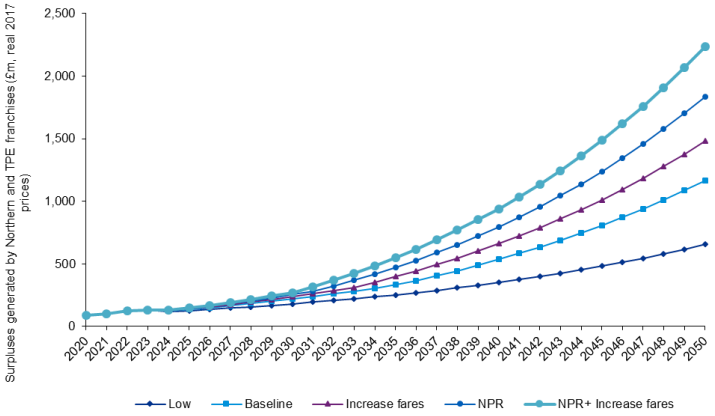
	In a low scenario where costs grow at a higher rate (because of, say, changes to access charges regime), then the estimated surpluses would represent around three-quarters of those in the baseline scenario in 2040 and 2050. In the baseline scenario, surpluses are anticipated to start growing faster than costs from 2033. It is noted that although we have not assumed a capacity constraint, we have been conservative in our assumptions for passenger income and cost growth. We have assumed an annual 5% passenger income growth (in real terms) which is significantly lower than the annual growth rate of 12% witnessed between 2003/04 and 2014/15.[27] We have assumed an annual increase in cost of 2% (in real terms) based on historical trends for all TOCs (ORR, 2016). This assumption is higher than the actual historical cost growth for TPE, which was c0.7%/year (real terms) during the last franchise.
Outcomes – total	The table below shows the total surpluses estimated to be generated within both franchises under each of the modelled scenarios.

Annual surplus generated, real 2017 prices	2025	2040	2050	Total 2020-2050
Baseline	£137m	£535m	£1,165m	£13.8bn
Low	£127m	£351m	£655m	£9.2bn
Increase fares	£140m	£660m	£1,481m	£16.8bn
NPR	£144m	£795m	£1,837m	£20.1bn
NPR + increase fares	£148m	£941m	£2,238m	£23.7bn

It is acknowledged that the higher-end scenarios implicitly require extra capacity investment not currently assumed within the emerging long term investment programme.

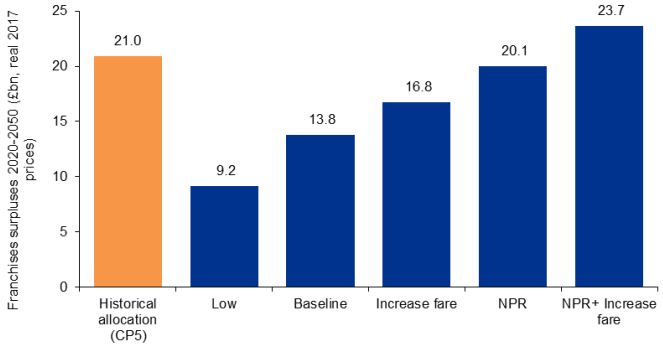
The figure below shows the potential profile of surpluses generated by both franchises between 2020 and 2050, in real terms, under the five scenarios modelled.

[27] FirstGroup plc Transpennine Express (December 2015), *Rail franchise award*



The profile of potential funding is relatively flat until 2030 and then increases rapidly from 2040, with surpluses more than doubling during the last ten years between 2040 and 2050. While this implies that the potential contribution from this funding source would be greatest during the later phases of TfN's investment programme, the back-ended timing means that the capital 'buying power' of the potential funding stream is reduced.

The figure below compares the potential total amount of surpluses generated between 2020 and 2050, in real terms, under the five scenarios modelled. For comparative purposes only, it also shows the historical funding figure, based on the actual allocation of funds in CP5.



Under a baseline scenario, the level of surpluses generated between 2020 and 2050 in real terms equals £13.8bn. If fares are increased by 1% a year then the value of surpluses generated increases to £16.8bn. Under the most optimistic scenario where NPR increases demand by 1% a year and fares are increased as well by 1% a year, surpluses generated could equal £23.7bn in total. In a low scenario where costs grow higher than historical trends (for example as a result of possible changes to

	access charges regime), then surpluses estimated to be generated would be reduced to £9.2bn. Under a baseline scenario, the value of surpluses generated represents around 65% of the historical allocation from Network Rail between 2020 and 2050. Under the most optimistic scenario, the amount generated could exceed the total allocation from Network Rail on rail enhancements in the North. It is acknowledged that if future surpluses were to be redirected to TfN's investment programme, there could be an impact on the allocation of grant funding from Network Rail and therefore the two different approaches to rail funding may not be truly additive. It is further acknowledged that there will be important considerations around implementation and stakeholder impacts if such an option were to be pursued, particularly in relation to risk management (i.e. who would be at risk should the forecast surpluses not materialise). Such issues could be considered as part of the next stage of work for the development of the funding framework.

6.4 Capital grants for major projects

For major projects (assumed to be those with capital costs above £1bn), central government typically allocates a distinct funding envelope outside of the five-year regulatory cycles, in recognition that the complexity and size of such projects lend themselves to 'special' treatment, separate to normal industry arrangements. For example, Crossrail and HS2 have received construction phase funding commitments outside of Network Rail's budget.

The NPR project is considered to fall within this category, and therefore as part of the 'Tier 1' analysis, it is assumed that funding for NPR would be provided outside of the regulatory cycle and be given a separate funding envelope.

Consistent with the 'Tier 2' case study analysis (refer to section 7.3), we have considered the Leeds-Manchester component of NPR only for the purposes of the current analysis. As the NPR project is still in development and the costs have not been confirmed, we have assessed a range of funding for the scheme. In a 'high' scenario, the funding envelope is assumed to equal, in real 2017 terms, £14.4bn between 2020 and 2050, covering the core infrastructure costs of this corridor. In a low scenario, the funding is assumed to be the equivalent of 75% of this amount, or £10.8bn.

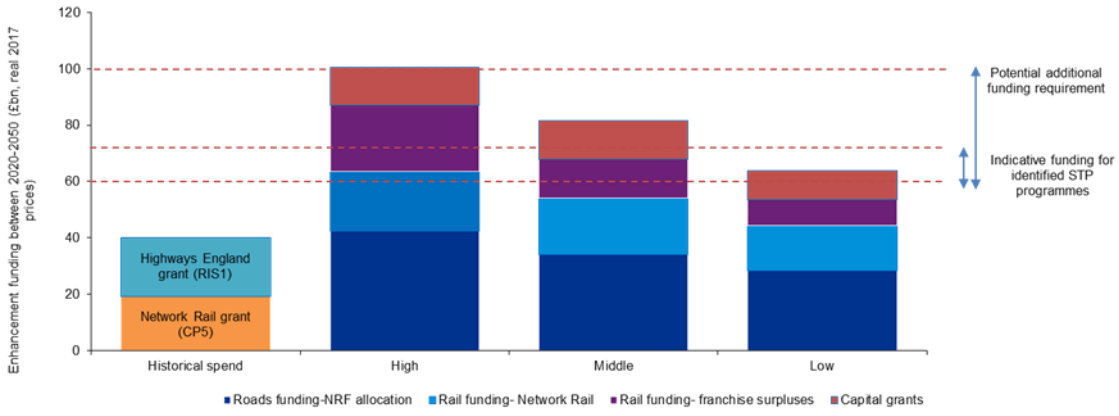
6.5 Overall 'Tier 1' funding contribution

The potential quantum of funding that could be directed to the North between 2020 and 2050 has been estimated both under a baseline or business as usual scenario and various alternative approaches to future funding including the redirection of rail franchise surpluses, capital grants for NPR and increased level of funding for roads through the hypothecation of VED revenues for the SRN and MRN. It is important to reiterate that this analysis represents an illustrative assessment of the potential contribution of centrally-derived funding under various scenarios, rather than an "ask" of Government.

To assess the potential overall contribution of 'Tier 1' funding, the following scenarios have been developed:

Scenario	Baseline	High	Middle	Low
Roads funding – NRF allocation	RIS1	SRN/MRN share	Average of population and vehicles share	GVA-based
Rail funding – Network Rail	CP5	Historical allocation	Population-based	GVA-based
Rail funding – franchise surpluses	N/a	NPR+ Increase fares	Baseline	Low
Capital grants	N/a	NPR core infra costs	NPR core infra costs	75% of NPR core infra costs

The figure below shows the overall potential 'Tier 1' funding contribution under each scenario. The contribution is compared to (a) TfN's preliminary view of the funding requirement of the long term investment programme (£60-70bn), and (b) an illustrative larger funding requirement (assumed to be £100bn) that also includes supporting transport capacity schemes to cater for growth around major urban conurbations in the North and any further schemes that may be added to the investment programme in addition to or in place of those that are already included (refer to section 3.3).



The analysis suggests that, assuming all four identified sources of 'Tier 1' funding were allocated to the TfN investment programme, under the 'middle' and 'high' scenarios, the core capital strategic transport funding requirement can be fully met by 'Tier 1' sources, while under the 'low' scenario, the contribution is around 90%. The implication of this is that with the necessary reform to funding flows and allocation arrangements, central funding for the TfN long term investment programme has the potential to support the investment levels required.

However, it is recognised that this entails a level of funding significantly higher than under 'business as usual'. The total funding anticipated even by the 'low' scenario is almost double the amount of 'business as usual'. Under the 'high' scenario, the quantum of funding is 2.5 times as large.

It also assumes that all four funding sources would be available. However, currently only two of the four sources exist - Network Rail allocations and capital enhancement grants. VED revenues for the NRF are planned from 2020 onwards and the redirection of rail franchise surpluses are not yet a committed source of funding.

This highlights that delivering the required levels of investment will require engagement amongst all stakeholders and Government at the earliest possible opportunity to ascertain the required level of reform, the appetite for it, and the steps to be taken to move forward the elements of the proposed framework.

Furthermore, it is important to remember that it is not simply a question of 'getting to the line'. The analysis in this report is focused on overall funding levels, expressed in today's prices – they do not represent buying power (which is a function of timing and financing as well as funding). The estimated funding streams (with the exception of the spike in the 2020s representing an assumed capital grant for NPR) grow over time, with significant growth in some scenarios towards the end of the programme. The profile of spend required for the TfN investment programme has not yet been fully developed, but when it is known, any mismatches in timing will need to be addressed through an appropriate financing strategy.

7 ‘Tier 2’ - potential of incremental locally derived funding

7.1 Introduction

‘Tier 2’ funding in the context of the TfN funding framework refers to those funding sources that are project-related and/or derived at the local level for specific interventions, reflecting the particular benefit that the schemes and projects will provide to local areas and meeting local needs.

‘Tier 2’ funding sources can therefore be differentiated from the ‘Tier 1’ funding sources previously explored in section 6 – while ‘Tier 1’ funds are anticipated to form part of a broad-based regional funding ‘deal’ and flow to the North from central sources for the purposes of programme-wide application, ‘Tier 2’ funding sources are locally-derived with strong connections to individual schemes.

But despite this distinction, there is an important connection between the two that is important in the context of bringing the different funding sources together into an overall framework. This interrelationship works on two levels:

- On the one hand, ‘Tier 1’ depends on ‘Tier 2’. An agreement with Government around access to (and the scale of) ‘Tier 1’ funds is likely (based on recent precedent) to be contingent on a commitment from local entities to raise some form and quantum of contribution locally.
- On the other hand, ‘Tier 2’ depends on ‘Tier 1’. It is likely that the contribution of ‘Tier 2’ funding will be able to be optimised and deployed most effectively if it is supported by an agreement of an appropriate ‘baseline’ of ‘Tier 1’ funding (which may include an element of ‘matching’). And the appetite of local authorities and other relevant bodies to raise local contributions will be improved if it is considered probable that these contributions will ‘unlock’ additional funding from central sources.

For this reason, a proper assessment of the potential of ‘Tier 2’ mechanisms becomes very important in the context of an overall package for the TfN investment programme.

To develop an understanding of the potential contribution of project-related and locally-derived funding to the emerging long term investment programme, three case study interventions have been identified and assessed: Northern Powerhouse Rail (Leeds to Manchester), a proposed new link road (“the link road”) and a proposed programme of on and off-track investments at a city centre rail station (“the station project”). These have been analysed individually for the purposes of understanding what type and quantum of ‘Tier 2’ funding might be considered as a reasonable assumption for the overall funding framework.

While the purpose is to assess the potential balance between different types of funding, there is no ‘target’ share between the tiers. Instead, the aim is to help inform a view of what is realistic, based on a bottom-up assessment of which local mechanisms might be appropriate and, then, how much they might realistically contribute to the overall capital funding requirement.

It is important to recognise at the outset that realising the potential of many 'Tier 2' funding sources will be reliant on working with local authorities and other partners. And although local contributions are an increasingly common feature of funding strategies for major transport schemes, the challenges associated with them can be considerable. In respect of existing pots of genuinely local money, such as local investment funds, availability is often heavily constrained. In respect to new mechanisms, there are limits to their applicability and deliverability in a Northern context. Finally, the role of parallel city region and local transport infrastructure programmes in the North, either under way or in development, must be recognised. These programmes, which may or not already be funded, are crucial in supporting the transformational change required and will naturally have the 'first call' on local funds. These constraints are explored further below.

The remainder of this section describes the approach adopted to evaluating funding options for the three case study schemes, the outcomes of this analysis and the conclusions that can be drawn as a result.

7.2 Approach

7.2.1 Identifying the case studies for assessment

The objective of the case study analysis is to develop an understanding – for a sample of schemes within the investment programme – of the types of 'Tier 2' funding mechanism that might be appropriate, and to undertake a preliminary assessment of the revenue-raising potential of each, and hence an appropriate balance between the 'tiers'.

For such an analysis, ideally the sample of interventions should be as representative of the overall programme as possible, including considerations of mode, type and dispersal of impacts and benefits, beneficiaries, impacted communities and local authorities, and scale of cost. This is because these considerations are likely to have a material impact on the types and scale of funding that may be available – both in the current environment and appropriate for consideration as part of a future framework – for the different types of intervention that together make up the emerging investment programme.

Each of these types of projects may enable conclusions to be drawn about other similar interventions within the programme. For example, a new rail link between two established conurbations might be forecast to create significant value for users (and other beneficiaries such as property owners) in these locations, but might have significant capital cost requirements for the components of the infrastructure *between the termini*, with little associated local value created. A public transport or road scheme designed to unlock new housing development, on the other hand, might have an entirely different value profile and therefore be suitable for different funding instruments. A road project aiming to relieve congestion would be different again.

However, the TfN emerging long term investment programme is a large, multidimensional plan, being developed through the Strategic Development Corridor programmes, in addition to the Northern Powerhouse Rail network, Integrated and Smart Travel programme, and the Strategic Road Studies. The interventions cover all parts of the North, with different profiles in terms of mode (as well as multi-modal, freight, and international connectivity opportunities),

geography, cost, timeframe and stakeholder environment. The partners who will be involved in the development (and funding) of the interventions have different ambitions, priorities and capabilities.

Accordingly, the diverse nature of the programme makes it is particularly difficult to be 'representative'.

For the purposes of the analysis, TfN has selected the following schemes as case studies, which are considered to be as representative a sample as is reasonable to expect in the context of the above.

1. a core section of the Northern Powerhouse Rail network: Leeds-Manchester,
2. a medium-sized road scheme (the 'link road'), and
3. a smaller programme of station on- and off-track investments (the 'station project').

An overview of each of the case study schemes is provided in sections 7.3, 7.4 and 7.5 below. Although the latter two are 'real' projects proposed for inclusion within the emerging TfN investment programme, and where possible actual available data has been used, for the purposes of this report they have been anonymised.

7.2.2 Funding sources

Project-related or locally derived ('Tier 2') funding sources reflect the benefit that specific schemes and projects will provide to local areas and meeting local needs. At the outset of the analysis, a 'short-list' of such funding sources was identified as follows:

Category	Funding source
Targeted grant funding	• Specific grants (transport and beyond transport)
Redirection of project-generated revenues	• Incremental farebox revenues (see Note) • Incremental commercial revenues and retail/ rental income • Long-term savings and efficiencies unlocked by projects and additionally aligned programmes
New charges and levies	• Land Value Capture (LVC) • Project user charges

Note: Although incremental farebox revenue is considered a 'Tier 2' funding source on account of its strong connection to individual schemes, and has been assessed as such within the case study analysis, for the purposes of the overall funding framework, income from passenger growth is more likely to be accounted for in 'Tier 1' programme-level funding strictures (via rail funding, franchise surpluses and/or new fares structures), and is therefore excluded from the total consolidated 'Tier 2' funding outcome, to avoid double-counting.

The objective of the case study analysis is to form a hypothetical view of which mechanisms might be considered appropriate for each scheme, on the basis of a high level of assessment of the benefit and value that each project is anticipated to generate, based on asking the following questions:

- Who are the beneficiaries?
- What form of value will be created?
- When and where will the value be realised?
- Are there any overlaps in value creation – e.g. with local/city region programmes?
- What is the basis and likely impact of deploying a new funding arrangement?
- What investment in ancillary local infrastructure may be required to maximise the benefits of the project and the TfN investment programme?
- What other factors are in play, including linked local programmes that may also need to draw on value created?

7.2.3 Overall approach

In the context of answering the questions above for particular projects and identifying potential 'Tier 2' funding sources, it is noted that the case study schemes are at relatively early stages of development. Indeed, most of the schemes still have a number of different options and the design has not yet been finalised. While we have worked with the respective sponsors of each scheme to understand them as best as possible, it is recognised that the full suite of detailed information that would be needed to definitively answer the questions set out above is not available.

Accordingly, the analysis that follows is in large part informed by a series of assumptions and the outcomes are presented as ranges. All assumptions are documented below.

In particular, for each case study, a 'high' and 'low' 'Tier 2' funding scenario has been developed. The key difference between the two – as is explained below – is the amount of LVC revenue that is assumed might be appropriate to include within the funding mix. The underlying LVC analysis is itself presented as a 'high growth' and 'low growth' uplift scenario, which informs the total amount of LVC funding assumed to be available under each funding scenario.

It is acknowledged that as each scheme is developed by its sponsors, it will be subject to detailed funding and financing analysis. The analysis undertaken here is designed not to replace this detailed investigation, but instead to provide key conclusions and lessons for the TfN investment programme as a whole, as the overall funding framework emerges and evolves.

It is important also to understand the nature of the 'Tier 2' funding being assessed. A crucial consideration for the overall framework will be the extent to which funding that can be generated locally is actually available for diversion to the strategic infrastructure requirements of the TfN programme. In particular, local project-related funding, where available, will in many cases be required to fund ancillary local infrastructure projects to maximise the benefits of schemes, and therefore may not be able to contribute to the core strategic infrastructure. In this way, local areas in the North will 'already' be contributing to the TfN programme through local schemes.

For this reason, the approach adopted in the case study analysis is to estimate the local ancillary infrastructure funding requirement over and above the core strategic infrastructure requirement, and to match 'Tier 2' funds to this in the first instance, with any 'left over' considered to be available to fund the core strategic investment.

Where calendar years are referred to in the analysis below, they should be taken to mean the equivalent financial year, so – for example – '2036' refers to 1 April 2036 - 31 March 2037.

7.2.4 Land Value Capture

One particular funding source that merits some explanation in the context of the case study analysis is Land Value Capture (LVC). This section provides some background to LVC and the particular considerations in relation to its applicability to TfN schemes.

Introduction

Improvements in transport connectivity can have a profound impact on transforming a location's residential and commercial potential:

- Firstly, improved accessibility and mobility benefits existing residents and businesses and attracts others to relocate to the area. In the absence of other mechanisms that abstract these benefits, this translates into higher commercial and residential land prices. This has been observed in cities around the world, where convenient access to public transport and strategic road networks provides a noticeable uplift in property values.
- Secondly, where planning allows (or as part of a planning response), new or improved infrastructure can also act as a catalyst for new higher density development. It can also create new land parcels and property rights from which in turn development opportunities can be leveraged.

However, the public sector captures only a very small fraction of the aggregate land value uplift catalysed by transport projects with existing instruments, such as property taxes and developer charges.

LVC describes a variety of mechanisms designed to address this by enabling governments and public authorities to generate new revenue streams from the uplift in value with the aim of applying them to project funding. Mechanisms that have been considered and – in some cases – implemented, include:

- Direct LVC (disposal of publicly owned land),
- Community Infrastructure Levy (CIL),
- Supplementary CIL,
- Council Tax Precept,
- Business rates retention,
- Business Rate Supplement,
- Stamp Duty Land Tax (SDLT) retention,

- SDLT supplement,
- Targeted residential betterment levy, and
- Enhanced development model / Development Rights Auction Model (DRAM).

These LVC mechanisms seek to align the funding of projects to the value that they create, in a way that the standard tax system does not, while simultaneously reducing the call on conventional budget funding.

In recent years there has been increasing attention paid to understanding LVC as a distinct category of public finance. Most recently, it has been advocated by the NIC as a means of contributing funding in areas of high property value. As the devolution agenda continues to develop, for example with the establishment of new mayoral combined authorities, it is conceivable that LVC will form part of future funding deals for major projects. Crossrail 2, and the significant local contribution required by the Government, is a prime example.

In respect of TfN's investment programme, there is a strong case for examining the potential of new forms of LVC funding which capture some of the value created across the North by the strategic projects and local schemes.

The level, nature and structure of new funding sources would need to take account of the fact that much of this value will be concentrated in the large cities of the North – but these places are also likely to need to tap into local value in order to provide contributions to complementary local growth-focused programmes to support the strategic infrastructure delivered. The approach also needs to reflect the reality that base levels of productivity, wages and land values are significantly lower across the North as a whole than other parts of the country and that there are significant differences within the North itself. Furthermore, capturing project-specific land value uplift through targeted local mechanisms is contingent on the availability of the required powers and the approval and implementation of revenue-raising mechanisms at the local level.

In this context, for each of the case study schemes analysed, we have undertaken a preliminary consideration of LVC as a potential funding source (without at this stage specifying the particular mechanisms that might be deployed). The assumptions that have been made to inform the range of analysis (see below) have, however, been developed to be realistic and represent the possible limitations of LVC in a TfN context.

LVC approach

For the purposes of this preliminary assessment of the potential of LVC to contribute funding to the long term investment programme, a high level 'top down' approach has been adopted.

The basis of the approach can be summarised as follows:

1. The overall potential uplift in land value within an assumed 'zone of influence' (as yet undefined) around the project sites over the course of the programme (until 2050) that might be attributed to the scheme has been estimated, in both a 'high' and a 'low' growth scenario. For the NPR case study, for the purposes of this analysis, uplift at Manchester Piccadilly and Leeds stations only has been considered. Given that, at the time of the analysis, the corridor route alignment is still under development, we have

not assessed intermediary stations such as Bradford. Including intermediary stations could improve the potential for land value uplift, noting that there may also be an impact on the range of cost assumptions used for the analysis.

2. It is assumed that an overall funding amount equivalent to 1/3 of this in present value terms can be captured (which is consistent with approaches being considered in London and elsewhere), and this will be made available to the scheme.
3. A notional revenue stream has been modelled with a profile mirroring the profile of land value uplift over time, which in total present value terms is equivalent to this overall assumed funding amount.
4. The precise revenue-raising (and financing) mechanisms to achieve the notional contribution of LVC have not yet been identified, but in a subsequent stage of analysis, it might be appropriate to adopt a 'bottom-up' analysis, modelling specific LVC mechanisms (developer charges, business rates redirection etc.).

Further detail about the approach is provided below.

LVC modelling methodology

Assumptions have been made for each assumed 'zone' for each case study as to the volume and value of existing stock, the volume and value of new development that would come forward as a result of the scheme over time, and (for NPR only)[28] any incremental impacts on the values of existing stock over time.

This enables the volume and value of property over time to be modelled in both a 'with' and 'without' project scenario (and for the former, further differentiated into a 'high' and 'low' growth scenario).

The total value uplift is taken to be the difference between the 'with' and 'without' project value of stock within the zone at 'a point in time' at the end of the appraisal period (i.e. in 2050) and discount this back to today's prices. The two different categories of uplift are described below.

- **Existing stock.** Uplift related to existing stock is assessed for the NPR case study only (on the basis that the impact of the other two case studies on existing stock is not considered to be significant). For 'existing stock' within the NPR station zones (at Manchester Piccadilly and Leeds), the value uplift is taken to be the difference in the total capital values of the stock in 2050 in the 'high' or 'low' growth scenario, less the equivalent in the baseline (i.e. without NPR) scenario. It is noted that the quantum of existing stock is forecast to decline over time, as older properties are demolished to make way for new development. The pace of development/ demolition is greater in the 'high' growth scenario.
- **New development.** Forecast new development within the zones is assessed for all case studies. Two approaches are used:

[28] Based on our understanding of the case study projects, it has been assumed for the current analysis that the link road and the station projects would not result in a significant uplift in the value of existing properties, and therefore the focus is on new development at these locations. NPR, however, is considered to have a more transformative impact and hence the potential for uplift in value of existing stock at Leeds and Manchester has been considered.

- For the new development that – it is assumed – would have occurred regardless of the scheme, the value uplift is calculated by deducting a notional baseline development (or market) value from a forecast 'high' or 'low' growth scenario value on a per sqm basis and applied to the quantum of forecast new development.
- For the new development assumed to be specifically catalysed by the scheme, the baseline value is set to be zero and the 'high' or 'low' 'with scheme' growth scenario value uplift reflects one third of the forecast development value in that scenario, to approximate a discount for the subsequent increase in development costs as well. This proportion equates to the industry 'rule of thumb' for the share of total development costs taken as the value of land.

For the link road and the station project case studies, all development is assumed to be project-related (i.e. the second category), noting that this assumption may not be consistent with Local Plans under development.

Of the total (combination of existing and new stock) land value uplift assessed in 2050, one third of the amount (in present value terms) is assumed to be captured. Assuming a growth profile consistent with the profile of the total value uplift over time for each scheme, a notional LVC revenue stream (for both the 'high' and 'low' growth scenarios) over time has been modelled such that the total cashflow in present value terms equals one third of the land value uplift generated by 2050 (also in present value terms).

Given that the case study schemes are still in development (with a number of options being considered), and in the absence of detailed land value uplift and new development forecasts, a number of assumptions have been made with regards to the amount and mix of stock within the assumed 'zones' and how the quantum and value of stock might change over time. These assumptions are documented below. Accordingly, the analysis should be considered at this stage to be highly preliminary in nature and will be able to be updated as more detailed and granular data around the expected impacts of the schemes becomes available.

7.3 Case study 1: Northern Powerhouse Rail

The table below provides an overview of the assessment of the potential 'Tier 2' funding for the Leeds-Manchester component of the Northern Powerhouse Rail programme.

Scheme overview	Northern Powerhouse Rail (NPR) is a strategic programme of rail upgrades between major northern cities designed to radically improve capacity, journey times and service frequencies. This will enable the region to function as a single economy and support a step change in the North's economic growth. For the purposes of this exercise, the scheme under consideration is the upgrade of the railway between Leeds and Manchester, which is one component of NPR. At the time of analysis, the route alignment for the Leeds-Manchester corridor is not yet agreed or defined. It is noted, however, that the draft STP describes an "emerging vision for the Northern Powerhouse Rail

network" that includes a new Trans Pennine rail line that connects Manchester and Leeds via Bradford.

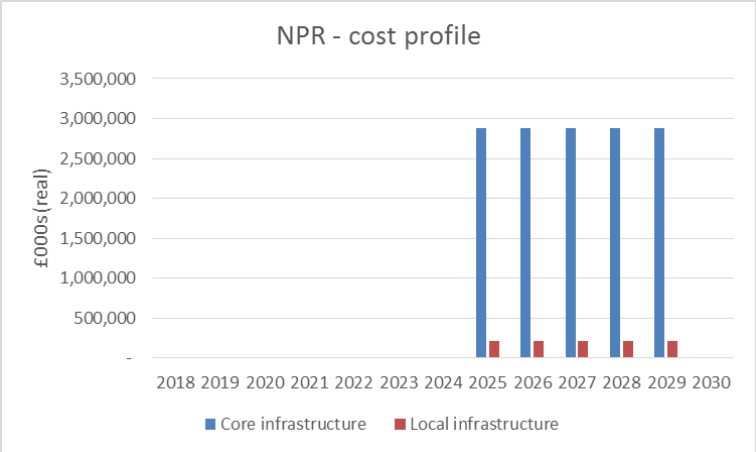
As, at the time of the analysis, the scheme is still under development, , the analysis of this case study is based on a number of ranges and averages for key variables such as cost, revenues and impacts. The values used to define the ranges and inputs are based on information made available to us by TfN in respect to the various options being considered, in order to give a realistic set of outcomes that are consistent with these options, but acknowledging that no particular option is currently preferred and the costs and other outputs remain preliminary in nature.

Funding requirement

Based on information provided by TfN, the costs of the corridor are assumed to be as follows (for NPR, all costs are in 2015 prices):

Cost element	Amount	Commentary
'Core' capex	£13.75bn	Reflects a mid-point of scenarios being considered by TfN. Inclusive of 66% optimism bias.
Local infrastructure requirement	£1bn	KPMG assumption.
Profile	Evenly split over the period 2025 - 2029.	KPMG assumption.
Inflation	TPI	KPMG assumption.

The cost profile (in real terms) is illustrated in the graph below.



Benefits and beneficiaries

The benefits of the NPR programme have been identified as follows:

- **Passengers.** Improved rail commuting in the North of England, and a modal shift towards rail thereby reducing strain on the motorway network. Currently fewer than 10,000 people in the North can access four or more of the North's largest economic centres within an hour. This would rise to 1.3 million once NPR is delivered.

	■ **Businesses**. Faster journeys between the key economic centres of the North will allow for and encourage greater agglomeration as well as supporting increasing productivity and efficiency. The objective is to enable 40% of businesses identified as having the North's prime capabilities to be within 90 minutes rail travel of four or more of the North's largest economic centres, compared with only 12% today. ■ **Development and land value uplift**. Enhance property values, and unlock substantial new development, in areas immediately adjacent to and with good access to key stations. ■ Serve to boost **leisure and tourism** in the Northern region. ■ Better access to **education, greater skills retention, housing growth** and a more varied catchment of **employment opportunities**. The particular benefits of the Leeds-Manchester upgrade will be: ■ Increased service frequencies and journey times between Leeds and Manchester, with benefits for users across the North using services that run on the corridor. ■ Land value uplift and new development opportunities at Manchester Piccadilly and Leeds.
'Tier 2' funding sources considered	In light of its strategic and pan-regional characteristics, and the significant capital element of the funding requirement, it is likely that there will be a strong case for the allocation of a significant amount of identified 'Tier 1' funding to the NPR scheme. In particular, it will be a candidate for a portion of: ■ capital funding for major rail schemes, and ■ the redirection of future surpluses generated by the rail franchises in the North. To complement the anticipated funding from 'Tier 1' sources, based on a high level assessment of the scheme, the following funding sources have been considered as part of the 'Tier 2' analysis: **1. Incremental farebox revenue** One of the key objectives of NPR is to encourage a modal shift towards rail, and accordingly there can be expected to be an incremental increase in rail passengers using the network and therefore an increase in the fare revenue earned by the industry. Some preliminary data on the revenue projections associated with the different options have been made available by TfN. In order to assess the order of magnitude of this opportunity, we have worked with TfN to understand the demand modelling underway as part of the scheme's development, how much of the future demand is truly incremental across the industry (i.e. not abstracted from any other rail route), and the fare assumptions (including a consideration of price elasticity) that have been applied to derive overall incremental revenue estimates.

As mentioned previously, although farebox revenue is shown as a separate item within the 'Tier 2' funding analysis, it is excluded from the total assessed contribution on the basis that it is anticipated that it will be accounted for within a future rail funding settlement for the North (specifically, any growth in premia received from TOCs or reduction in subsidy paid to them) – which has been considered within the 'Tier 1' analysis.

Broadly consistent assumptions for rail patronage and revenue growth across the two parts of the analysis have been used, to ensure that incremental growth is identifiable and treated appropriately.

2. Land Value Capture

The delivery of major rail upgrades (and associated local investments) has been demonstrated to significantly enhance commercial and residential property values, and unlock opportunities for substantial new development, in areas close to or with good access to key hubs such as stations. Land value uplift in this context is a function of two components: new development volume (the timing and scale of development activity, leading to higher density), and value uplift (the increase in property values by use class against baseline trends). Understanding the impact of these two factors will provide the basis for establishing the potential of LVC to contribute funding to the scheme.

For the purposes of the current exercise, the prime opportunity for land value uplift is considered to be at the two stations at Leeds and Manchester. Benefits are likely to be experienced at stations between and beyond Leeds and Manchester, but these have not been assessed at this stage, in light of the fact that – at the time of the analysis – the alignment is not yet confirmed. Analysis of additional stations would introduce the potential for further land value uplift, noting that there may also be an impact on the cost assumptions deployed.

For new development, a range of forecasts for stock growth and the potential change in share of different land uses over time within an assumed 'zone of influence' around each station has been developed, by use class and over time. To understand the impact on land values within the study areas, a range of forecasts of benchmark growth assumptions have been established, based on previous work that has analysed historic transaction data for precedent case study projects, as well as academic and commercial research. These are documented below.

It is acknowledged that both Greater Manchester and Leeds are already engaged in work – through the development of their HS2 'Growth Strategies' – to consider the land value impacts of a range of investment scenarios including those that include the delivery of NPR to Manchester Piccadilly and Leeds stations, and a range of LVC mechanisms that might be used to help fund the local contribution required for the associated infrastructure investment. It is possible, therefore, that a significant amount of value uplift, and any resulting

LVC revenues, would in practice be retained in the local area so that they can support the funding of this important local investment.

3. Rental income and other commercial activities

The forecast increase in patronage from the delivery of NPR may generate opportunities for enhanced retail activity within enlarged/ improved station footprints and their immediate areas.

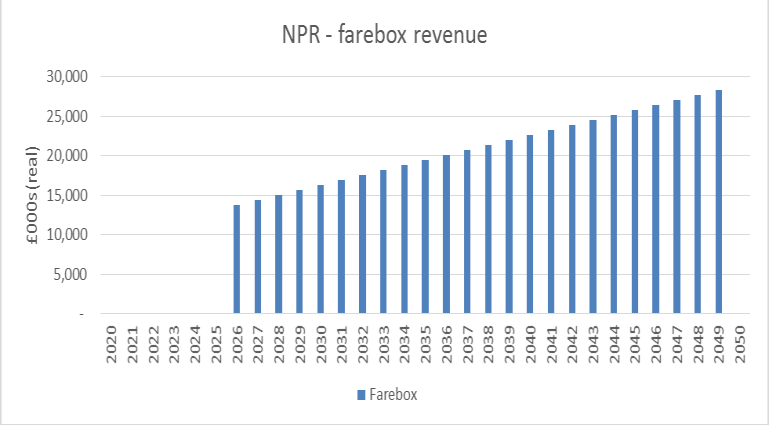
The revenue potential of this funding source has been estimated through the development of assumptions for:

- the retail floorspace provided in the designs for stations and surrounding areas, attributable to NPR, and
- rental values that may be achieved with the proposed retail offerings.

Farebox revenue analysis

TfN has undertaken preliminary revenue modelling of a range of options for the Leeds-Manchester component of NPR. Based on the mid-point of the scenarios being considered, we have assumed incremental farebox revenue of £13m in 2026 (in 2015 prices), growing to £19m in 2036, with assumed flat growth in between and beyond these years. Fares are assumed to grow with RPI.

The funding profile (in real terms) is illustrated in the graph below.



Land value uplift and capture analysis

The following high level assumptions have been developed for the basis of the LVC analysis for the NPR case study.

For the NPR case study, a 'baseline' (i.e. no scheme) scenario has been developed against which the 'low growth' and 'high growth' scenarios are compared to provide a view of the estimated incremental land value uplift.

For this case study, land value uplift in relation to existing, as well as new, stock has been considered.

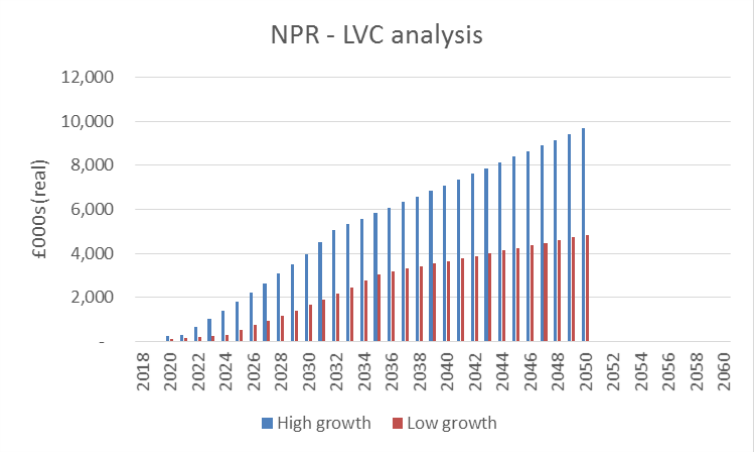
Manchester Piccadilly	'Baseline' scenario	'Low growth' scenario	'High growth' scenario

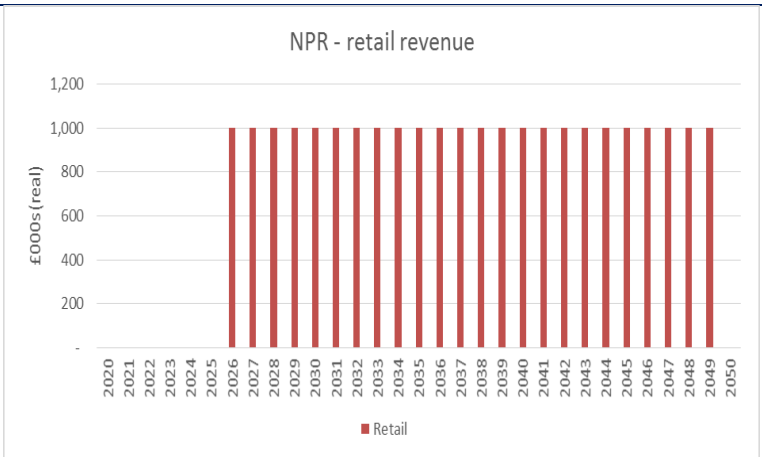
Residential			
Existing stock sqm [1]	200,000 (2019) 168,000 (2050)	200,000 (2019) 139,000 (2050)	200,000 (2019) 110,000 (2050)
Existing stock value (2017) [2]	£1,941 per sqm	£1,941 per sqm	£1,941 per sqm
New stock value	120% of existing	120% of existing	120% of existing
New sqm	165,000 sqm by 2050	Midway between Baseline & High	295,000 sqm by 2050
Office			
Existing stock sqm [1]	150,000 (2019) 118,000 (2050)	150,000 (2019) 99,000 (2050)	150,000 (2019) 80,000 (2050)
Existing stock value (2017) [3]	£2,438 per sqm	£2,438 per sqm	£2,438 per sqm
New stock value	120% of existing	120% of existing	120% of existing
New sqm	165,000 sqm by 2050	Midway between Baseline & High	330,000 sqm by 2050
Retail & leisure			
Existing stock sqm	20,000	20,000	20,000
Existing stock value (2017) [3]	£4,000 per sqm	£4,000 per sqm	£4,000 per sqm
New stock value	120% of existing	120% of existing	120% of existing
New sqm	33,00 by 2050	Midway between Baseline & High	49,500 by 2050
Industrial			
Existing stock sqm [1]	100,000 (2019) 68,000 (2050)	100,000 (2019) 39,000 (2050)	100,000 (2019) 10,000 (2050)
Existing stock value (2017) [3]	£660 per sqm	£660 per sqm	£660 per sqm
New stock value	N/a	N/a	N/a
New sqm	Nil	Nil	Nil
Value growth			
Value growth over time	HPI [4]	Additional 1% over HPI per annum for 10 years from 2025 [4]	Additional 2% over HPI per annum for 10 years from 2022 [4]

1. Declines over time to account for demolition to make way for new development.

2. Source: ONS

3. Rateable value per sqm (source: Valuation Office Agency, rateable value per sqm, December 2016) and assumed yield of 5% for office and industrial and 4% for retail & leisure.

	4. HPI assumption: GDP deflator and RPI: OBR Economic & Fiscal Outlook, Supplementary Economy Table 1.7 The assumptions above apply to Manchester Piccadilly. For Leeds, existing stock values were also extracted from the ONS and Valuation Office Agency, with the assumed 2017 values being £1,920 per sqm for residential, £2,705 for office, £4,475 for retail & leisure and £700 for industrial. For the quantum of stock (both existing and new development), it is assumed that the totals for Leeds are equivalent of 75% of those for Manchester Piccadilly. Based on these assumptions and applying the methodology described above, the total assessed land value uplift in 2050 is £249m (for the high growth scenario) and £118m (for the low growth scenario), in present value terms. Using an assumption of 33% capture, this has been used to model a notional LVC cashflow as follows:  It is noted that there is a limited amount of land value uplift prior to the commencement of construction of the project, which reflects research elsewhere into the timing of land value impacts associated with major rail schemes. Based on this notional cashflow, the total assessed LVC potential in real terms is £165m (for the high growth scenario) and £80m (for the low growth scenario), in today's prices.
Rental/ commercial income analysis	We have made the assumption that there is 6,000 sqm of retail space at Manchester Piccadilly and 4,000 sqm at Leeds. We have assumed that as a result of NPR, rental values will increase by £100 psqm (in today's prices) per annum, growing with RPI, and this incremental amount will be made available to the project. The funding profile (in real terms) is illustrated in the graph below.



Outcomes

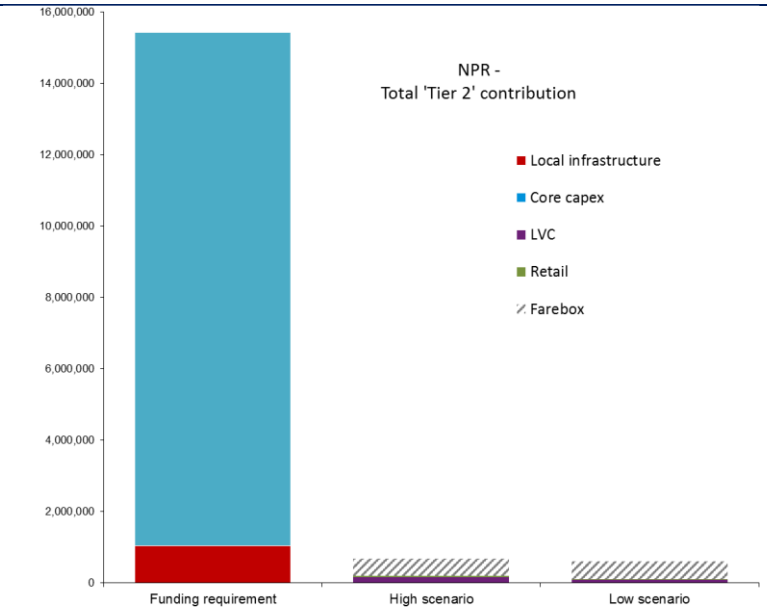
To provide a range for the potential of 'Tier 2' funding, reflecting the stage of the current analysis, two scenarios have been identified:

- Low: full farebox revenue, 'low growth' LVC scenario, full retail/ commercial income.
- High: full farebox revenue, 'high growth' LVC scenario, full retail/ commercial income.

This results in the following total 'Tier 2' funding:

£m (real – today's prices)	Low scenario	High scenario
Core infrastructure	14,376	14,376
Local infrastructure	1,045	1,045
Total funding requirement	**15,421**	**15,421**
Farebox	*505*	*505*
LVC	80	165
Rental/ commercial	24	24
Total 'Tier 2'	**609**	**694**
Total 'Tier 2' excl. farebox	**104**	**189**

Excluding farebox revenues (which are accounted for in 'Tier 1'), this suggests a contribution of 'Tier 2' funding that could cover, in real terms, between 10-18% of the local infrastructure requirement, and between 0.7-1.2% of total scheme costs.



The contribution over time to the local infrastructure component is illustrated in the graph below (which includes farebox revenues).

7.4 Case study 2: the link road

The table below provides an overview of the assessment of the potential 'Tier 2' funding for the link road.

Scheme overview	The link road case study is based on a real proposed scheme but has been anonymised for the purposes of this report. The key objectives of the scheme are to: ■ relieve congestion,

- improve journey time reliability and reduce driver stress,
- improve road safety by reducing the number of accidents,
- accelerate the pace of local development and provide a mixture of housing and employment, and
- minimise impacts on the natural and built environments, including designated landscape/biodiversity features, noise and air quality.

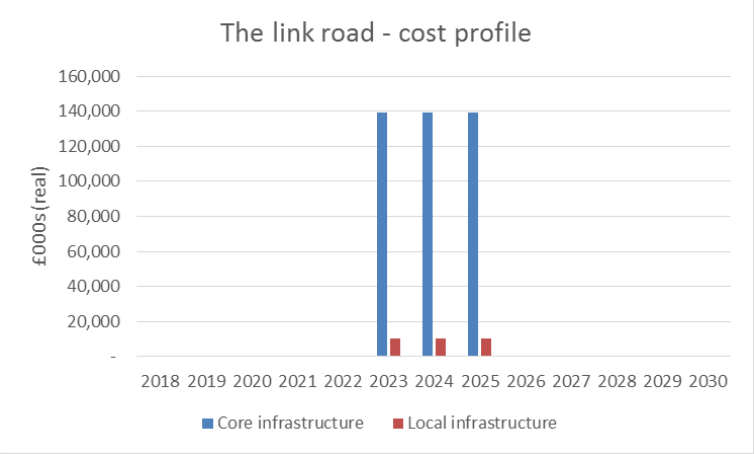
Funding requirement

Based on information provided by the local authority, the costs of the scheme are assumed to be as follows:

Cost element	Amount	Commentary
'Core' capex	£417m	Reflects latest cost estimate provided by the local authority for the preferred option. Inclusive of 'most likely risk cost' (£22m) and 15% optimism bias.
Local infrastructure requirement	£31m	Reflects costs of supporting local road connections for the preferred option. Inclusive of 15% optimism bias.
Profile	Evenly split between 2023 and 2025.	
Inflation	TPI	KPMG assumption.

As described in the table above, the 'local' infrastructure requirement is assumed, for the purposes of this exercise, to connect the new link road to the local community and site of potential new residential development.

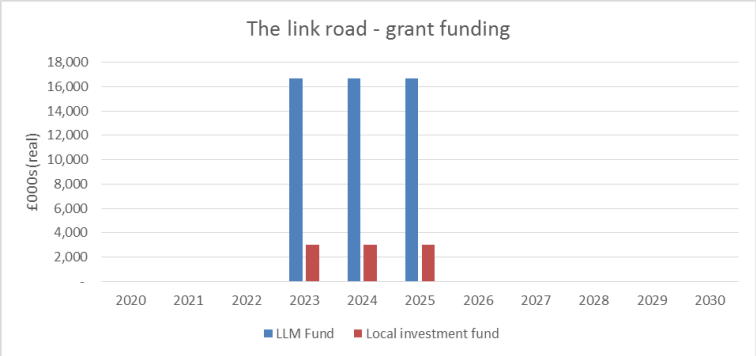
The cost profile (in real terms) is illustrated in the graph below.



Benefits and beneficiaries

The specific benefits of the scheme have been identified as follows:

	■ **Attraction of strategic traffic away from the local road network**. The construction of an alternative route to connect the motorway and a major A-road would alleviate pressure on other key routes and free up capacity for the local journeys that these roads are better suited to serve, enabling local and city regional growth. ■ **Enhanced national and regional connectivity.** Facilitate and accelerate growth along the economic corridor between a major port and nearby town/city, and makes the entire city region more accessible for trips originating in the North. ■ **Improved journey times**. ■ **Reduction in the societal and environmental impact on built-up areas**. The corridor has several Noise Important Areas related to traffic and there are important cultural heritage assets. ■ **Unlocking housing and commercial growth opportunities**. The local authority's Local Plan identifies the area to the North of the town/city as the potential for significant housing growth, and discussions are underway with local landowners and developers. Although the delivery of the new road can both speed up the delivery of this housing and open up new areas for development, the dependence between the two is still under investigation.
'Tier 2' funding sources considered	Based on a high level assessment of the scheme, road users are considered to be one of the primary groups of beneficiary, on account of the objective of improved network resilience and connectivity and better journey times. Specific user charging has, however, been ruled out by the sponsors as a potential funding source. Due to the nature of the scheme, (being a new link road rather than primarily to tackle congestion), this is considered to be an appropriate conclusion at this stage. Accordingly, the following funding sources have been considered: **1. Local and national grant funding** In respect of roads-specific grant funding, the evolution of current funding arrangements for the SRN and MRN, and the introduction of the National Roads Fund, are considered within the 'Tier 1' funding assessment. However, in the short term it is assumed that the Large Local Majors (LLM) Fund will continue and that the link road will be a candidate scheme for investment from the fund. In addition, there may be some funds available from the combined authority's investment fund. **2. Land Value Capture** There is a pipeline of new housing development in areas close to the scheme being put forward as part of the Local Plan. While the dependency of the timing and quantum of housing delivery on the link road is still under investigation, we have considered a moderate

	contribution from LVC based on a the 'top-down' methodology described above, and a series of assumptions set out in more detail below. The potential for land value uplift in relation to *existing* properties in the area is not considered to be significant enough to merit consideration of associated LVC mechanisms (council tax precepts, betterment levies and so on).
Local and national grant funding analysis	We have assumed that an amount of £50m will be made available from the LLM Fund, drawn down to match the construction cost profile. We have assumed that £3m per annum in each year of construction will be made available for the link road from the local investment fund. The funding profile (in real terms) is illustrated in the graph below. 
Land value uplift and capture analysis	The following high level assumptions have been developed for the basis of the LVC analysis for the link road. Land value uplift has been assessed for new residential development only, and in accordance with the 'bottom-up' approach described above.

	'Low growth' scenario	'High growth' scenario
Existing stock value (2017) [1]	£1,260 per sqm	£1,260 per sqm
New stock value	120% of existing	120% of existing
New sqm	210,000 sqm by 2050 (15,000 per annum 2022-2035)	280,000 sqm by 2050 (20,000 per annum 2022-2035)
Value growth over time	Additional 1% over HPI per annum for 10 years from 2018 [2]	Additional 2% over HPI per annum for 10 years from 2018 [2]

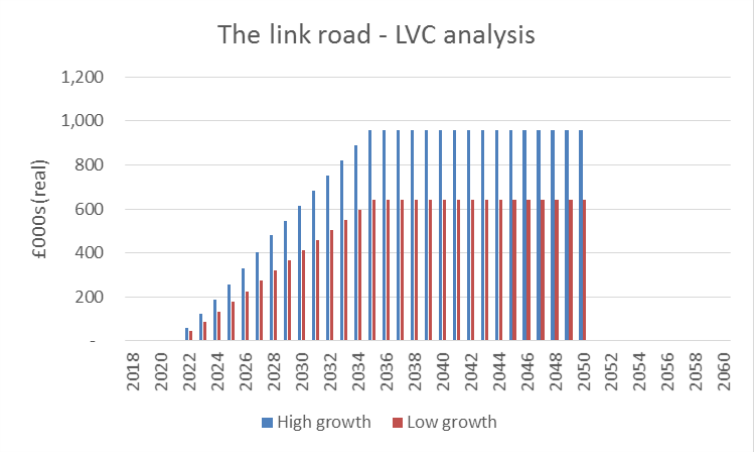
1. Source: ONS

2. HPI assumption: GDP deflator and RPI: OBR Economic & Fiscal Outlook, Supplementary Economy Table 1.7

In respect of the above assumptions, it is noted that the profile of development is relatively low and slow – 150-200 homes per annum

over 10-15 years. Furthermore, the new development is assumed to be delivered with or without the road going ahead, reflecting the fact that it is likely to be required as part of the Local Plan even in the absence of the road going ahead (although the project may increase the pace of development). Analysis of the impact of the scheme on the quantum and pace of development of new housing has been commissioned by the local authority but was not available at the time of writing.

Based on these assumptions and applying the methodology described above, the total assessed land value uplift is £33m (for the high growth scenario) and £22m (for the low growth scenario), in present value terms. Using an assumption of 33% capture, this has been used to model a notional LVC cashflow as follows:



Based on this notional cashflow, the total assessed LVC potential in real terms is £21m (for the high growth scenario) and £14m (for the low growth scenario), in today's prices.

Outcomes

To provide a range for the potential of 'Tier 2' funding, reflecting the stage of the current analysis, two scenarios have been identified:

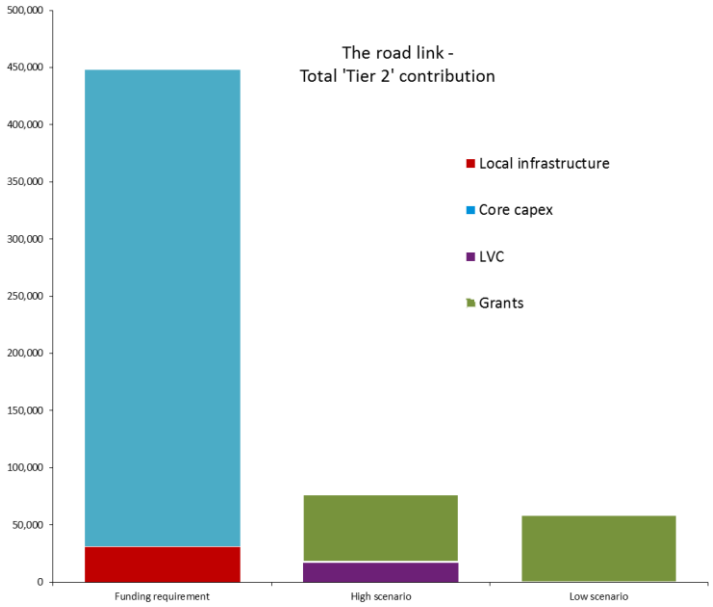
- Low: full grant funding, zero LVC.
- High: full grant funding, LVC equivalent to the mid-point between the high and low growth scenarios.

This results in the following total 'Tier 2' funding:

£m (real – today's prices)	Low scenario	High scenario
Core infrastructure	417	417
Local infrastructure *	31	31
Total funding requirement	**448**	**448**
Grant funding	59	59
LVC	-	18
Total 'Tier 2'	**59**	**77**

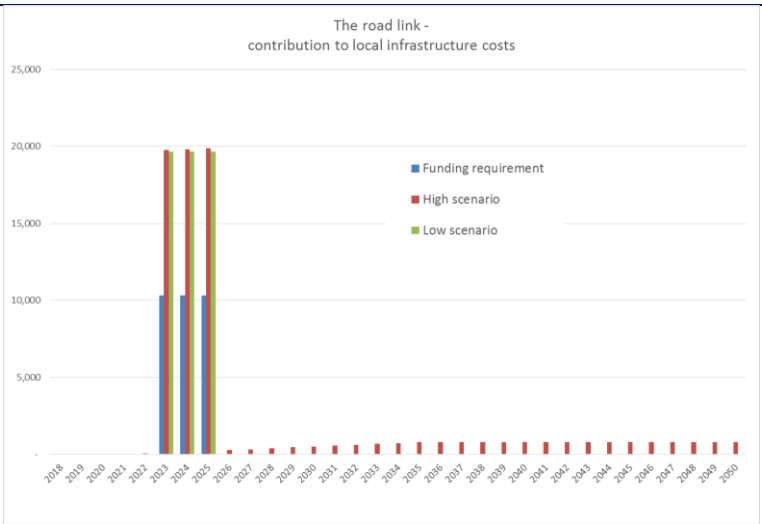
* This represents the cost of the supporting local road connections integrating the link road with the local community.

This suggests a contribution of 'Tier 2' funding that could cover, in real terms, all of the local infrastructure requirement, and between 13-17% of total scheme costs.



The contribution over time to the local infrastructure component is illustrated in the graph below.

The assumptions for the grant funding contributions suggest that these funds will be more than adequate to meet the costs of the distributor road (i.e. the 'local' element), and will therefore be likely applied also to elements of the core strategic infrastructure requirement. The contribution from LVC is relatively modest, and spread over a relatively long time period.



7.5 Case study 3: the station project

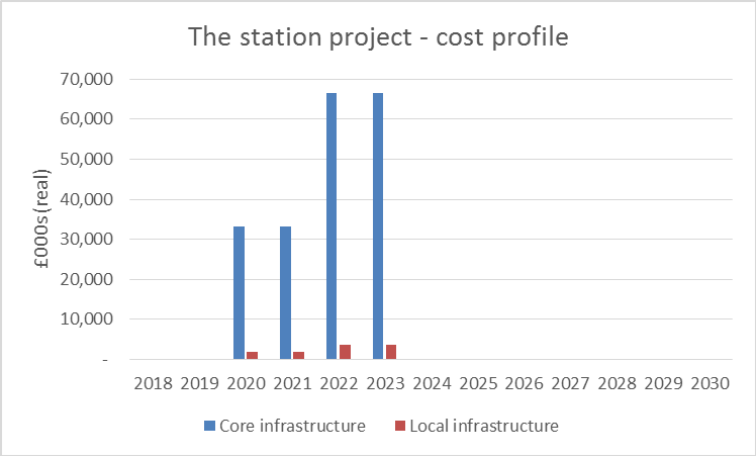
The table below provides an overview of the assessment of the potential 'Tier 2' funding for the station project.

Scheme overview	The station project case study is based on a real proposed scheme but has been anonymised for the purposes of this report. The station project is a series of 'on-track' interventions and 'off-track' regeneration and development projects designed to create a holistic gateway for rail in a town/city and improve the overall passenger experience for those arriving at, passing through or departing from the station. The current recommended package of projects includes an additional through-platform, junction reconfiguration, road and pedestrian access enhancements, public realm works, and new and expanded car parking facilities at the station.
Funding requirement	A very preliminary assessment of capital costs, including phasing, has been made by the local authority. Based on this, the costs of the scheme are assumed to be as follows (in today's prices):

Cost element	Amount	Commentary
'Core' capex	£200m	Represents 95% of the total assumed project cost, based on a high level classification of cost elements between core and local.
Local infrastructure requirement	£10m	Represents 5% of the total assumed project cost, based on a high level classification of cost elements between core and local.

Profile	1/6 in each of 2020 and 2021, 1/3 in each of 2022 and 2023.	Local authority/ KPMG assumption.
Inflation	TPI	KPMG assumption.

The cost profile (in real terms) is illustrated in the graph below.

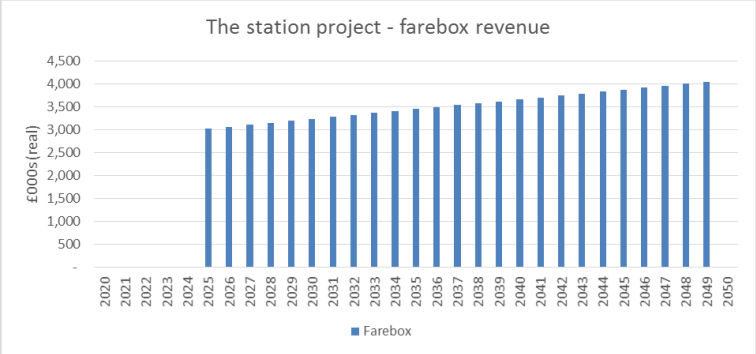


Benefits and beneficiaries

The benefits of the scheme have been identified as follows:

- **Rail users** will benefit from:
  - Greater accessibility, with better service to key strategic locations in the North and beyond.
  - Travel time savings.
  - Improved passenger experience due to augmentations to station facilities, public realm and car parking improvements.
- **Road users** will benefit from increased highway capacity and more broadly from the impacts of modal shift from car to rail in terms of less congestion and fewer road accidents.
- The **local community** will also benefit from modal shift, in the form of:
  - Less greenhouse gas emissions.
  - Improved local air quality.
  - Less road traffic noise and fewer road infrastructure repairs.
- **New development**. The local area is already earmarked for significant development, which is anticipated to deliver new jobs in around the station and at other sites. There will also be new homes.
- The anticipated **wider economic benefits** of the scheme relate to improving labour market accessibility, promoting business investment and growth via better connectivity with the sub-region,

	and an enhanced image of the town/city as a gateway for the wider sub-region.
'Tier 2' funding sources considered	Work undertaken to date on the project identifies a range of potential funding sources for the scheme, although it is noted that a financial case and funding strategy have not been completed at this stage. It is feasible that components of the project may attract grant funding. For track infrastructure, for example, Network Rail Control Period 6 (CP6) funding may be a potential source subject to the outputs identified through the Periodic Review 2018 (PR18), HS2 connectivity funds, and/or the North of England Route Study. Due to the early stage of development of the scheme, and as capital grants may be accounted for in 'Tier 1', these are not, however, considered as a distinct form of 'Tier 2' funding at this stage. The following funding sources have been considered as part of the 'Tier 2' analysis: **1. Incremental farebox revenue** Work undertaken to date on the project includes an assessment of the additional incremental farebox income that might be expected to be generated as a result of the investment in the station project. It notes, however, that any increases in fare revenue will be required to fund opex, and therefore for the purposes of the current analysis, it has been assumed that a revenue stream equivalent to 20% of assumed incremental farebox income is made available to the scheme. As mentioned previously, although farebox revenue is shown as a separate item within the 'Tier 2' funding analysis, it is excluded from the total assessed contribution on the basis that it will be accounted for within the analysis of a future rail funding settlement for the North (specifically, any growth in premia received from TOCs or, indeed, reduction in subsidy paid to them) – which is considered within the 'Tier 1' analysis. **2. Land Value Capture** Work undertaken to date on the project identifies a pipeline of residential and non-residential development in the city centre, noting that there has not been any assessment to date of the dependence of this development on the identified station improvements. We have therefore considered a moderate contribution from LVC based on the 'top-down' methodology described above, and a series of assumptions set out in more detail below. The potential for land value uplift in relation to *existing* properties in the city is not considered to be significant enough to merit consideration of associated LVC mechanisms (council tax precepts, betterment levies and so on) at this stage.

	3. Rental income and other commercial activities Work undertaken to date on the project notes that the retail offer of the station is likely to be significantly enhanced, but at this stage detailed analysis of this opportunity has not been undertaken. We have therefore estimated the revenue potential of this funding source through the development of assumptions for the potential increase in retail rentals that may be achieved with the project.
Farebox revenue analysis	The local authority has undertaken preliminary revenue modelling of the potential incremental farebox revenue generated by the project. Based on this, we have assumed incremental fare box revenue of £14m in 2020 (in today's prices), growing to £15.5m in 2027, with assumed flat growth in between and beyond. Fares are assumed to grow with RPI. On account of the assumption made in the work undertaken to date on the project that the majority of passenger revenue will be required to meet the operating costs of the project, we have assumed that 20% of this amount is made available from 2025 for 25 years. The funding profile (in real terms) is illustrated in the graph below. 
Land value uplift and capture analysis	The following high level assumptions have been developed for the basis of the LVC analysis for the station project. It is noted that land value uplift has been assessed for new development only, and in accordance with the 'bottom-up' approach described above.

	'Low growth' scenario	'High growth' scenario
Residential		
Existing stock value (2017) [1]	£1,892 per sqm	£1,892 per sqm
New stock value	120% of existing	120% of existing
New sqm	Half of 'High growth' scenario	33,900 sqm by 2050
Office		
Existing stock value (2017) [2]	£1,695 per sqm	£1,695 per sqm

New stock value	120% of existing	120% of existing
New sqm	Half of 'High growth' scenario	49,000 sqm by 2050
Retail & leisure		
Existing stock value (2017) [2]	£4,300 per sqm	£4,300 per sqm
New stock value	120% of existing	120% of existing
New sqm	Half of 'High growth' scenario	23,500 sqm by 2050
Value growth		
Value growth over time	Additional 1% over HPI per annum for 10 years from 2018 [3]	Additional 2% over HPI per annum for 10 years from 2018 [3]

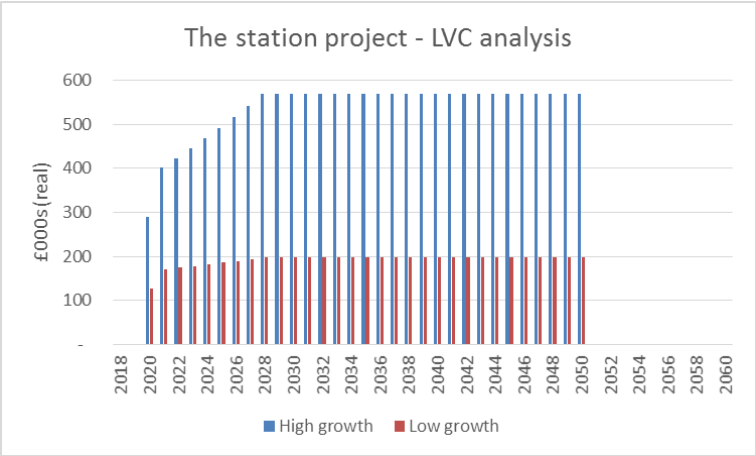
1. Source: ONS

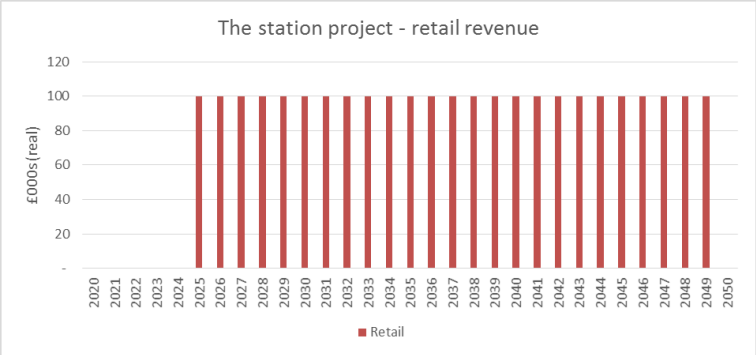
2. Rateable value per sqm (source: Valuation Office Agency, rateable value per sqm, December 2016) and assumed yield of 5% for office and industrial and 4% for retail & leisure.

3. HPI assumption: GDP deflator and RPI: OBR Economic & Fiscal Outlook, Supplementary Economy Table 1.7

In respect of the above assumptions, it is noted that the new development is assumed to be delivered with or without the scheme going ahead, reflecting the fact that it is likely to be required as part of the Local Plan even in the absence of the scheme going ahead (although the project may increase the pace of development). Analysis of the impact of the scheme on the quantum and pace of development has not been undertaken.

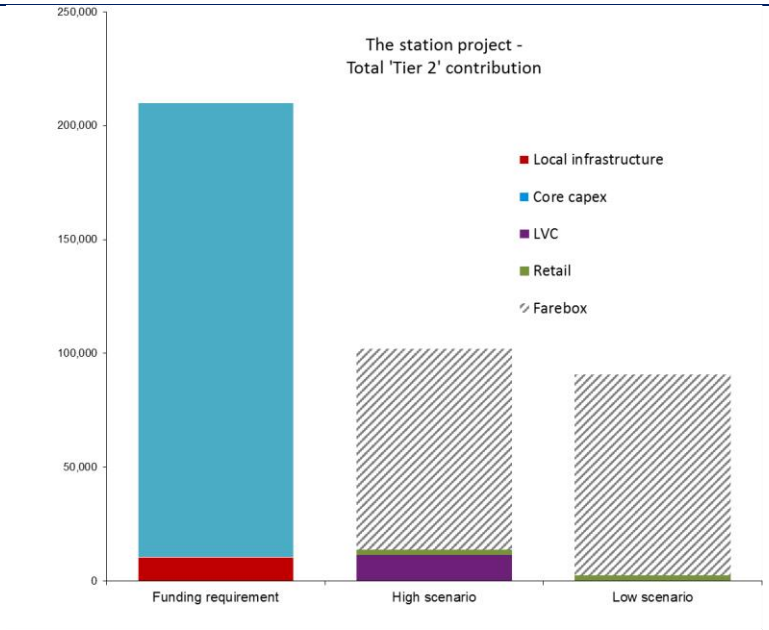
Based on these assumptions and applying the methodology described above, the total assessed land value uplift is £29m (for the high growth scenario) and £10m (for the low growth scenario), in present value terms. Using an assumption of 33% capture, this has been used to model a notional LVC cashflow as follows:



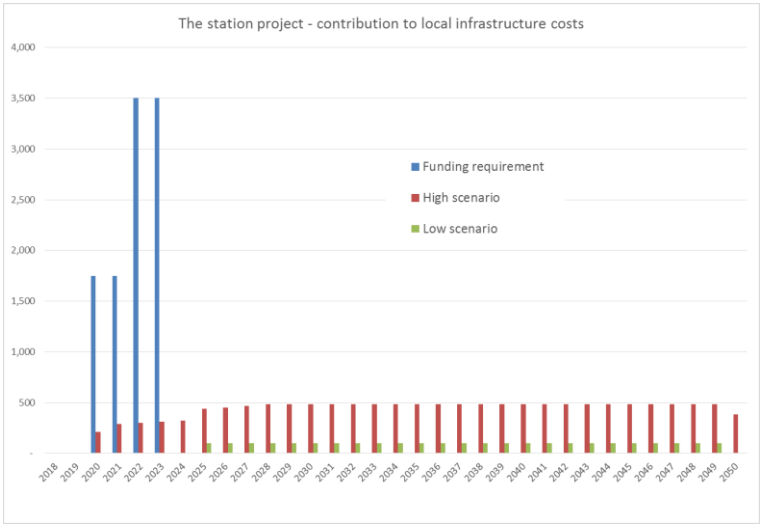
	Based on this notional cashflow, the total assessed LVC potential in real terms is £17m (for the high growth scenario) and £6m (for the low growth scenario), in real terms.
Rental/ commercial income analysis	We have made the assumption that there is 1,000 sqm of retail space at the station. We have assumed that as a result of the scheme, rental values will increase by £100 psqm (in today's prices) per annum, growing with RPI, and this incremental amount will be made available to the project from 2025 for 25 years. The funding profile (in real terms) is illustrated in the graph below. 
Outcomes	To provide a range for the potential of 'Tier 2' funding, reflecting the stage of the current analysis, two scenarios have been identified: ■ Low: full farebox revenue, zero LVC, full retail/ commercial income. ■ High: full farebox revenue, LVC equivalent to the mid-point between the high and low growth scenarios, full retail/ commercial income. This results in the following total 'Tier 2' funding:

£m (real – today's prices)	Low scenario	High scenario
Core infrastructure	200	200
Local infrastructure	10	10
Total funding requirement	**210**	**210**
Farebox	88	88
LVC	-	11
Rental/ commercial	3	3
Total 'Tier 2'	**91**	**102**
Total 'Tier 2' – excl. farebox	**3**	**14**

Excluding farebox revenues (which are accounted for in 'Tier 1'), this suggests a contribution of 'Tier 2' funding that could cover, in real terms, between 25-130% of the local infrastructure requirement, and between 1-7% of total scheme costs.



The contribution over time to the local infrastructure component is illustrated in the graph below (which includes farebox revenue).



7.6 Interpreting the outcomes of the case study analysis

The analysis of the case study schemes provides additional evidence of the diverse nature of the projects that make up the emerging TfN long term investment programme.

But although, as previously mentioned, the case studies may not be perfectly representative of the programme as a whole (and reflect the fact that the programme is still being developed), it is perhaps not very likely that there will be a large number of schemes in the programme that would produce fundamentally different results to the three assessed. The outcomes do,

therefore, provide some important conclusions for the potential contribution of locally-derived and project-specific funding sources a part of an overall funding framework.

For the NPR case study, the contribution of 'Tier 2' funding is assessed as being very limited. Income from LVC and retail rental is assessed as having the potential to deliver funding of roughly £100-200m (in today's prices). This is equivalent to 10-18% of the assumed 'local' infrastructure requirement of the project, but when compared to the scheme as a whole the contribution is only 0.7-1.2%. Extrapolating this outcome to other similar projects would suggest that for the very large schemes in the programme, the absolute potential of 'Tier 2' funding is relatively significant (reflecting the significant potential for wider value creation), but in the context of the very considerable capital costs of such schemes, the overall relative contribution (both in terms of quantum and timing) is in fact minor. The majority of funding for such schemes would likely need to be derived from other sources.

For the link road and the station projects, the relative contribution of locally-derived funding appears to be greater. For the link road, the local infrastructure costs are able to be met in full by assumed project-specific grant funding receipts, with LVC contributing a further amount equivalent to 40% of the local costs in the assumed 'high' funding scenario. For the station project, LVC in the 'high' funding scenario can (just) cover the local infrastructure requirement, with a further quarter potentially met by enhanced retail activities at the station. In both cases, there may be some contribution to the 'core' strategic infrastructure, but it is very limited.

This implies that for small and medium-sized interventions (such as station upgrades and individual road schemes), project-related and locally-derived funding has the potential to make an important contribution to the additional 'local infrastructure' elements, and in some cases a very modest contribution to the capital costs of the strategic assets.

The following additional conclusions relating to the mechanisms analysed are considered relevant.

- Project **user charges** may have a role to play in the funding solutions for certain schemes. The only road scheme analysed – the link road – is not considered appropriate for user charges. And for rail projects, user charges form part of the overall **fare structures** and industry funding flows which – it is assumed – will form part of discussions with government around the quantum of 'Tier 1' funding for rail (as explored in section 6).
- In respect of **local grant funding**, such as local investment funds, availability is generally heavily constrained. For this reason, it has only been considered an option for the link road, and even then for a very modest amount. Moving forward, it may be that as devolution arrangements mature and local fundraising powers evolve, local authorities may in the future have more spending power available to them.
- **LVC** is an important area for consideration and is highly likely to be part of the discussion around local contributions to transport schemes all over the UK. However, it remains something of an unknown quantity, for example in relation to the availability of the required powers and mechanisms. It is important to recognise that 'the North' does not exist as an elected tier or Government, with tax raising powers, and any LVC contribution would likely need to rely on the availability and exercise of powers at the partner level.

- Although innovative LVC funding models have been trialled in London and the South East, the contribution of LVC assessed in the case study analysis appears to reflect the fact that these may not always be appropriate to schemes elsewhere. For projects such as NPR, the economic impacts of inter-urban interventions are more diffuse, reflecting the larger and more diverse geography. More generally, base levels of productivity, wages and land values are significantly lower in the North than other parts of the country, as well as there being significant differences within the North itself.

Inter-city vs intra-city schemes

The analysis of the NPR case study 2 (Leeds to Manchester) suggests that LVC could contribute £80-£165m in today's prices, equivalent to:

- between 8 and 16% of the assumed costs of ancillary local infrastructure, and
- between 0.6 and 1.1% of the assumed costs of the project as a whole.

The underlying assumptions for land values supporting this analysis are based on the latest ONS and Valuations Office releases for Manchester and Leeds.

In a sensitivity where the baseline per sqm land values were raised to London values, then the resulting LVC revenue numbers increase by around 150%, and their contribution would be £202-£412m in today's prices, equivalent to:

- between 19 and 39% of the assumed costs of ancillary local infrastructure
- between 1.4 and 2.9% of the assumed costs of the project as a whole.

While this represents a significant 'improvement' in the potential for LVC to contribute to the funding for NPR, a contribution of under 3% is still a long way off what has been assessed as achievable in London under a similar regime – which is close to 100%.

This implies that it is not just underlying land values that contribute to the challenges of making LVC work in the North, but rather the nature of the project in question. NPR is a major inter-city strategic scheme with large components of major cost in greenfield areas but opportunities for significant uplift likely to be mainly or only at the termini. Crossrail 2, the Bakerloo Line Extension and other such projects in London exist, by contrast, in a dense urban environment with stations and stops very close together creating a much more concentrated opportunity for land value uplift and capture.

The economic impacts of inter-urban interventions such as NPR are more diffuse, reflecting the larger and more diverse geography, than those that are located within a single conurbation.

Comparing the impacted footprint of an inter-city scheme like NPR to an intra-city scheme like Crossrail 2, for example, gives a further indication of the potential impact of 'TfN-type' interventions.

Crossrail 2 can be considered to impact 1.1 sq km per km of route (based on analysis of 1km radii around each proposed station), compared to 0.1 sq km for NPR, suggesting that Crossrail 2 will impact a land area ten times greater than NPR. This is primarily due to the fact that Crossrail 2 comprises 13 stations on a shorter route compared to an assumed 3 stations for NPR (based on the Leeds-Manchester component, with intermediary stations yet to be confirmed).

This greater impact implies a greater potential for development and therefore contribution from LVC mechanisms to the funding requirement of the scheme.

Although the analysis has sought to make a distinction between the 'core strategic' and 'local' components of the schemes, additionally the role of parallel city region and local transport infrastructure programmes in the North, either under way or in development, must be recognised. These programmes, which may or not already be funded, are crucial in supporting the transformational change required and will naturally have the 'first call' on any local funds that can be incrementally raised from investment in transport infrastructure. This constrains the ability of such funds to contribute to the core strategic costs of the TfN programme.

Overall, the analysis suggests that although local contributions can form a part of the framework, in the context of the TfN investment programme, the challenges associated with them are sizeable. The implications for the overall funding framework – and how it might evolve in the future – are explored below.

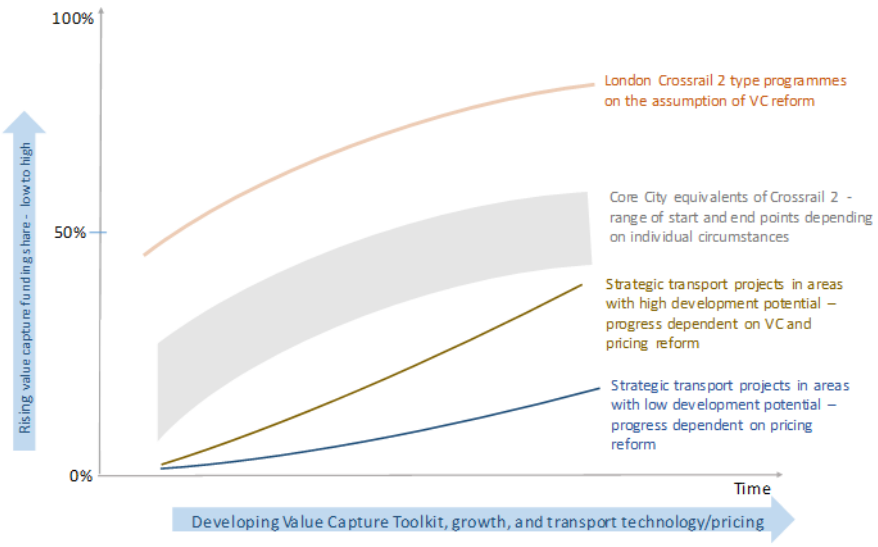
7.7 'Tier 1' and 'Tier 2': an evolving relationship

While the contribution of 'Tier 2' funding is currently assessed as being significantly smaller than the requirement for central investment, this does not always have to be the case.

The preliminary assessment of the case study schemes demonstrates that different schemes and programmes will have different levels of potential for local value generation (and capture), and there will also be important differences between places at any one time and in any one places over time. The role of local economic conditions and the 'type' of scheme in this are explored in the box above.

Initiatives and places can be considered on a 'continuum' in terms of the realistic potential for local uplift and funding. The continuum runs from 'low/none' at one end to potentially 100% at the other and each type of investment and each place can be expected to progress along that continuum over time. The location of a scheme or place on the continuum can determine the level of local contribution and potential requirement for matched funding from central government. It also indicates the scale of reform needed to maximise the value capture potential and to improve it over time.

The figure below shows the different paths of value capture funding potential over time by types of transport projects.



This figure shows that for any type of transport scheme, the potential to capture and monetise value locally will increase over time depending on the reforms put in place to achieve this.

London with Crossrail 2 is at the higher end of the continuum and is expected to go much further over time as a result of London's strong property market, TfL's control of its public transport farebox and the strength and size of the local economy.

Other cities will start further down the continuum – how much further would depend on individual circumstances and the value capture tools available. For strategic projects with low development potential, value uplift generated by the intervention will be relatively small – in these cases, funding reform may not be suitable and, instead, a way to tap into the financial windfall gains of rebalancing investment might be through transport pricing reform. As highlighted by the 2017 Wolfson Prize and by recent announcements in relation to the Government's assumptions on the pace of technological change in the road vehicle market, substantial changes in the way road users pay for access to the road network will be required before long as fuel duty revenues start to decline. Government-led, road-based charging initiatives, together with smarter approaches to public transport fares, will open up subtler ways to capture a proportion of the benefits of rebalancing investment via transport users with reduced risk of counter-productive responses.

Not all strategic infrastructure projects will start at the very end of the continuum - certain exceptions, such as the East West Rail scheme that will link Oxford to Cambridge, will open up new housing potential in regions of high demand and could – provided the tools are in place – benefit from significant value capture funding at an early stage.

TfN's emerging long term investment programme, which has a rebalancing mission at its core, can be considered as a strategic programme that will start relatively far down the continuum, with progress potentially slow and possibly dependent on transport pricing reforms. This is implicit in the 'majority central funding' hypothesis and the evidence of the potential contribution of 'Tier 2' funding sources to the identified case study interventions.

However, in the context of a successful programme of rebalancing investment and the implementation of tools that allow places to tap into value over time (and not just at the point of development, where – in many locations – viability issues may limit their effectiveness), there is potential for the TfN programme to 'move along' the continuum and reduce the reliance on centrally-derived funding. Over time, therefore, the share of 'Tier 2' funding sources can increase and contribute more to the funding requirement. This has implications in the phasing of the long term investment programme and the prioritisation of interventions.

Finally, the role of complementary local investments – which have an important role in optimising benefits of strategic programmes like TfN's and addressing the rebalancing agenda – must also be considered from this perspective. The capacity of local areas to raise local contributions (informed by where they 'sit' on the continuum) can be expected to play an important role in ensuring that the required local investment can be funded and delivered.

8 Governance, funding flows, rules and regulations

8.1 Introduction

The funding framework for the TfN investment programme is at an early stage of its development - as is the programme itself. This is reflected in the quantitative funding analysis described in this report. This analysis is relatively theoretical in nature; its purpose is to identify the different sources of funds that look most appropriate or have the clearest potential given current policies, precedents and live debates (e.g. in terms of the potential of LVC reform), providing a preliminary view of the potential quantum of contribution that might be provided by each, and a discussion of the practicalities associated with their use for programmes such as TfN's.

To translate this initial analysis into a practical framework that is deliverable and sustainable will, in time, require consideration of key issues of governance, implementation and financial management. It will also, as the discussion of the "continuum of funding approaches" in the previous chapter highlights, involve recognising that the funding of TfN programmes cannot be seen in isolation from approaches and programmes in other parts of the country. Inevitably this prompts consideration of potential mechanisms and 'rules' which achieve the optimal balance between central government funding (whether from existing flows or new arrangements) and new local or pan-regional funding instruments, not just for TfN's programmes, nor just in terms of the North. It will also involve thinking through what TfN's role, together with those of comparable organisations in other parts of the country, might ultimately be in terms of budgeting and revenue raising will be, and options for the efficient and accountable flow of funds to interventions which may be being delivered by a range of other organisations.

8.2 Key considerations

Specific questions that will need to be considered in order to move towards a practical solution include the following.

- **What is the scope of the TfN long term investment programme?** The programmes, projects and schemes included within the long term investment programme need to be clearly defined. This is required to ensure a pragmatic alignment between what TfN is sponsoring / delivering and other local and national investment programmes. This pragmatic alignment (and the proper delineation of 'boundaries') is clearly important to ensure consistency of policy and to deliver the programme in an efficient and cost effective manner. It also has important implications for funding, especially in the context of schemes that will need to be funded both from central and local sources. Synergetic and coordinated investment by TfN and other investing bodies can maximise the gross additional contribution from all funding sources, including those that are locally-derived. At the same time, where TfN-type interventions generate incremental value and increase the potential for value capture at a local level, it must be recognised that the value can only be 'captured and spent once' – and this means that a programme-wide view becomes crucial. In addition, as noted elsewhere, there will be a need for consistency between the where the

dividing line is drawn and funding practicalities. If, as seems possible, there is an extension of LVC funding, the greater suitability of LVC funding for local programmes would argue for a dividing line that allocates incremental costs of investment that is primarily of local benefit, and which can be subject to local decision making, to local, part LVC funded, programmes rather than core TfN programmes for which LVC is a much less practicable proposition.

- **How will funding be directed to the TfN investment programme?** Consideration of the practical arrangements for directing funds to the TfN investment programme will need to accommodate:
    - the phased approach to the investment programme,
    - the practical application of the identified funding principles, and
    - the realities of delivery, including consideration of regional/national funding ratios, recognising that value will be created nationally by the programme (e.g. via the tax receipts on national growth) as well as locally, and the need for consistency between regions.

  At least at the beginning of the programme, funds may not necessarily flow 'via' TfN into individual projects, and instead may be allocated directly from central/ local sources from within a TfN programme control total or similar arrangement for "keeping score" which will be an essential part of ensuring consistency between places and providing transparency about what was actually bought with additional local/regional contributions – options for how this might work in practice are described below.

  The extent to which funding directed to TfN programmes in the future remains aligned to existing funding arrangements, or alternatively is delivered through a more discrete funding settlement, will have implications for the potential of the programme to deliver its identified outcomes, and the scope for unlocking new sources of local or regional funding, which (as explained elsewhere in this report) will depend on the kind of transparency about what these contributions actually buy which has rarely been a feature of UK transport funding.

  For example, current funding regimes are generally uni-modal, with separate at best five-year national settlements for rail and highways, usually in the context of defined programmes rather than geographies, and often the subject of change, and are supplemented by a range of different mode-specific, frequently ad-hoc capital grants programmes. These existing industry processes rarely promote a cross-modal view and undermine efforts to demonstrate additionality from non-traditional funding sources. TfN, however, is developing a multi-modal programme that identifies the investments that will make the biggest contribution to meeting its rebalancing objectives and generate national value for money. This argues for both a modally-agnostic approach and one which allows TfN to make the case to stakeholders that additional local/regional funding is necessary, proportionate, and fair both in comparison to other regions and across the North.

- **How will funding be allocated within the TfN investment programme?** Where funds made available to TfN are not linked explicitly to particular schemes or programmes, and TfN has

a degree of discretion as to how they are spent, then a clear set of 'rules' will need to be defined by agreement of its partners, allowing funds to be invested and prioritised across the North. These rules should be aligned with the principles agreed between TfN and its partners, underpinned by clear 'balance criteria', address the need for inter-regional transparency and avoid where possible a simple 'jam-spread' of investment across the region.

- **Where does responsibility for financing and risk management lie?** Although the focus, appropriately, at this early stage is on the key question of overall funding, once there is greater clarity on the funding side consideration will need to be given to how the identified funds might support a best value financing and procurement strategy to provide capital for construction expenditure, and how best to manage risks. In the absence of a major restructuring of TfN into a delivery body with material revenue raising and borrowing powers, it is highly likely that financing and risk management will continue to be for other parties, including DfT, Network Rail, Highways England, and any new project specific organisations (eg on the HS2 model) to manage, either directly or via private finance and related mechanisms. This would need to include managing any risks associated with new funding sources being drawn on to contribute towards costs. Financing and related procurement options (and risks) should be evaluated in the context of both the programme as a whole and individual schemes or types of scheme – in recognition that, for example, a new motorway or crossings might lend itself to private finance in a way that a package of rail infrastructure enhancements, especially on the existing network, typically would not. These assessments, and the necessary overall transparency around total expenditure that rebalancing programmes are going to require (eg to allow inter-regional comparisons to be made on a like for like basis), will need to reflect the impact different procurement and financing options can have on the timing and nature (eg capital or resource) of public expenditure impacts of investment.

8.3 Potential new funding arrangements

The focus of the analysis in this report is on the key 'building blocks' of the potential future funding framework – the principles underpinning it and the primary categories and sources of funding that are expected to make the primary contribution to the investment programme.

Once greater certainty on these elements of the framework is achieved, it will be appropriate to turn attention to the practical arrangements for the direction of funds to the programme – and in particular the settlement agreed with Government to enable the crucial 'Tier 1' funds to flow to the programmes TfN is charged with developing.

There is a likely to be broad spectrum of ways in which this could be achieved, ranging from a purely strategic role for TfN (with no funding resource or remit) to a much more autonomous role as a budget holder, able to shape future investment and make the case for and thereby secure agreement to the kind of reforms that material additional local or regional funding will require. Some potential scenarios are outlined below. Further investigation and evaluation of options will be required as the funding framework is further developed.

Scenario 1: Continuation of existing arrangements. If existing funding arrangements for rail and road – delivered via the respective five year regulatory and spending review and related

processes – were to continue, TfN's role would likely be limited to an advisory role and strategic planning, providing input into national processes such as Network Rail's and Highways England's business planning. TfN would address compliance with whatever rules are established to ensure transparency between the funding of programmes in different parts of the country – an inevitable by-product of a rebalancing agenda - and facilitating (to the extent possible) agreements with stakeholders on the case for additional local/regional funding for TfN programmes. This scenario would require minimal changes to funding arrangements and governance structures.

Scenario 2: Separate mode-specific regulatory settlements for the North. Alongside the settlements for Network Rail, Highways England, HS2, London etc, TfN would have a separate five year (or longer) funding plan for its rail and road enhancements – like a Northern HLOS and RIS, similar to the current Scottish HLOS. A separate funding envelope for the North would provide greater certainty over baseline funding, with options for establishing the size of the envelope on a formula basis – eg to address pressures for transparency between regions in the context of rebalancing for example using a percentage of GVA (as recommended by the NIC) potentially with specific allowances to reflect the rebalancing agenda (which would imply higher GVA ratios for regions with below average GVA per capita) and/or to put into action the kind of continuum of local/national funding ratios described in chapter 6. This option would still see separate baseline envelopes for different modes, but would result in a more active role for TfN in agreeing final budgets on the basis of funding deals reached with regional and national stakeholders on the degree to which these would be topped up, including via the kind of match-funding deal logic that sits behind the continuum approach set out above. The "keeping score" role of scenario 1 would be retained and become even more important. It would also require the development of an agreement between TfN and its partners on rules to ensure a fair allocation of funding across the North reflecting, amongst other things the scale and sources of additional funding secured – just as the North as a whole will require transparency on these returns relative to those secured by other parts of the country, individual parts of the North will need to be satisfied about the returns they get relative to the rest given the likelihood that the burden of additional local/regional contributions will not be evenly spread across the North.

Scenario 3: Combined regulatory settlement for the North. This variant would involve a single pooled baseline funding envelope for transport enhancements (across all modes) in the North, aligned with TfN's multi-modal long term investment programme, and in line with the rules established to address consistency between regions and to facilitate the development of the funding continuum discussed in chapter 6. This funding envelope for the North would give greater autonomy and discretion to TfN, in agreement with its stakeholders, on the allocation and sequencing of investments between modes, in addition to the local/regional funding driven flexibilities described under scenario 2, and the "keeping score" role described under scenario 1.

Scenario 4: 'Budget holder'. In the most 'radical' variant, with income from all funding sources being directed to a devolved TfN budget, set against a long term baseline and with the 'Barnet'/continuum/baseline style rules aligned to the achievement of rebalancing policy objectives and to provide a case for additional local/regional funding. Such arrangements would necessitate mechanisms to ensure that central government (and, where relevant,

locally-derived) money is spent on value for money projects and would likely require an enhanced governance arrangement and delivery capacity for TfN to support democratic accountability at the regional/local level not just about investment and funding decisions but also delivery and risk management.

These scenarios are illustrative and preliminary in nature and will require further development and evaluation as the framework is developed. As these issues are explored in more detail, the considerations that will be crucial in evaluating which arrangements for funding are likely to be best suited to TfN's future state include the following:

- **Degree of autonomy/devolution**: the extent to which TfN as an organisation will operate as an autonomous entity, with powers devolved from central government or existing devolved bodies.
- **Degree of funding reform required, particularly in terms of new funding sources**, and the extent to which TfN has a role in promoting this.
- **Certainty of funding**: the extent and time period over which baseline funding flowing to TfN and to its projects to be predictable, secure and certain.
- **Alignment with existing arrangements**: the degree of change (legislative, administrative etc.) that is required to existing arrangements, and the deliverability and pace of such change.
- **Appropriate incentives**: the extent to which TfN and partner organisations are incentivised to pursue funding reforms in accordance with identified objectives and policy aims. and/or contribute to on-time on budget delivery
- **Governance implications**: the governance and organisational arrangements that would be required to put in place the identified arrangements which (as noted above) could under some scenarios extend to delivery as well as programme sponsorship, investment allocation and funding reform.

Regardless of the eventual funding model adopted, incremental 'stepping-stone' arrangements would probably need to be established for short-term funding. This could be achieved through recognition of current arrangements planned for CP6 and RIS2, with levels of investment to reflect the rebalancing objective, potentially moving to more autonomy in future.

8.4 Governance

These questions around funding flows, funding reforms, investment allocation, delivery and risk management will inevitably lead to and raise further questions around the future remit of TfN as an organisation and the level of autonomy and accountability it has, linked to the emerging Strategic Transport Plan and the expected approval of statutory status. Questions of governance will be relevant at two levels: the programme level and project level, and potentially in terms of both decision making and delivery

Ownership and governance of the overall long term investment programme of strategic investments will, it is anticipated, lie with TfN. Building as necessary on the kind of funding deals/agreements with its stakeholder that wider funding reforms would require, this may

need to extend to revenue questions – e.g. in the context of a NPR driven fares strategy, or on the assumption of moves by Government in the direction of transport pricing reforms, supplementary road pricing decisions – e.g. in the context of additional TfN road investment.

All these arrangements would in practice need to be subject to "second key" type approvals by the Secretary of State, which in practice will also usually mean HM Treasury – match funding deals in principle always need to be confirmed in detail, not least in terms of the timing of total expenditure in the context of spending review totals etc., to confirm national value for money for the central match, and to ensure consistency with the arrangements (potentially being negotiated in parallel) in other places. All reform based deals will need to be supported by fit for purpose risk management arrangements which will need to be agreed with the centre.

On the basis that TfN will also be held accountable for delivery of the programme, some degree of autonomy and discretion in respect of the allocation of funds will therefore need to be agreed as part of the funding settlement and arrangements established between TfN, Government and TfN's partners at the local level. Arrangements for (and the sources of) any back up funding that would need to be secured regionally to manage retained risks would also need to be agreed not only centrally but with those local stakeholders who bear the ultimate burden.

At the project level, governance arrangements will have to be established between TfN, local authorities and Government. These may vary by scheme and will often depend on the size of the project. For the very largest schemes, such as NPR, bespoke and separate governance arrangements will likely be established, as was the case for schemes such as Thameslink and Crossrail, and recommended for major and complex enhancement programmes in the Bowe review of Network Rail's 2014-19 enhancement programme.

These are issues that will impact heavily on the funding arrangements in place – but they go beyond funding, with implications for every aspect of TfN's activities. It is not within the scope of the current study work to consider these broader questions of TfN's role, status and set-up, however it is important to recognise that the governance arrangements put in place will have a key role in moulding the approach to delivering the funding framework.

9 Next steps

As TfN builds on the preliminary analysis described in this report and continues to develop the funding framework to support the emerging long term investment programme, there are a number of steps and activities that are likely to be useful.

The primary activity is likely to be engagement – with partner organisations initially, and then with Government – to establish an agreed position as to the overall approach to the framework, the elements within it and the broad categories of funding source that are assessed. There may be an element of engagement with wider stakeholders too, such as infrastructure owners and service providers.

Ideally this would culminate in an agreed position as to the principles and key components of the framework, including:

- the funding sources "in play" and thus the degree of reform being targeted. This is likely to differ depending on the timeframe over which the questions are being asked, and the assumptions made about central Government policy. As noted above, technological change – in particular the escalating pace of the electrification of the road fleet – makes fundamental reform of road taxation and thus the way we pay to access the network inevitable within the timeframe covered by TfN's investment programme. Also inevitably, given that this is about road taxation, this has to be a central Government initiative. Once underway, however, these potential central reforms could open up the possibility of regional and local variations in the charges paid to access the road network dependent on the scale and nature of local/regional investment relative to other parts of the country, and the right kind of transparency, rules etc. This, in turn, could provide greater flexibility to consider transport pricing reforms more generally, with additional options that went beyond incremental road investment. This points to value in agreeing some potential national road pricing reform scenarios with central Government to guide some scenario analysis around local/regional variations driven by transparent additional investment
- the objectives and metrics for appraising funding options on a scheme-by-scheme basis
- the funding scenarios / affordability envelopes to be developed.

Depending on the progress of this initial consultation exercise, it would then be appropriate to undertake a number of technical workstreams to further develop the detailed framework. These are likely to include:

- Further development of individual funding mechanisms, in particular:
  - development of a detailed approach to the redirection of future rail franchises, including assessing the impact of any regulatory changes (such as access charge regimes) and operational arrangements for the management of risk and the flow of funds to the investment programme. The need to demonstrate investment additionality and fair treatment between regions would be a critical part of this;

- further exploration, based on engagement with Government, around the future hypothecation of funds from the NRF, including the role of this in providing a baseline without which (as explained in a number of places in this report) it is impossible to demonstrate local or regional additionality from additional local/regional funding. Clearly, there is a strong parallel here with the discussion above of the implications of potential national road pricing initiatives given the future of fuel duty;
- further detailed assessment of the potential of LVC to contribute to particular schemes, and engagement with Government and local authorities to explore the appetite for establishing the powers and regulatory arrangements required for LVC mechanisms to be implemented. There may also be value in a discussion with the NIC about the potential role of further analysis in the context of its review of LVC approaches due alongside its national infrastructure needs assessment later this year

- Further analysis of how the emerging funding framework can be applied to the TfN long term investment programme, as further details of the programme become available. This might include:
  - further consideration of how to specify the rules that would ensure transparency and consistency between places and regions, including the potential development of the continuum idea set out in chapter 7
  - additional project case study analysis
  - economic and financial modelling of the potential economic impact potential by scheme, or sub-programme. This could include work targeted at the NPR SOBC due later this year.
- Development of more detailed options for the governance of the funding framework, linked to the evolving role of TfN as a statutory body, and including assessment of the 'operational rules' required to manage the flow of funds to individual schemes, risk allocation, and questions of accountability and devolution.
- Development of financing options and an overarching approach to financial and risk management.

The outcome of this analysis might be a shortlist of affordability scenarios – i.e. those that best achieve the identified objectives for the programme as a while and are consistent with the agreed principles for the funding framework. This could form the basis of the next stage of engagement with partners and Government, with the objective of agreeing:

- steps required to establish the governance and operational arrangements required to deliver the framework
- funding contributions from partners, Government and any other third parties
- delivery and implementation procedures for the first phase of the long term investment programme
- a work programme for future phases.

Appendix 1 – Assumptions book

A.1 'Tier 1' funding modelling

A.1.1 Historical spend

Highways England

Enhancements budget in 2015 prices	RIS1-2015-20/21[29]	Annual average-RIS1 period	Pre RIS annual spend	Annual average 2010-20/21
England	£10.8bn[30]	£1.8bn	£941m[31]	£1.4bn
North	£2.9bn	£580m	£415m[32]	£498m

Network Rail:

Enhancement budget in 2012 prices	CP5-2014-19	Annual average- CP5 period
England	£12.5bn[33]	£2.1bn
North	£3bn[34]	£600m

[29] Source: Road Investment Strategy available at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/408514/ris-for-2015-16-road-period-web-version.pdf
[30] Total budget for RIS1 from 2015 to 2020/21 is equal to £17bn. Ratio of enhancement budget for the period is 63%.
[31] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/374676/FOI_712722.pdf
[32] Source: Date from DfT 2012 published on the following website: http://www.roadusers.org.uk/chapters/uk-road-network/uk-road-network-2-2/
[33] National Audit Office (September 2015), *Planning and delivery of the 2014-2019 rail investment programme*
[34] House of Commons Library (November 2016), *Parliamentary debate 23/11/16: Transport in the North East*

Population and GVA-based scenarios assumptions:

NOMIS, Population estimates- local authority based by single year of age:

Region	Population in 2016
North East	2,636,848
North West	7,219,623
Yorkshire and The Humber	5,425,741
East Midlands	4,724,437
West Midlands	5,800,734
East	6,130,542
London	8,787,892
South East	9,026,297
South West	5,515,953
Wales	3,113,150
Scotland	5,404,700
Northern Ireland	1,862,137

ONS- Revisions Triangles NUTS1 Workplace Based Regional GVA:

Region	GVA in 2013, £m
North East	45,374
North West	141,620
Yorkshire and The Humber	101,701
East Midlands	88,835
West Midlands	110,246
East	130,378
London	338,475
South East	227,232
South West	113,806
Wales	52,070
Scotland	117,116
Northern Ireland	32,841

	Share of the North in England	Annual enhancement spending on roads- RIS1 period (2015 prices)	Annual enhancement spending on roads- 2010-20/21 (2015 prices)	Annual enhancement spending on rail- CP5 period (2012 prices)
Population based	27.7%	£499m	£380m	£579m
GVA based	22.2%	£401m	£305m	£465m

A1.2 VED revenues modelling

Vehicle licensing statistics

Department for Transport statistics, Vehicle licensing statistics, Table VEH0104, 2017 Q3:

Region	Cars	Motor cycles	Light goods	Heavy goods	Buses and coa-ches	Other vehi-cles[1]	Total
Number of vehicles in thousands							
North East	1,123.3	44.2	155.5	16.0	6.3	22.7	1,368.0
North West	3,221.1	126.5	340.4	67.2	16.1	65.7	3,836.8
Yorkshire and Humberside	2,458.2	109.9	282.2	48.6	12.1	66.3	2,977.2
East Midlands	2,404.3	114.3	332.3	50.6	10.6	71.5	2,983.7
West Midlands	3,078.9	112.8	456.9	61.3	14.0	66.1	3,790.0
East of England	3,382.2	148.9	412.5	50.6	13.0	82.7	4,089.8
London	2,682.3	124.1	221.1	20.4	20.6	37.3	3,105.8
South East	5,172.5	228.4	651.9	70.4	22.4	81.0	6,226.6
South West	3,164.9	160.8	489.8	48.9	20.1	101.2	3,985.6
England	26,687.6	1,170.0	3,342.5	433.9	135.1	594.4	32,363.5
Wales	1,546.5	62.0	206.3	22.3	9.4	55.5	1,901.9
Scotland	2,474.8	80.0	294.5	38.6	14.9	83.2	2,985.9
Between Keepers previously GB	628.6	15.7	68.3	6.6	1.5	13.4	734.1
Region/Country unknown, previously GB	2.1	0.8	1.0	0.1	0.1	0.7	4.8
Great Britain	31,339.5	1,328.4	3,912.7	501.5	161.0	747.1	37,990.2
Northern Ireland	948.5	25.4	112.2	24.1	5.7	33.3	1,149.0
Between Keepers previously NI	13.3	0.2	0.9	0.2	-	0.1	14.7
Region/Country unknown, previously NI	1.5	-	-	-	0.0	-	1.6
United Kingdom	32,302.8	1,354.1	4,025.8	525.7	166.7	780.4	39,155.5

Strategic and Major Roads network assumptions

Jacobs for TfN, *Initial Major Roads Report*, June 2017:

Summary statistics	Length (miles)
SRN in the North	1519
SRN in England	4,400[35]
MRN in the North (Rees Jeffreys Road Fund Report) (excludes SRN)	1103
MRN in England	3800[36]

	2017 figures
Percentage of UK vehicles licensed in England	83%
Percentage of English vehicles licensed in the North	25%
Share of SRN located in the North	35%
Share of MRN located in the North	29%

[35] DfT (April 2017), *Road Lengths in Great Britain 2016*

[36] Rees Jeffreys Road Fund Study (October 2016), *A Major Road Network for England*

A1.3 Rail franchise surpluses modelling

Data for Northern franchise

£000	2020/21	2021/22	2022/23	2023/24
Subsidy[37]	204,000	158,000	136,000	114,000
Passenger income	366,519	394,372	424,144	455,951
Cost	553,902	536,283	543,829	553,351

Assumptions for the modelling of surpluses from 2024/25 to 2050:

	Figures
Passenger kilometres annual growth	3.0%
Cost annual growth (real terms)	2.0%
Passenger income above RPI	4.4%
Profit margin	3.0%

Assumptions for the modelling of scenarios for Northern:

Scenario	1. Baseline	2. Low	3. Increase fares	4. NPR scenario	5. NPR + Increase fares
Fares annual growth	N/A	N/A	1%	N/A	1%
Annual yield[38]	0.9%	0.9%	1.4%[39]	0.9%	1.4%
Cost annual growth[40]	2.0%	3.5%	2.0%	2.0%	2.0%
Annual demand growth	3.0%	3.0%	3.0%	4.0%	4.0%

[37] https://www.21stcentury-rail.com/dft-forced-to-disclose-trans-pennine-franchise-premiums/
[38] ORR (March 2016), *Trends and comparisons for franchised operators*
[39] Used a 0.5 elasticity.
[40] See above

Data for TPE

£000	2020/21	2021/22	2022/23	2023/24
Surplus[41]	98,700	111,300	143,500	157,100
Passenger income	335,884	364,075	394,451	427,163
Cost	228,062	243,053	241,299	259,676

Assumptions for the modelling of surpluses from 2024/25 to 2050:

	Figures
Passenger kilometres annual growth	5.0%
Cost annual growth (real terms)	2.0%
Passenger income above RPI	5.2%
Profit margin	4.0%

Assumptions for the modelling of scenarios for TPE:

Scenario	1. Baseline	2.Low	3. Increase fares	4. NPR scenario	5. NPR + Increase fares
Fares annual growth	N/A	N/A	1%	N/A	1%
Annual yield[42]	0.2%	0.2%	0.7%	0.2%	0.7%
Cost annual growth[43]	2.0%	4%	2.0%	2.0%	2.0%
Annual demand growth	5.0%	5.0%	5.0%	6.0%	6.0%

[41] https://www.21stcentury-rail.com/dft-forced-to-disclose-trans-pennine-franchise-premiums/
[42] ORR (March 2016), *Trends and comparisons for franchised operators*
[43] See above