

Poacher Line Strategic Outline Business Case

23 May 2017

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Issue and revision record

Revision	Date	Originator	Checker	Approver	Description
-	10 May 2017	KJC, MF, JB, JC	CH	CH	Draft Document
A	23 May 2017	KJC, MF, JB, JC	CH	CH	Final Document

Document reference: 382505 | 1 | A

Information class: Standard

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Executive Summary

This Strategic Outline Business Case (SOBC) presents a case for service and infrastructure improvements to the Poacher Line, a rail branch line that runs eastwards from Nottingham to Grantham, through the counties of Nottinghamshire, Leicestershire, and Lincolnshire.

Local Authority partners note that this section of the Poacher Line suffers from inadequate frequency of service and elongated journey times due to infrastructure issues, leading to economic and social disadvantage for the communities along the line. With planned growth in housing and employment, the need for a more frequent service is becoming ever more pressing. The infrequent level of service limits the ability of the Poacher Line communities to sustainably access jobs and opportunities in Nottingham and beyond. The poor level of service appears particularly unfavourable when compared to the better-connected Nottingham commuter belt to the west of the city.

Providing a service that neither caters for existing or new users means potential train commuters and other rail users are forced to use the already congested highway network – and particularly the A52 – which suffers from significant congestion on the approach to Nottingham and resulting air quality problems. As a result, commuters at present discount the option of train travel due to the less than desired quality of service available; the Poacher Line is not seen as a viable commuter line by the communities alongside the line seeking improved access to employment and opportunity.

Key Concerns: Poacher Line Service and Infrastructure Improvements

- Upgrades to the Poacher Line can help the Local Enterprise Partnerships (LEPs), the three Counties, the Districts and communities to achieve their goals of enabling all communities to sustainably access economic prosperity. It will help local economies to grow and thrive.
- The aims of Midlands Connect and HS2, and the East Midlands Trains Re-Franchise, require good local rail connections; the Poacher Line is currently unable to assist in meeting this aim.
- Improvements to the level of service along the Poacher Line can unlock regeneration, provide for sustainable development, and provide access to jobs and opportunities for its commuters.
- Improvements to the facilities at the stations, particularly additional car parking, can ensure that all current and future residents are able to sustainably access an improved service.
- A more attractive and viable rail service will help to ensure planned developments are sustainable, accessible, and that the new and existing residents will consider rail as a mode of travel to work, leisure, and other activities.
- Enhancements to the Poacher Line from Grantham into Nottingham will ensure equity in the quality and utility of service for local communities comparable to lines entering Nottingham from the north and west.
- Accessibility and P&R facilities are key concerns for stakeholders, the latter of which could lever greater demand for the rail service.
- The A52 suffers considerable congestion near Nottingham, and rail is competitive compared to road travel, particularly in the AM peak.
- Parts of Netherfield do exhibit high levels of deprivation and social need which public transport investments could help address if targeted effectively.

Given the above, four key objectives have been set for the development of options for consideration in this SOBC:

- Objective 1:** Support the growth, development and vitality of communities along the Poacher Line;
- Objective 2:** Support the regeneration of Netherfield;
- Objective 3:** Enable commuters and leisure travellers to choose rail travel over car travel;
- Objective 4:** Make the case for the efficient, cost-effective and practicable delivery of a preferred option for this section of the Poacher Line.

The transport and socio-economic issues and opportunities for each of the stations along the line are considered in the SOBC, and the constraints to change identified. Principle amongst these are the single-track section of track on the approach to Grantham (limiting additional train movements to one in and one out of Grantham per hour), and the need to ensure the proposals are financially and commercially viable for the operator and the Department for Transport.

Economic analysis and rail modelling were conducted to develop preferred options for improving the service and facilities on the Poacher Line, to cater for current rail use, latent rail use, and future rail use resulting from the significant housing and employment growth expected in the study area.

Preferred Options

The analysis and context provided in the Strategic Case, combined with analysis in the Economic and Financial Cases in particular, presents a case for improvements to the Poacher Line between Nottingham and Grantham.

It is suggested that ‘Do Something 2’ or ‘Do Something 3’, shown in the table below, are taken forward for consideration.

Option	Peak Service	Off-Peak Service	Sunday Service	Park & Ride
Do Minimum (current scenario)	Hourly at all stations barring Elton & Orston	Hourly at Bingham 1 every 2/3 hours at Aslockton, Bottesford, & Radcliffe on Trent No service at Netherfield	Bingham only (5 trains per day in each direction)	Aslockton: 11 Bingham: 6 Bottesford: 13 Others: 0
Do Something 2 (DS2)	As per DS1 but half hourly peak service from Radcliffe on Trent, Bingham, Aslockton, and Bottesford	1 per hour, except Netherfield (every 2/3 hours)	Minimum, e.g. single Derby-Grantham service every 3 hours	Aslockton: 30 Bingham: 50 Bottesford: 50 Radcliffe on Trent: 30
Do Something 3 (DS3)	As per DS2 but retimes Nottingham-Skegness to provide even interval	As per DS2 but retimes Nottingham-Skegness to provide even interval	Minimum, e.g. single Derby-Grantham service every 3 hours	Aslockton: 30 Bingham: 50 Bottesford: 50 Radcliffe on Trent: 30

With a positive BCR of 1.07 (DS2) and 1.04 (DS3), these two options would deliver enhanced sustainable transport options and access to economic opportunity for the communities of the Poacher Line and the study area. DS2 delivers the best economic appraisal results, but DS3 re-times the services to create less ‘bunching’ in the timetable, to the benefit of passengers (delivering on the Franchise Prospectus’ imperative to ‘put the customer first’).

These two options deliver an hourly service for almost all the stations throughout the day from approximately 6.30am until 10pm, depending on the station. They deliver a half-hourly service during the peak hours at Radcliffe on Trent, Bingham, Aslockton and Bottesford, and additional Park and Ride at these stations to accommodate and encourage the additional demand for rail travel, brought about both by these improvements and the expected growth in the settlements' populations.

There is strong political and stakeholder support from the communities along this section of the Poacher Line for the increased services proposed in DS2 and DS3, and the improvements in infrastructure. Sensitivity Test 1 (in Chapter 4) shows that the impacts of the improvements in service could exceed those expected in the standard economic appraisal.

Realising the Benefits

DS2 and DS3 would deliver the objectives for the Poacher Line between Nottingham and Grantham. If either preferred option is delivered, we would anticipate meeting the SOBC objectives identified:

Objective 1: Support the growth, development and vitality of communities along the Poacher Line

The preferred options deliver capacity and infrastructure improvements designed to accommodate the levels of growth allocated in the study areas' Local Plans. They will encourage more travel to and from each of the station's towns and villages, and make these places more attractive locations for commuter-based families and individuals to settle. Local people will be able to access the leisure and service economy in larger urban areas such as Nottingham more conveniently and later into the evening. The economic development and vitality of each of the settlements, and the larger districts and regions they are part of, will be supported.

Objective 2: Support the regeneration of Netherfield

Netherfield will have two viable, convenient train stations, with Netherfield station more than doubling its stopping trains per day, and its last stopping train from Nottingham now four hours later than is currently provided. These will benefit new and existing residents as the town regenerates. The DfT and the franchisee will consider accessibility improvements at the station. Although we cannot provide a level of service at Netherfield through DS2 or DS3 that is comparable with some of the other stations on the Line, since it would lead to a much poorer economic case, the improvements that are proposed for services at Netherfield station can be seen within a wider sustainable transport offer to Netherfield's population, in combination with Carlton station and their regular bus service.

Objective 3: Enable commuters and leisure travellers to choose rail travel over car travel

Rail travel will be more frequent and more convenient, and present a more attractive option than currently, when compared to travelling by car. Congestion and its associated delays and air pollution could be reduced as people choose to travel by a more reliable and frequent rail alternative. People will be able to combine car and rail travel using the additional P&R capacity to avoid delays and unreliability on the road network when travelling to congested areas such as Nottingham City Centre. The improvements to the Poacher Line's level of service will not significantly dis-benefit other travellers coming in to (or returning from) Nottingham from further afield than Bottesford.

Objective 4: Make the case for efficient, cost-effective and practicable delivery of a preferred option for this section of the Poacher Line

The proposed service changes re-cast the Poacher Line timetable as efficiently as possible and work within the practical constraints set out earlier in the Strategic Case. The economic appraisal shows DS2 and DS3 provide value for money and although some subsidy is required, there is capacity to reduce this from our forecast levels, and this subsidy is in line with (and in fact less than) many other examples from across the country. The improvements it will generate for the Poacher Line communities and study area will, in our opinion, provide economic, social and environmental benefits that are worth investing in.

1 Introduction

Mott MacDonald were appointed by Gedling Borough Council, Rushcliffe Borough Council and Nottinghamshire County Council to develop a Strategic Outline Business Case to consider whether a case can be made for improvements to the service, and for supporting infrastructure along the Poacher Line, between Nottingham and Grantham.

This Strategic Outline Business Case (SOBC) has been prepared to be considered as part of the re-tendering process for the East Midlands Trains (EMT) franchise. The purpose of this SOBC is to present a compelling case for intervention, both to the benefit of the DfT and franchisee, and to the benefit of the communities and commuters that use the Poacher Line.

An SOBC covers the prescribed five 'cases' required by WEBtag (the Department for Transport's appraisal framework): strategic, economic, financial, commercial and management. Since the SOBC is proportional in its consideration and appraisal of options, and is being prepared to assist the DfT and potential franchisees in their planning of the next East Midlands Rail Franchise, it has been deemed unnecessary to cover the Commercial and Management cases in great depth at this early stage of appraisal.

Following this introduction, the document is structured as followed:

Chapter	Content
2	Part one of the Strategic Case, outlining the aspirations and vision for this section of the Poacher Line
3	Part two of the Strategic Case, setting out the issues and opportunities that this Business Case seeks to address
4	Part three of the Strategic Case, describing how the options for improvements have been assessed, and setting out the final option
5	Details the Economic Case, presenting the methodology and results of the Rail Modelling and Wider Economic Benefits analysis to support the case for change
6	Provides details of the Financial Case, considering costs and funding
7	Gives a summary of the Commercial and Management cases
Appendix A	Economic Appraisal Summary Tables
Appendix B	Letters of Support

2 Strategic Case – Vision and Aspirations

2.1 Introduction

This Strategic Outline Business Case presents a case for service and infrastructure improvements to the Poacher Line, a branch line that runs eastwards from Nottingham to Grantham, through Nottinghamshire, Leicestershire, and Lincolnshire. The stations on the line are:

- Nottingham;
- Netherfield;
- Radcliffe on Trent;
- Bingham;
- Aslockton;
- Elton and Orston;
- Bottesford; and
- Grantham, from where the line runs on to Skegness.

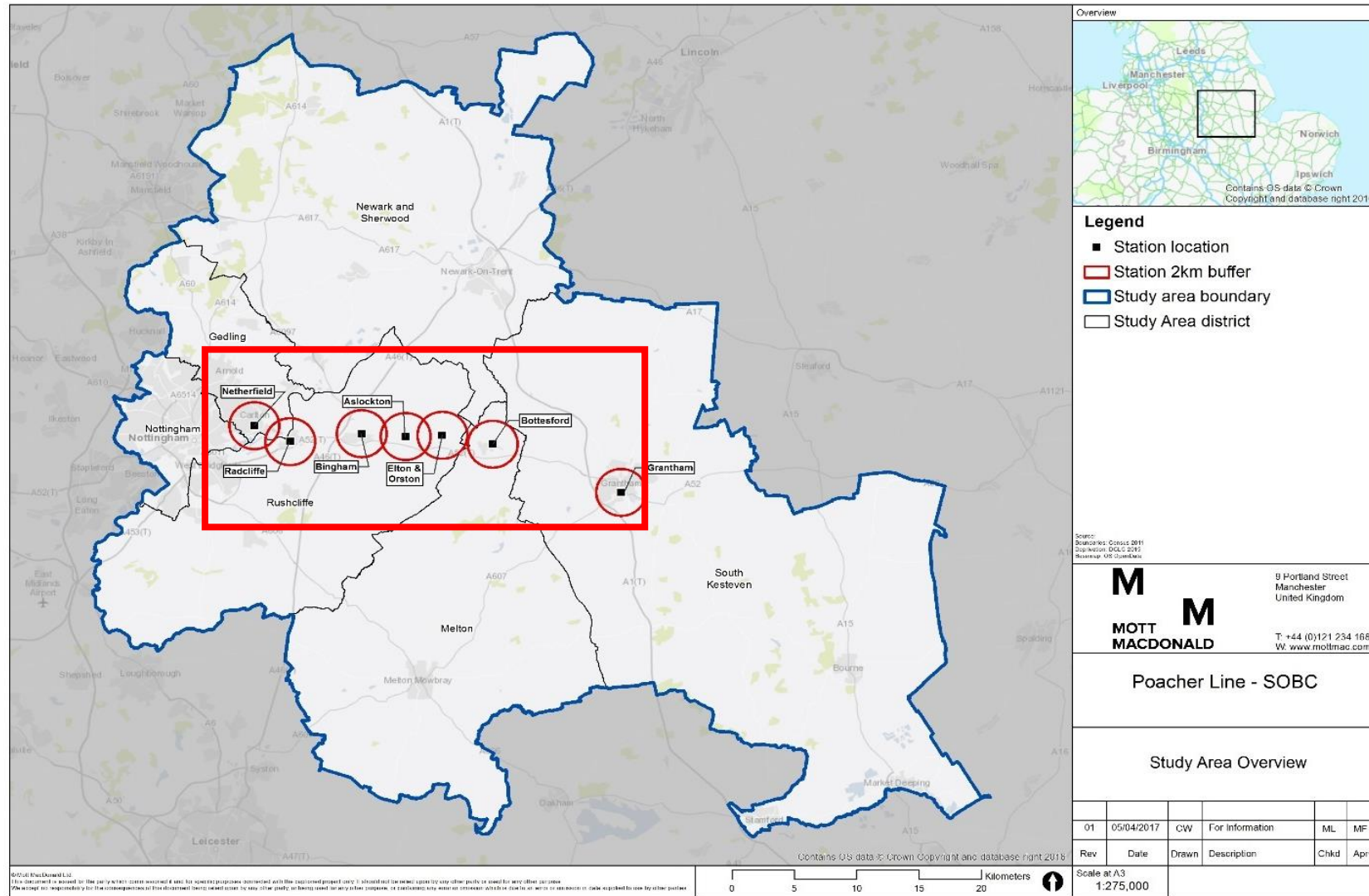
The area covered by this Business Case is shown in Figure 1. The stations on the line are located in the Council areas of Gedling, Rushcliffe and Melton (in Leicestershire).

The section of the Poacher Line being considered has, according to local elected representatives and stakeholders, long suffered from an inadequate frequency of service and elongated journey times due to infrastructure issues. With the planned growth in housing and employment along the study area, discussed in the developing Local Plans, the need for a more frequent service will become even more pressing. The infrequent service limits the capacity of the Poacher Line's communities to sustainably access jobs and opportunities in Nottingham and beyond. The poor level of service appears particularly unfavourable when compared to the better-connected Nottingham commuter belt to the west of the city.

Providing a service that neither caters for existing or new users means potential train commuters and other rail users are forced to use the already congested highway network – and particularly the A52 – which suffers from significant congestion on the approach to Nottingham and resulting air quality problems. As a result, commuters at present discount the option of train travel due to the less than desired quality of service available; the Poacher Line is not seen as a viable commuter line by its working community.

There is a latent and growing market for better train services and for supporting infrastructure along the length of the Line. The value of meeting the requirements of this market are considered in this business case. This SOBC considers the aspirations and objectives for the Poacher Line and its communities, examines how the poor level of service may hinder these from being realised, and explores options for presenting a fully evidenced case for a preferred investment option made up of service and infrastructure improvements.

Figure 1: Poacher Line SOBC Study Area – Overview



Source: Mott MacDonald

2.2 Strategic Economic, Transport and Development Goals for the Region

The primary economic hub for the Poacher Line is Nottingham, a designated Core City and Science City¹, and the economy of Greater Nottingham is based on the science and knowledge sectors. The strategic economic, transport and development goals of key organisations at the regional, county and district levels are summarised below.

2.2.1 The Region

The specialised economy of Nottingham and its surrounding communities is an important aspect of the Midlands Engine, helping to drive forward the objectives of improving connectivity to raise productivity, strengthening skills, supporting enterprise and innovation, and enhancing quality of life.² Its links to other regional nodes are being enhanced through Midlands Connect, an initiative aiming to improve connectivity to access growth and power the Midlands Engine. Central to Midlands Connect is the transformational power of High Speed 2 (HS2). It will provide the region's businesses and employees with greater and faster access to the rest of the UK³.

Regionally, the focus for rail is on Midlands Connect and HS2, but both these transformational initiatives require local rail services to provide enhanced connectivity. The East Midlands Rail (EMT) refranchising process will help to deliver the Midlands Connect objectives and also enhanced local rail services. The Draft Prospectus for the EMT Franchise states that the strategic objective for the new franchisee must be to "drive economic growth in the East Midlands by increasing connectivity, consistent with both the Midlands Engine and Midlands Connect initiatives."

The value of rail to support economic development is widely acknowledged. Its power to unlock sustainable growth through access to employment and supporting the sustainability of new developments means that it is strategically important to the region, and on a local as well as regional level.

The D2N2 (The Local Enterprise Partnership for Derby, Derbyshire, Nottingham and Nottinghamshire) Strategic Economic Plan has an aim for the region to become the best-connected place in the country, and for all of its communities to be able to contribute to growth and prosperity, regardless of their location. For this, it requires both local and regional transport to provide excellent connectivity. The Local Enterprise Partnerships (LEPs) of Lincolnshire and Leicestershire have similar aspirations to improve connectivity.

For the Poacher Line communities and commuters to access the anticipated opportunities brought by Midlands Connect and HS2, the EMT Re-franchise and the strategic goals described in the following sections, they need a rail service that meets their aspirations for enhanced connectivity.

2.2.2 The Counties served by the Poacher Line

2.2.2.1 Nottinghamshire

Nottinghamshire aspires to become a better place to live, work and visit. A place where vibrant and active communities can flourish and a place where public services help and improve people's lives. Nottinghamshire County Council's Strategic Plan 2014 - 2018 lists five key

¹ Rushcliffe Core Strategy, 2014

² Midlands Engine Strategy, 2017

³ Midlands Connect Strategy, 2017

strategic priorities in achieving its vision. Of these, three priorities have been identified to be of relevance to the Poacher Line scheme:

1. Supporting safe and thriving communities
2. Protecting the environment
3. Supporting economic growth and employment

Ensuring that Nottinghamshire thrives is an objective that underpins all the County Council's strategic priorities. The efficient transport of goods and people has been identified as crucial to the county's development and growth. The strategy seeks to manage the increasing demands on the road network whilst also improving connectivity to ensure communities can travel in a sustainable, safe and healthy way.

The natural environment and the countryside is a valued asset in Nottinghamshire. The Strategic Plan places importance on the protection and management of the environment. In meeting the second strategic priority, the county aims to minimise the impacts of the transport system on people's lives and seeks out opportunities that improve the environment and reduce carbon emissions.

Creating the right conditions for economic growth is an essential part of Nottinghamshire's strategic plan. The authority aspires to a county where jobs are created, skills are developed and where young people have better employment prospects. Unlocking land for development, such as new employment and housing sites is principal in increasing the County's employment prospects. Delivering necessary transport and telecommunications infrastructure has a crucial role in supporting investment opportunities and existing businesses.

2.2.2.2 Leicestershire

The Leicester and Leicestershire Strategic Economic Plan looks to further the economic output of the region and create a vibrant, attractive, and distinctive place to live. A three-stage framework is delivered that gives a robust structure to delivering the County's vision:

- 'Investing in our Place' – the strategy prioritises investing in places that have the ability to unlock key development sites, improve public realm and enhance connectivity to facilitate the efficient of transport of goods.
- 'Investing in our business' – supporting the County's business is principal to stimulating economic growth. The strategy aims to deliver its business support programme, sector-based support programme, innovation support programme, support economic intelligence and deliver the low carbon programme.
- 'Investing in our people' – the strategy also looks to target the County's skills shortage and unemployment rate. Six flagship programmes are produced that look to enhance skills, education and ensure the retention of the areas workforce.

The county has ambitious growth targets to increase the number of jobs in the region. Delivering a high-quality transport network that unlocks development opportunities and reduces congestion is noted as key to facilitating growth and reducing economic risk.

2.2.2.3 Lincolnshire

Lincolnshire has a distinct economy and is a net contributor to UK GDP. The County is a major gateway to European markets and has a strong energy and agriculture economy. The Greater Lincolnshire Strategic Economic Plan 2014-2030 seeks to build on the productivity of the region and further create new commercial and employment opportunities for its residents and businesses.

The strategy gives a strong focus to growing Lincolnshire's contribution to the UK economy and concentrating and strengthening its activities in the sectors that have the greatest impact. Thereby the top priority for the County's development is driving growth in the county's agri-food sector, advanced manufacturing and engineering sectors, low carbon economy and visitor economy.

The second priority gives precedence to Lincolnshire's emerging growth sectors. This includes the areas ports and logistics sector, particularly the activities at the Port of Immingham, and the growth in the Health and Care sector.

The third growth priority seeks to drive growth by delivering modern telecommunications and infrastructure improvements. In order to realise the County's vision, the strategy places importance on reviewing and improving the county's transport connectivity. With investment being prioritised in sustainable transport schemes to improve local transport, promote sustainability, and reduce transport's negative impact on the environment.

2.2.3 The Districts served by the Poacher Line

2.2.3.1 Gedling

The Greater Nottingham Aligned Core Strategies (GNACS) recognises Nottingham as a city of national importance and an important driver of the wider economy. The core strategy envisages Broxtowe, Gedling and the city of Nottingham becoming an area of exceptional quality of life, having a buoyant economy and being a place with a 'strong city theme'.

A number of spatial objectives are listed in the GNACS which are seen as essential to the delivery of Nottingham's vision. In reference to this scheme, four are relevant:

1. Environmentally responsible development addressing climate change
2. High quality new housing
3. Economic prosperity for all
4. Excellent transport systems and reducing the need to travel

The core strategy takes a strong focus on development and widening the economic horizons for its residents. Much of the areas development will be concentrated in the main built up area of Nottingham and make best use of the existing infrastructure. This said, the strategy does envisage the expansion of the urban area and delivery of several new neighbourhoods at Field Farm north of Stapleford, in the vicinity of the proposed HS2 station at Toton, at Teal Close, Netherfield and at the former Gedling Colliery site. These sites are assigned as places of importance for their significance in meeting housing and employment demand.

In meeting the strategic objectives, the core strategy confirms the need for new development to reduce the causes of climate change and to minimise its effects through locating development where it can be accessible by sustainable transport. Transport has a crucial role to play. Broxtowe, Gedling and Nottingham aspires to a transport system that can ensure access to jobs, leisure and services in a sustainable way, whilst also reducing the need to travel by private car.

2.2.3.2 Rushcliffe

The Rushcliffe Core Strategy (2014-2028) recognises Rushcliffe's significant role in the region and sets out ten Spatial Objectives for the lifetime of this Local Plan. Five are relevant to this SOBC:

1. Environmentally responsible development addressing climate change;
2. High quality new housing;
3. Economic prosperity for all;
4. Flourishing and vibrant town centres; and
5. Excellent transport systems and reducing the need to travel.

Rushcliffe is expecting a considerable number of new developments during the life of the Core Strategy. Ensuring these are a part of sustainable and vibrant communities, and the new and existing communities can access economic prosperity sustainably will help to deliver these five Spatial Objectives.

In addition, Rushcliffe has a Sustainable Community Strategy (2009-2026) which has been prepared by the Rushcliffe Community Partnership. Its vision is that Rushcliffe will be 'An excellent place to live, work and visit for everyone'.

2.2.3.3 Melton

The Melton Local Plan aspires to a prosperous district that has a strong employment base, attracts highly skilled industry, and can provide a good quality of life for its residents. Melton's vision is to be a place of new and established local employers that benefit from a pool of appropriately-skilled local workforce. The area will also have improved connectivity within and across the Borough, and to Nottingham and Grantham and the Borough's many villages. Melton Borough, it says, will be a desirable place to live, work in and visit, both sub-regionally and beyond.

Regenerating the local economy remains a high priority alongside securing adequate housing stock for Melton's future aspirations of the local economy. This is reflected in a number of Melton's strategic objectives and priorities:

- Improve the local economy and infrastructure
- Make existing structures and projects more accessible
- Create a safer and stronger community
- Enable and support the provision of affordable housing

Substantial development is planned for the district with at least 6,125 homes and 51ha of employment land becoming available between 2011-2036. This will be distributed with 65% in Melton Mowbray's main urban area and the remaining will be located in service centres and rural hubs (Bottesford falls under this category).

Providing the necessary infrastructure for new developments is principal to the core strategy. In tandem, new developments should support or promote the efficient and safe transport and movement of people and goods, reduce the need to travel by car and encourage the use of alternatives, such as walking, cycling, and public transport.

2.2.3.4 South Kesteven

South Kesteven's Local Plan vision is to have "A successful rural district supported by excellent social and transport infrastructure. Grantham will have developed as a key economic centre not only in Lincolnshire but also sub regionally". All of this will have been achieved in ways which ensures a good quality of life, health and well-being for everyone, as well as celebrating the distinctiveness of the District's countryside and heritage.

Strengthening the function of South Kesteven's largest urban areas is a high priority in boosting the economic performance of the District. In realising South Kesteven's vision several strategic objectives are produced to guide meaningful development. The following strategic objectives are of relevance to the Poacher line SOBC:

- Objective 1 - To facilitate a pattern of development that meets the diverse economic, social and cultural needs of the whole community and contributes to the environment in a way which ensures that development does not compromise the quality of life of future or existing generations.
- Objective 3 - To make effective use of land by maximising the amount of development on suitable previously developed sites and on sites in locations which reduce the need to travel.
- Objective 4 - To improve accessibility to jobs, houses and services, and to reduce traffic growth, by ensuring choice to use public transport, walk or cycle, for as many journeys as possible.
- Objective 6 - To promote and strengthen the role of Grantham as a Sub-Regional Centre, and properly plan and deliver the additional housing growth expected by the Grantham Growth Point and the Regional Spatial Strategy.

Much of South Kesteven's development goals focus around strengthening the function of its main urban area (Grantham) and consolidating its status as a sub-regional centre. The town has been identified as a new growth point within Lincolnshire. A significant part of the growth plan is the urban extension site H2A North West Quadrant. This consists of a large-scale housing site south of the Nottingham Rail Line (Poacher Line). This area represents a significant urban development, with the potential for 4000 new homes.

The role of transport is noted as playing a substantial role in realising Grantham's growth plans. The core strategy seeks a sustainable integrated transport system that supports and promotes the location of development in areas accessible by public transport and active modes. Focus is also given to reducing the need to travel by the car and making more sustainable modes as safe, convenient and attractive as possible.

The Region's Key Strengths and Aspirations

- The Study Area within the region is generally prosperous, and benefits from its proximity to Nottingham, and its science and knowledge-based industries.
- New investment through Midlands Connect and HS2 should bring greater access to opportunities to the region's population.
- The region's Districts and Counties are committed to sustainable development, economic growth, access to economic opportunities and effective, sustainable infrastructure.
- Many of the communities are expecting new housing and employment sites, which could bring new working-age populations, vibrancy and economic activity to their towns.

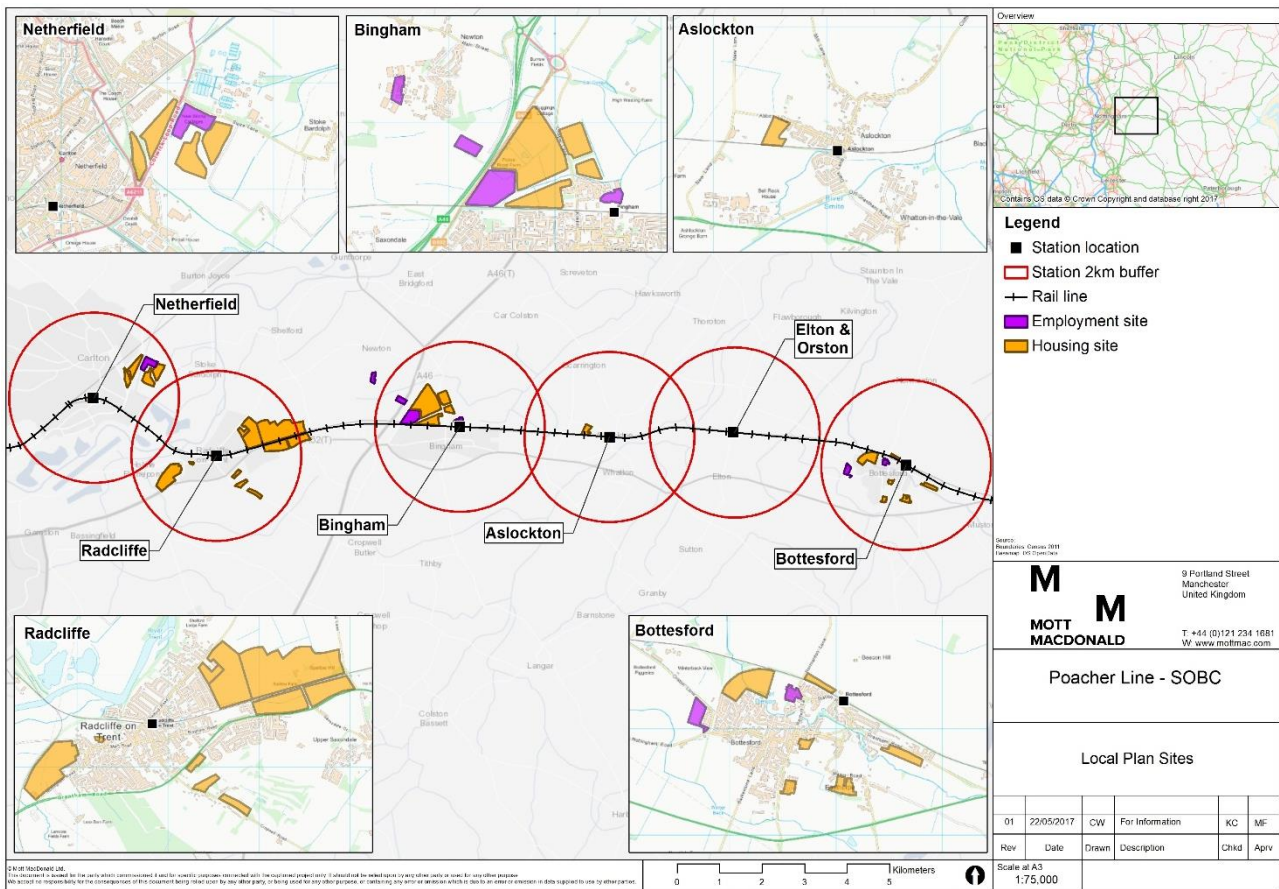
What does this mean for the Poacher Line?

- Midlands Connect and HS2, and the East Midlands Trains Franchise plans all require good local rail connections; the Poacher Line with its current level of service is unable to deliver this.
- Upgrades to the Poacher Line service can help the LEPs and three Counties achieve their goals of enabling all communities to access economic prosperity.
- All the County Councils and Districts have objectives to ensure new developments are sustainable, the environment is protected and local economies grow and thrive. With its current level of service, the Poacher Line is unable to help deliver these objectives.

2.3 Individual Community Aspirations for their Development

Each community along the Poacher Line has aspirations for how their futures can be positively impacted by the line and its potential improvement. These aspirations are, in part, influenced by the planned and proposed growth of the communities, as shown in Figure 2.

Figure 2: Planned and Proposed Development along the Poacher Line



Source: Mott MacDonald

The development of this Strategic Outline Business Case has included stakeholder engagement sessions with local communities. The opinions and evidence presented by these stakeholders has been used to inform this report.

2.3.1.1 Netherfield

Netherfield has a markedly different socio-economic profile to the rest of the study area, with areas of deprivation (shown in detail in Section 3.6).

Netherfield’s Locality Plan recognises that it suffers from deprivation, and has a series of commitments around wider socio-economic initiatives. It states that there are three transformational projects for the town, two of which are transport-based and one of which is “Trains stopping every hour at both stations”.

Netherfield’s Locality Manager recognises the importance of improvements to Netherfield station to help unlock regeneration of the town and enable its residents to access employment opportunities in Nottingham city centre and other employment hubs in the area. The Locality Manager also recognises that the planned growth north of the station (see Figure 2) and the need to provide for the new residents helping to regenerate the area increases the need for improvements at Netherfield station.

2.3.1.2 Radcliffe on Trent

Radcliffe on Trent Parish Council is in the process of developing a Neighbourhood Plan. The draft states that 'Rail services from the village are... substandard, both in quality and frequency.' It also asserts that 'Access to the eastbound platform for people with physical disabilities is poor and the waiting facilities on both platforms need to be improved. The station car park is in need of major investment to create a modern, secure and attractive facility.' The Parish Council believe that improvements to the level of service, infrastructure and accessibility of the station will help support the village's role in Rushcliffe's growth corridor. They support improvements and expansion to the existing parking provision at the station.

2.3.1.3 Bingham

Bingham is earmarked for significant development compared to its current size, both within and near to the town. Its Town Council are aware of the need for the station to have a better frequency of service and associated infrastructure. They are particularly concerned to ensure the station is more accessible to designated development sites, and have previously been in negotiations with a potential supermarket store to upgrade accessibility at the station (but the company chose not to progress with their planned development). There is a lack of parking to accommodate P&R at the station.

2.3.1.4 Aslockton

Aslockton is a unique community made up of residential areas and a large prison facility; residents at the prison make up 40% of the community population as recorded in the census. Aslockton's Parish Council aims to preserve the current village size and feel without encouraging new development. They have made an explicit request for their station not to benefit from service improvements due to concerns regarding supporting future development aspirations. However, this Strategic Outline Business Case has considered potential service improvements for the purposes of appraisal (see Chapter 4) and they have been considered in a sensitivity test (see Section 4.3.2). Rushcliffe Borough Council support the improvement of service for all stations along the Poacher line between Nottingham and Grantham which supports the growth, development and vitality of communities along the line.

2.3.1.5 Elton and Orston

The smallest of the communities along the line, Elton and Orston is not identified for any development within its 2km buffer (as shown above in Figure 2).

2.3.1.6 Bottesford

Bottesford is the only community along the line not located within Nottinghamshire; it is located in Leicestershire. It is earmarked for a number of relatively small developments (though some are significant in size for the village itself) and its Parish Council have expressed a clear desire to enhance the Poacher Line with service improvements for the benefit of its community.

The Role Stakeholders and Strategies Believe Rail Can Play in Supporting These Communities

- Improvements to the level of service along the Poacher Line can unlock regeneration, provide for sustainable development, and provide access to jobs and opportunities for its commuters.
- Improvements to the facilities at the stations, particularly additional car parking, can ensure that all current and future residents of the communities are able to sustainably access an improved service.
- A more attractive and viable rail service will help to ensure planned developments are sustainable, accessible, and that the new and existing residents will consider rail as a mode of travel to work, leisure, and other activities.

What does this mean for the Poacher Line?

- Upgrades to the Poacher Line at Netherfield are one of three transformational projects in its Locality Plan.
- Radcliffe on Trent Parish Council want improvements to the level of service, infrastructure and accessibility of their station to help support the village's role in Rushcliffe's growth corridor,
- Bingham and Bottesford also feel they need accessibility and service improvements, particularly given planned development, and Bingham requires additional parking.
- Elton & Orston do not have any planned developments within their station catchments and are the smallest communities along the line. Aslockton Parish Council does not want significant service improvements.

2.3.2 Objectives for the Poacher Line SOBC

In considering the strategic policy context for the Poacher Line, the aspirations of the communities on the line, and the views expressed to the study team the following four objectives have been set for the purposes of appraisal:

Business Case Objectives:

1. Support the growth, development and vitality of communities along the Poacher Line;
2. Support the regeneration of Netherfield;
3. Enable commuters and leisure travellers to choose rail travel over car travel;
4. Make the case for the efficient, cost-effective and practicable delivery of a preferred option for this section of the Poacher Line.

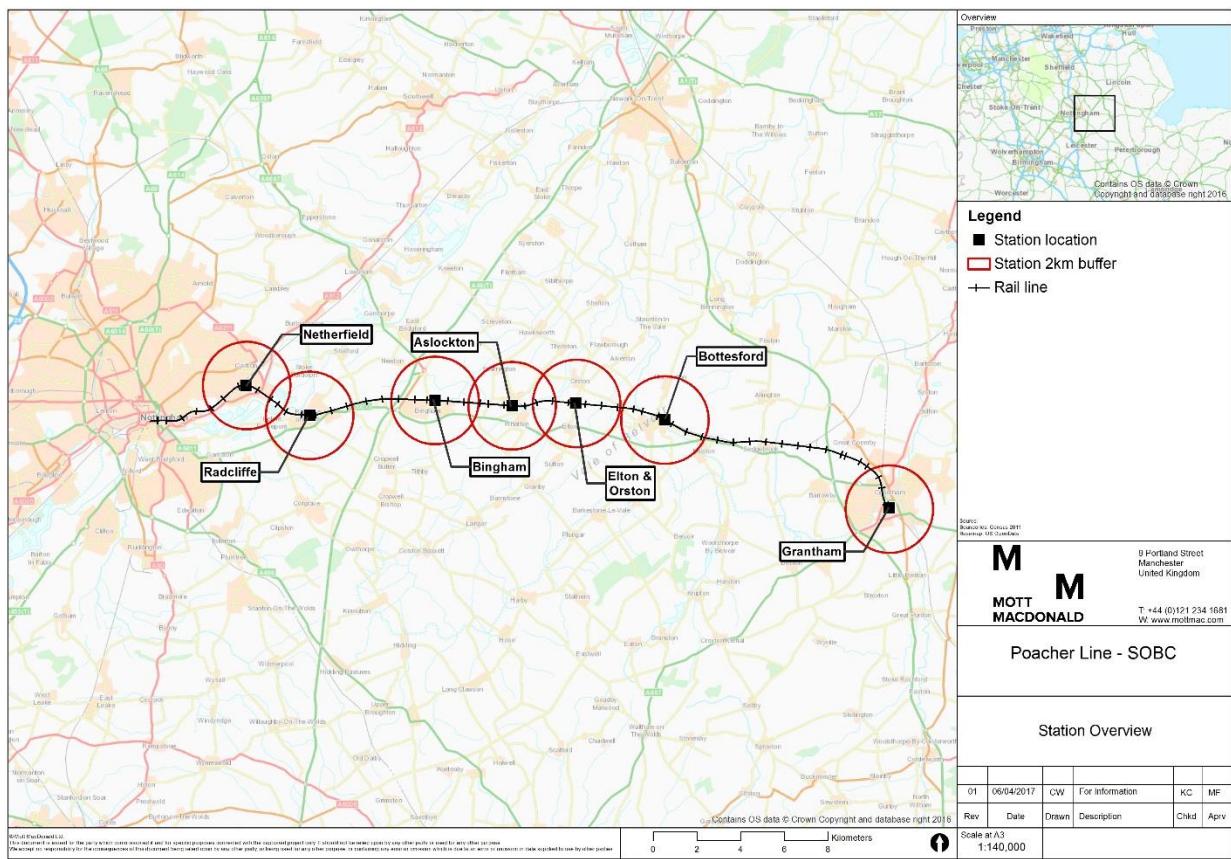
3 Strategic Case – Issues and Opportunities

3.1 Introduction – Understanding the Line and its Communities

The strategic issues and opportunities for the Poacher Line study area (shown in Figure 3) are explained in this section, first considering current rail usage, rail issues and opportunities for the Line as a whole before considering each area in detail.

Having set out the vision of each of the Poacher Line’s communities in Section 2.3 (and particularly in relation to their planned development growth) the geographical and transport issues and opportunities for each community are then described in Section 3.5. Each of these communities are shown in Figure 3, with a 2km buffer shown around each station, used for the purposes of analysis.

Figure 3: Poacher Line SOBC Study Area – Detail



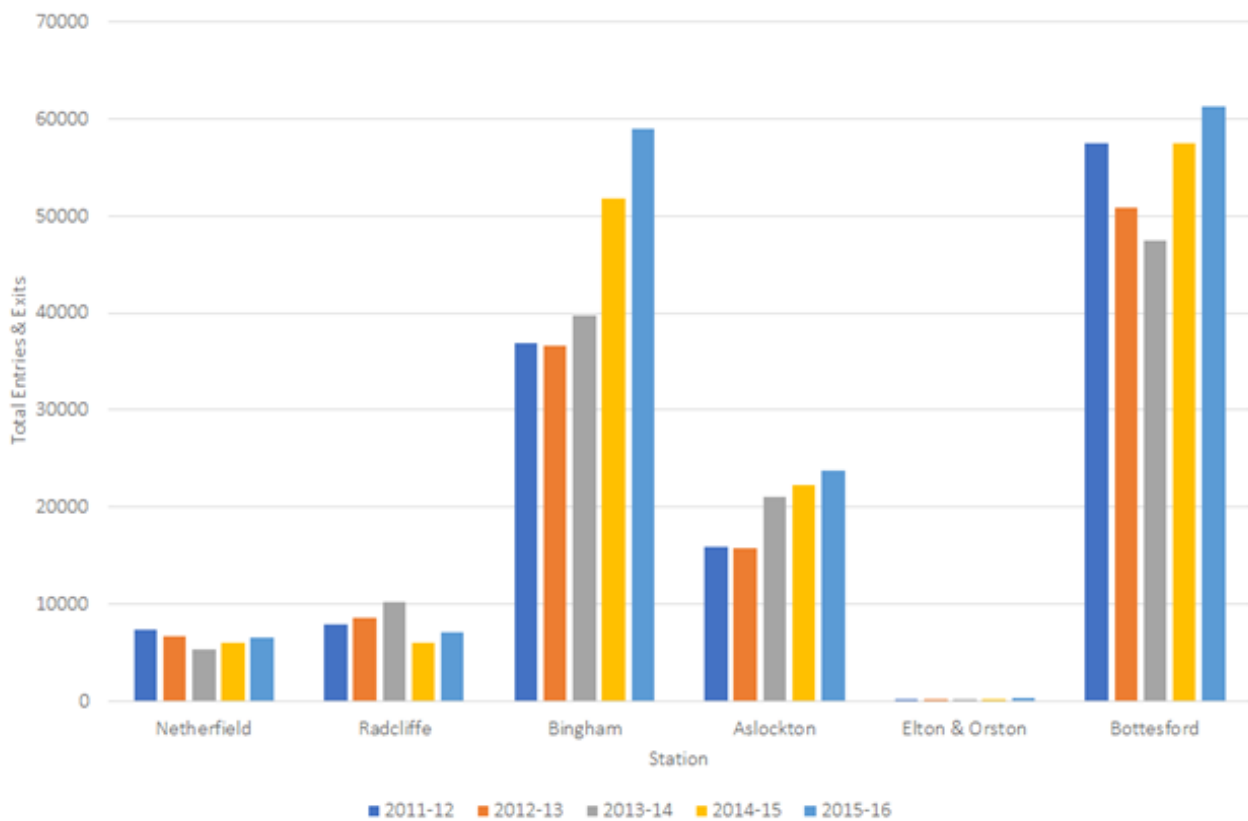
Source: Mott MacDonald

3.2 Current Rail Usage

Over the past ten years, passenger rail use has increased by 40% in the East Midlands and is expected to increase by over 100% into key East Midland cities by 2043⁴. Current and future rail usage of the Poacher Line should be considered within this context.

Total entries and exits at each of the intermediary stations are shown in Figure 4, as provided by ORR statistics and estimated from ticket sales data. It is recognised that there may be some inaccuracies within these estimates of usage due to unmanned stations and/or crowded services, which means that the true origin and destination stations of travellers may not be captured and/or there may be a significant volume of ticketless travel. Independent passenger boarding and alighting counts would help to verify these existing estimates from which subsequent demand forecasts pivot. Bottesford is the most well used station, while Bingham and Aslockton have both seen significant growth post 2012/13.

Figure 4: Annual Entries and Exits by Station⁵



Source: Office for Rail & Road (ORR) Station Usage Statistics. Raw source is LENNON ticket sales data.

Table 1 shows the existing travel-to-work (t-t-w) by station, covering 2011 Census Middle Super Output Areas (MSOAs) within 2km of the intermediary stations and 1km of the city centre stations. Whilst Bottesford to Nottingham, followed by Aslockton to Nottingham, are the largest individual commuting flows, the volume of demand to other locations implies either:

⁴ East Midlands Franchise Prospectus, 2014

⁵ The community representatives of Radcliffe on Trent, in particular, are keen to point out that they believe the Radcliffe on Trent rail usage figures are an underestimate. This is because there is no ticket machine at the station, and thus people will be travelling without purchasing a ticket from Radcliffe on Trent, thus depressing the figures.

- Significant railheading to other stations, evidenced by the relatively high use of rail by Radcliffe on Trent residents which is not evidenced in the ORR usage statistics, or the use of Carlton Station by residents in the Netherfield catchment;
- Travel to a dispersed set of rail accessible destinations, rather than a focus on the three main East Midlands centres; and/or
- Travel to destinations beyond 1km of the major centres, potentially involving the use of onward public transport modes such as bus or Nottingham Express Transit (NET).

Table 1: Travel-to-Work by Rail (average daily commute trips)

Station	Nottingham City Centre	Derby City Centre	Leicester City Centre	Other Location
Aslockton/Elton and Orston	21	1	0	22
Bingham	6	6	1	36
Bottesford	34	1	7	87
Netherfield	11	11	6	65
Radcliffe on Trent	2	2	1	56
TOTAL	74	21	15	266

Source: ONS 2011 Census

Section 3.4 contains further analysis of 2011 Census t-t-w demand. This shows that, as with the majority of other communities, total commuting falls rapidly with distance and associated increases in travel times and costs, but that:

- Rail demand increases with distance up to a band of 10 to 20 miles, as evidenced by Bottesford to Nottingham being the largest flow on this section of the Poacher Line, and Bingham to Derby commuting numbers being as large as Bingham to Nottingham; and
- Correspondingly, rail mode share increases markedly as total demand falls and rail demand increases. Figure 5 shows the relatively high mode share for rail, especially when compared to level of service offered, for commuting into Nottingham by Bottesford residents.

Figure 5: Rail Mode Share for Travel-to-Work by Bottesford Residents (rail accessible locations only)



Source: ONS 2001 Census

3.3 Strategic Rail Issues and Opportunities on the Poacher Line

Strategic rail issues are well-recognised at the local, county, and regional levels. The D2N2 Strategic Economic Plan, for example, states that “*The rail network is not playing a sufficient role in catering for travel needs in the area, with limited network penetration, low frequencies and relatively long journey times between towns, resulting in high car dependence and congestion on inter-urban corridors.*” The issues for this section of the Poacher Line are described below, before setting out the opportunities.

3.3.1 Issues

3.3.1.1 Service Provision

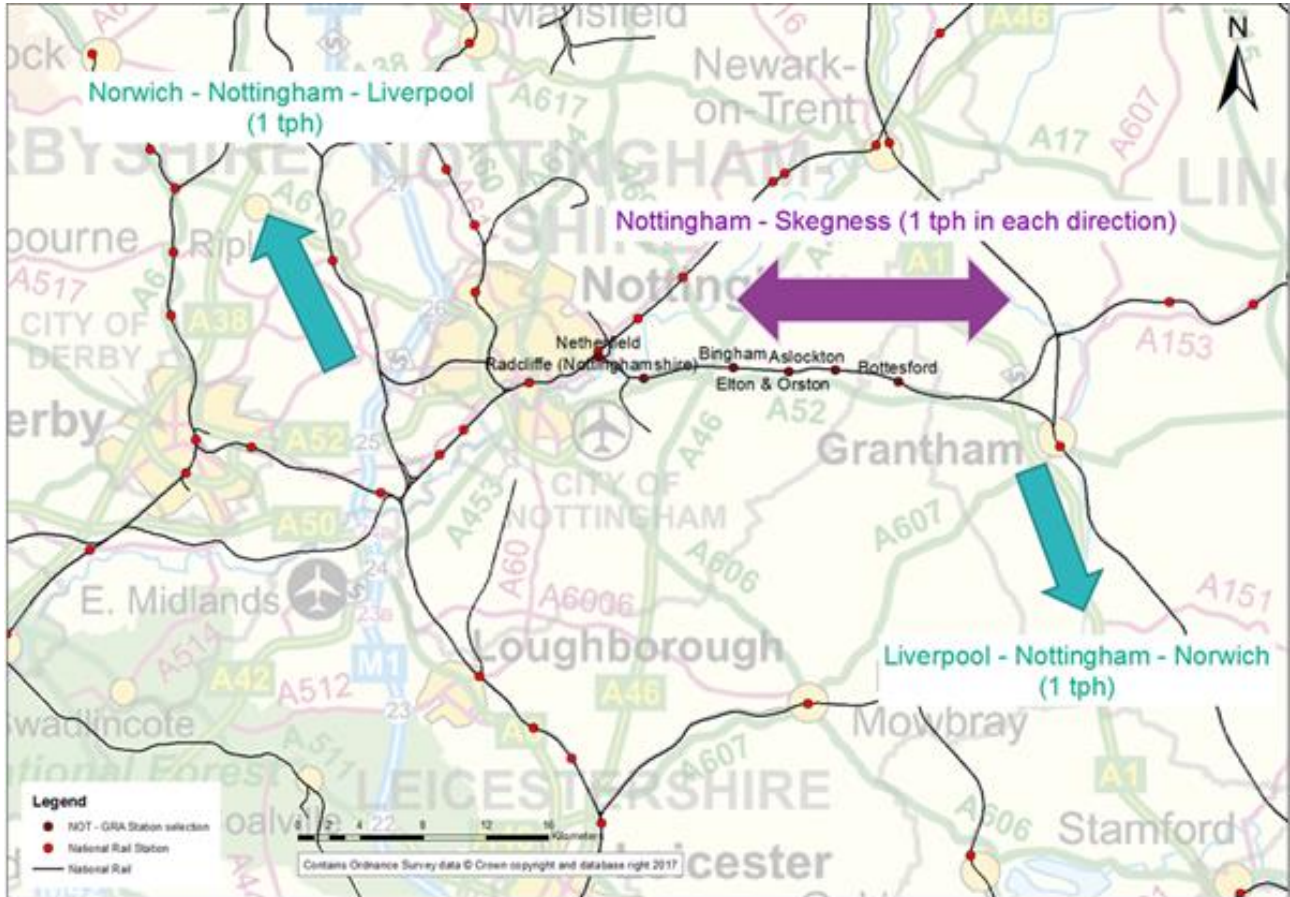
Figure 6 shows the current passenger services operating on the section of the Poacher Line between Nottingham and Grantham, excluding the hourly services between Nottingham and Newark via Carlton which diverge at Netherfield Junction to the west of Netherfield Station. These comprise:

- Interurban services between Liverpool/Manchester/NW England and East Anglia via Sheffield and Nottingham. These are hourly throughout the day, and provide some infill services at local stations during peak periods and additional calls at Bingham only during

other periods. It is highly likely that these services will be re-mapped [to another franchise] and/or amended as part of the EMT re-franchising; and

- Nottingham to Skegness services, providing an hourly service along the line and, as described previously, limited calls at stations other than Bingham coupled with a low level of service eastwards out of Nottingham after 18:00. In order to cater for seasonal fluctuations in demand, these services are often strengthened or extended to Derby during summer holidays.

Figure 6: Nottingham-Grantham Rail Services



Source: Mott MacDonald

Sunday services are restricted to limited calls to 5 trains per day (tpd) in each direction at Bingham. The availability of first and last trains to meet commuter and leisure demand varies between the stations, as indicated in Table 2.

Table 2: First and Last Weekday Trains to/from Nottingham for the Poacher Line Study Area Stations

	Netherfield	Radcliffe on Trent	Bingham	Aslockton	Elton & Orston	Bottesford
First train of the day departs	07.42	06.39	06.33	06.29	06.25	06.21
Last train of the day arrives	17.50	21.01	21.06	21.11	17.10	21.17

Source: National Rail Enquiries

The timetabling of the weekday services varies as explained in the next sub-section. It is also clear that the timetabling for the Poacher Line to the east of Nottingham is significantly worse than that available to commuters and other passengers accessing the city from its western and northern sides, as shown in Table 3.

Table 3: Poacher Line Service (East of Nottingham) Compared to West and North of Nottingham Service

Line	Peak Service	Off-Peak Service	Sunday Service	Station Parking Spaces
Poacher (Nottingham – Grantham)	Hourly at all stations barring Elton & Orston	Hourly at Bingham 1 every 2/3 hours at Aslockton, Bottesford, & Radcliffe on Trent No service at Netherfield	Bingham only (5 tpd ⁶ in each direction)	Aslockton: 11 Bingham: 6 Bottesford: 13 Others: 0
Derby – Nottingham (Long Eaton, Attenborough, Beeston)	6/7 AM peak arrivals into Nottingham	Half-hourly	Hourly	Attenborough: 0 Beeston: 23 Long Eaton: 94
Nottingham – Newark (Carlton, Burton Joyce, Lowdham et al to Newark Castle)	Hourly	Hourly	4 tpd	Burton Joyce: 0 Carlton: 20 Lowdham: 0

Source: Mott MacDonald analysis of National Rail Information.

3.3.1.2 Service frequency

The number of trains stopping at many of the stations along this section of the Poacher Line has decreased since the late 1990s, principally for operational rather than demand reasons. The reduction in frequency was mirrored by a corresponding drop in passenger numbers. However, in line with the majority of the National Rail network, demand has again risen in spite of a lower level of service on offer. There has however, been a slight increase in the number of trains serving Radcliffe on Trent station since December 2016. The number has risen from 11 trains per day to 16 (mainly inter-peak infills). It is too early to see whether this has impacted on passenger numbers.

Stakeholder responses and evidence, such as from a questionnaire conducted by Radcliffe on Trent Parish Council of its villagers, suggests that many people do not use the rail service because the level of service is considered very limited. This same questionnaire reports that a significant number of people who considered themselves rail users did not use the Poacher Line for this reason.

3.3.1.3 Latent Demand from Level of Service

Over the long term, passenger numbers have generally been falling for some stations on this section of the Poacher Line. For example, Netherfield passenger figures fell from 6,938 in 2005/06 to 6,544 in 2015/16. This fall has been attributed (by Netherfield's Locality Group) to a reduction in train services stopping at the station, added to the fact that the station catchment is very well served by a frequent bus service.

In tandem, passenger figures at Radcliffe on Trent have fallen from 10,892 in 2005/06 to 7,108 in 2015/16. Again, the reduction in numbers has been attributed to a reduction in train services stopping at Radcliffe on Trent Station.

⁶ Tpd = Trains per day

Notwithstanding the above, some stations on the Poacher Line have seen some significant growth in passenger numbers over the most recent few years. For example, in Bingham a total of 59,018 passengers boarded or alighted at the station between April 2015 and March 2016, compared with 39,786 from April 2013 to March 2014. showing a growth of nearly 50% over two years. This growth has been attributed to a view that travel by rail is now the most effective means of public transport from Bingham to Nottingham: increasing road traffic congestion has made rail travel relatively more attractive compared to the private car. Bottesford and Aslockton have also seen significant growth in the last 2/3 years, in spite of the level of service on offer, indicative of both a growing demand for rail travel, as travel patterns change in response to evolving land uses, job opportunities etc., and also the relative attractiveness of rail compared to other modes which are subject to increasing road traffic congestion.

3.3.1.4 Network Capacity

Constraints on the number of services which can operate along the line are imposed by:

- Platform capacity, particularly at major stations;
- Paths available at key junctions, particularly where there are conflicts with other movements;
- Signalling which impacts on the required headways (gaps) between services for safe operation;
- Line speeds; and
- Interactions between faster interurban services and slower 'stopping' services.

In totality these affect both overall capacity for additional services and performance; concerns on the latter have driven previous service reductions, but this was prior to the rail renaissance of demand in both the East Midlands and the rest of the UK.

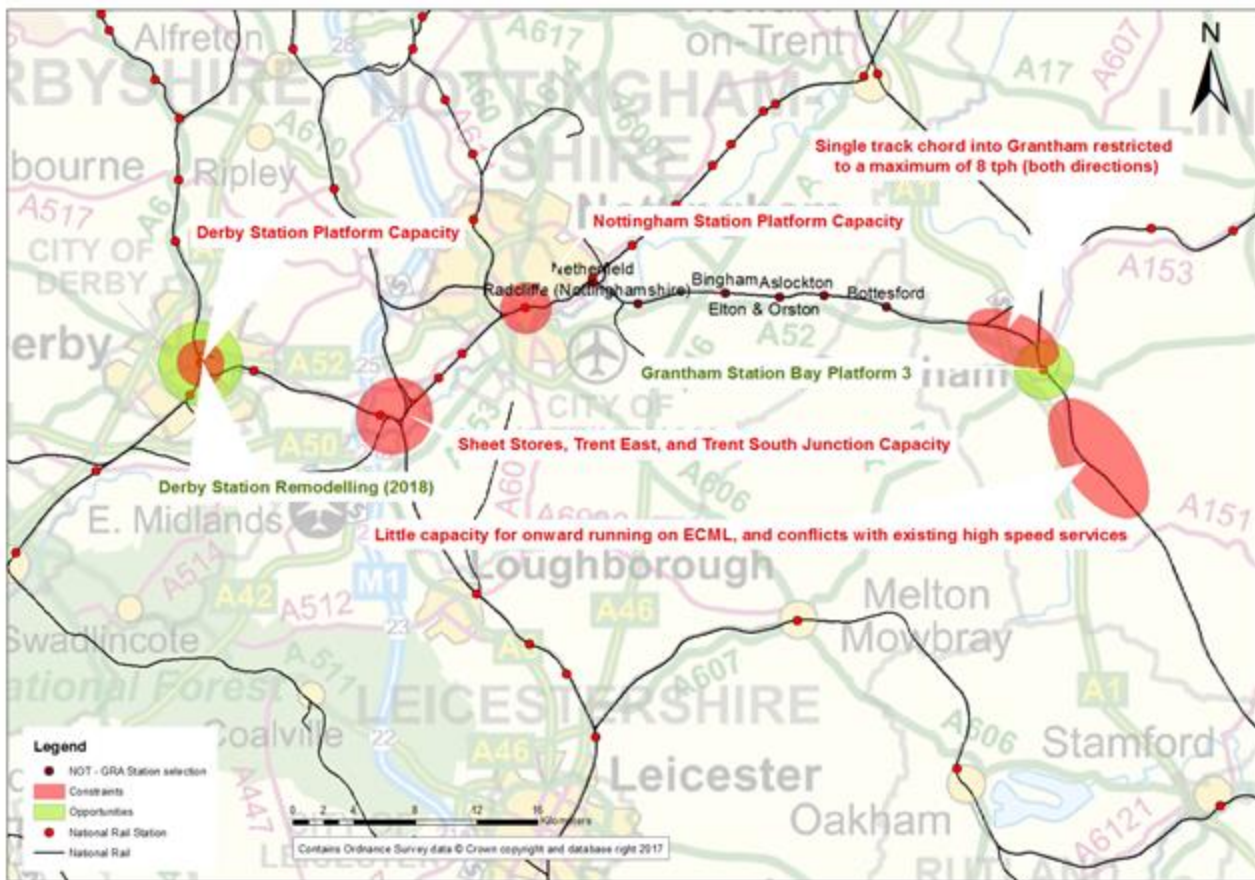
Figure 7 summarises the main issues for existing (and any proposed additional) services between Nottingham and Grantham. In addition to the constraints, there are some opportunities to help accommodate additional services, namely:

- Planned remodelling work at Derby Station during 2018, although this also presents a risk depending on whether sufficient capacity is provided to accommodate growth in local services; and
- Provision of the north facing bay platform at Grantham Station, meaning any additional services from the west could terminate there without interaction with East Coast Mainline (ECML) services.

Principal amongst the constraints is the single-track chord connecting the Poacher Line to the ECML north of Grantham. There are already at least six train paths per hour over this section during much of the week, with two Norwich-Liverpool services and the reversal of the Nottingham-Skegness services taking a further four paths. Network Rail planning rules are restrictive on pathing, and adding in an additional hourly service in each direction would take usage to eight trains per hour over the single line section, assuming the Skegness services still call at Grantham.

With a departure from Grantham and then an arrival from Nottingham there would need to be a seven-minute gap between services, meaning operation of eight paths will be 'tight' on this particular section, with little spare capacity should there be delays, especially when dealing with the manual signalling locations.

Figure 7: Derby-Grantham Capacity Constraints and Opportunities



Source: Mott MacDonald

3.3.1.5 Timetabling

Current timetabling for this section of the Poacher Line is perceived to not be optimised to suit passengers boarding and alighting at each of the stations. The Nottinghamshire Local Transport Plan states that trains “are very badly spaced, with the stopping train following shortly after the fast train. In addition, the service to most intermediate stations is insufficient and irregular.” The County Council is seeking a regular hourly service in each direction, throughout the day, at Netherfield, Radcliffe on Trent, Bingham, Aslockton and Bottesford.

In reality any additional services on the Poacher Line between Nottingham and Grantham would have to be integrated around other services, meaning that the resulting timetable would have to fit within the remaining paths once these have been established. As with the physical network itself, this will, in practice, as it already does, impose constraints on what can be offered at the intermediary stations due to factors such as:

- Platform availability for reversing services at Nottingham or Derby (or an alternative depending on potential linking with other local services to and through these major centres);
- A need to avoid conflict, and potential delays, with longer distance services;
- Pathing on the single track chord north of Grantham and the need to maintain acceptable minimum headways between services thereon; and

- A desire to preserve certain interchange opportunities at Nottingham and Grantham, e.g. for the Nottingham-Skegness services.

Whilst even interval timetables, without significant gaps during the day, are the clear aspiration, these may not always be feasible in practice due to the above considerations and interrelated network capacity issues.

It should be noted that there is a degree of seasonality to be considered by the franchisee of the Poacher Line: the current franchisee implements additional services in the summer months, supplemented by buses, to transport tourists to Skegness. This is reflective of the growth in demand for rail travel to Skegness during the summer holidays and summer weekends.

3.3.1.6 Rolling Stock Provision

In considering the aspirations of local communities to see service improvements on the Poacher Line it is important to note that:

- There are no additional units available within the current franchise to operate new services or variants of current services; and
- Additional calls on existing services, as well as imposing time disbenefits to ‘through travellers’ also risk comprising the existing paths used by these services across the network and/or the turnaround times at route termini – potentially meaning further units would again be required.

The pragmatic assumption is therefore that a new service, and additional rolling stock, will be required to meet desired outputs for the Poacher Line, with the accompanying costs that this may entail. With a significant timetable recast, there is then the possibility that efficient solutions could be found which help mitigate these additional operating costs.

3.3.1.7 Station Facilities

Along the Poacher Line, many of the stations do not have accessible means of traversing between platforms, and many do not have sufficient parking to accommodate current or future demand for Park & Ride (P&R). Where these issues have particularly been raised, they are covered in Section 3.5 as each community is analysed in turn. However, some general observations can be made:

- Accessibility for the mobility impaired, and those with buggies, is an issue at a number of the stations. It is a particular concern for the local councils at Bingham, Radcliffe on Trent and Netherfield.
- P&R using designated car parks at stations often does not match demand. A simplified viewing of Table 3 indicates that car parking is minimal, and often less than communities to the west and north of Nottingham.
- It is known that the price of parking at Nottingham and Grantham is considered to be high (£11/day), and there is an appetite amongst some Parish and Town Councils along this section of the Poacher Line to charge for parking at a more competitive rate.
- There is capacity for increased station parking at some stations along the line, notably at Radcliffe on Trent and Bingham, which are arguably natural P&R locations.
- None of the stations on this section of the Line have ticket machines or ticket offices at the station. Stakeholders have reported that this disincentivises train travel as some people may be afraid to travel without buying a ticket first.

3.3.2 Strategic Rail Opportunities

A number of opportunities within the above headings have already been identified, but there are some strategic opportunities for the Line which make the timing of this SOBC prescient.

3.3.2.1 EMT refranchise

The current East Midlands Train franchise was originally due to end in March 2018 (though the Secretary of State has powers to extend this by up to a year, and the March 2018 date has already been extended). The Department for Transport, in their East Midlands Rail Franchise Prospectus (2016) believes that *“the regional and local services in the franchise offer opportunities for development, in line with the socio-economic growth in the region”* and also strongly advocates putting the passenger first. Some of its aims for the franchise that echo the objectives of this SOBC include:

- A high-level objective *“to support the Government agenda to make the Midlands region an engine for growth, working particularly to develop connectivity within and outside the region; to focus on supporting the region’s industry and leisure economy. To improve the quality, frequency and timings of journeys on the east of the franchise network, and to seek to develop new services and connections.”*
- A commercial proposition asserting: *“in line with East Midlands Councils’ aspirations, we are keen to explore how regional and local train services could benefit from better timetabling and/or from new routes, which aim to drive growth in the East Midlands and improve travel options by connecting the passenger to communities, whether for business or leisure purposes.”*

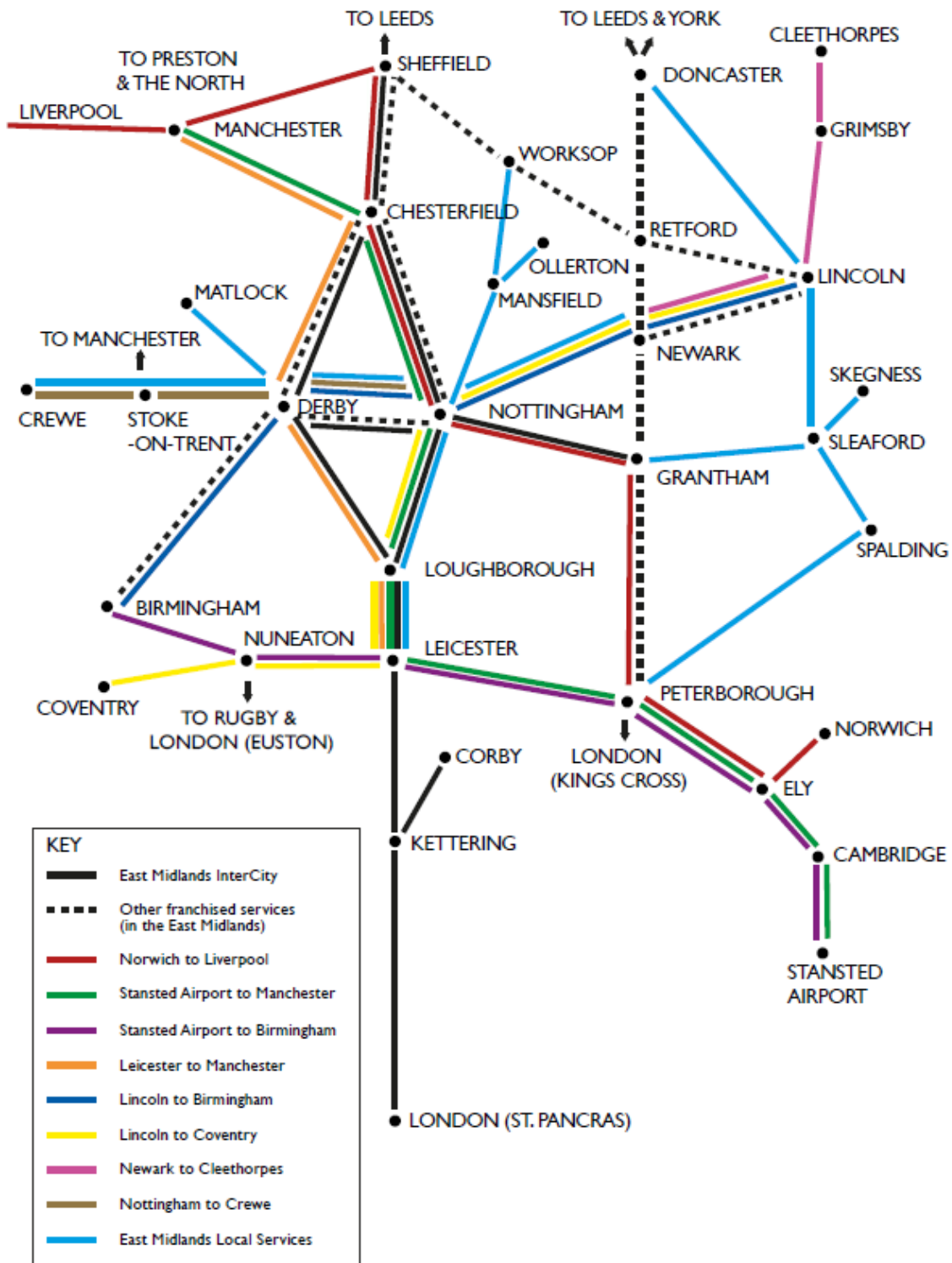
East Midlands Councils, working together to help ensure the re-franchising meets the needs of its populations and local objectives, have set four objectives for the re-franchises, one of which states *“Local services [should be] providing access for outlying communities into the key towns and Regional Hub cities of the East Midlands.”* It aims for a 7-day service serving a 7-day economy, with better spread of services at the start and end of the day. For local services, their ideal requirements are:

- “Faster than the car alternative.”
- “Services designed to serve local communities and connect into the four Regional Hubs and Intercity services.”
- “Sunday services comparable to Mon-Sat”
- “First and last services to be timed to meet current needs (min 06:00-22:00)”
- and in their service options for consideration: “Nottingham to Grantham stopping service to provide peak hour stops at all stations, and ideally throughout the day too.”

The East Midlands Council group view local, regional services as not only important for local reasons, but also in ensuring that East Midlands communities outside the major cities and towns can access growth and opportunities through linking with the wider network. Their proposed Regional Express Network is shown in Figure 8.

By providing a robust case for improvements on the Poacher Line between Nottingham and Grantham, in alignment with the aims of the re-franchising competition, this SOBC can potentially be included in the franchising conversation and decision by the DfT and franchisee.

Figure 8: East Midlands Proposed Regional Express Network

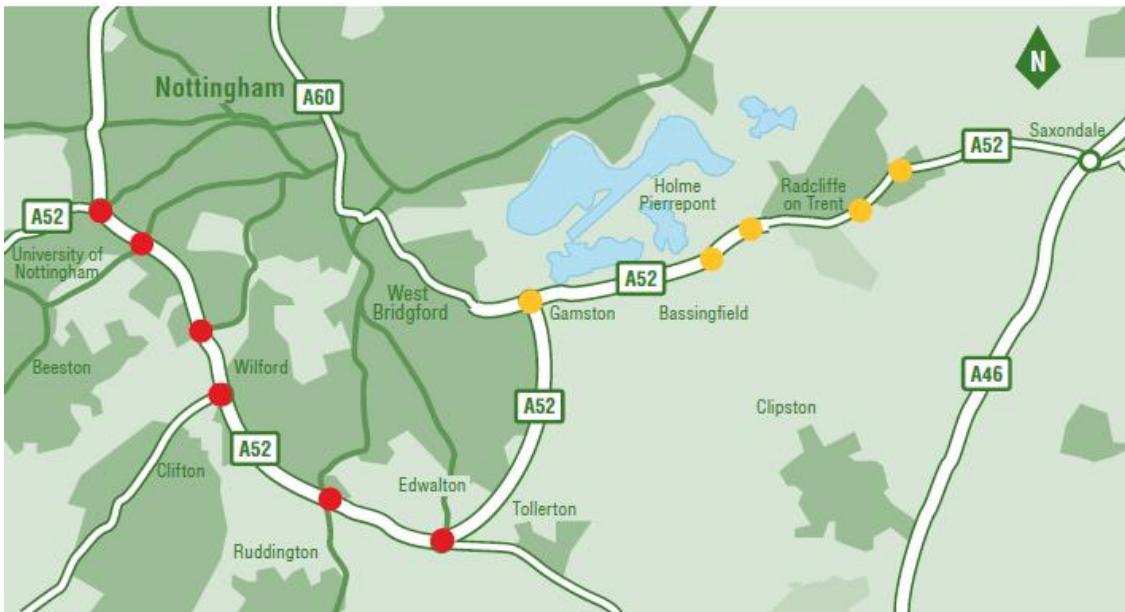


Source: A Draft Prospectus for the East Midlands Rail Franchise: East Midlands Councils

3.4 Strategic Highways Issues – the A52

Having recognised the extent of congestion problems on the A52, Highways England are constructing several junction improvement schemes (shown in yellow on Figure 9, and due to finish by the end of 2017/18). These works were included in the Government’s first Road Investment Strategy (RIS1), in response to severe congestion and delays.

Figure 9: A52 Nottingham Junctions Improvement Scheme 2017, Highways England



Source: Highways England

To understand congestion issues on the main parallel highway route, the A52(T), and thus the relative attractiveness of rail or otherwise, we extracted relevant journey time from the Highways England database, supplemented by Google journey planner information for the last legs from the A52 into the centres of Nottingham and Grantham. These are weekday AM peak (08:00 to 09:00) travel times and are centre-to-centre estimates for February 2017. The comparative rail totals in Table 4 are the onboard (in-vehicle) time only, i.e. excluding any assumptions about wait or access/egress times.

Table 4: AM Peak Travel Time

Station	To Nottingham		To Grantham	
	Car	Rail	Car	Rail
Radcliffe on Trent	19	13	32	29
Bingham	27	18 to 20	27	23
Aslockton	30	22	23	20
Elton & Orston	31	29	20	18
Bottesford	36	26	18	14

Source: Highways England and MOIRA rail planning software

Purely on onboard times rail is competitive to car in the AM peak, particularly due to the existing congestion levels on the A52(T); however, its market share is constrained by a combination of factors:

- Low frequencies, leading to longer wait times and/or scheduled arrivals and departures which do not align with the needs of local travellers;
- Elongated access/egress times, particularly for Bingham and Bottesford where the stations are not centrally located; and
- Ultimate destinations, with more dispersed workplaces or other attractions for leisure and retails being inconveniently situated relative to rail stations.

Air pollution is also a problem. Rushcliffe has two Air Quality Management Areas (AQMAs) along their commuter routes:

- AQMA 1 2005 – covering the Lady Bay Bridge/Radcliffe Road junction, Trent Bridge/Loughborough Road/Radcliffe Road junction and Wilford Lane/Loughborough Road/Melton Road junction; and
- AQMA 1 2011 – Covering several properties along the A52 and Stragglethorpe Road at the junction of the A52 and the Stragglethorpe Road, Radcliffe-on Trent.

Gedling does not have any AQMAs in the south of the Borough, but has levels of pollution along the Colwick Loop Road (A612) which are just below the threshold and are of concern.

With the Government consulting on its UK Air Quality Strategy, tackling air pollution caused by commuter traffic is a growing priority.

Strategic Rail and Highways Key Issues and Opportunities

- Regionally, passenger numbers are growing. In the study area, Bottesford is the most well used station, while Bingham and Aslockton have both seen significant growth post 2012/13.
- Bottesford to Nottingham, followed by Aslockton to Nottingham, are the largest individual commuting flows.
- The Poacher Line from Grantham into Nottingham has a much poorer level of service than comparable lines entering Nottingham from the north and west.
- The number of rail users at Poacher Line stations is likely influenced by the low level of service, with latent demand reported by stakeholders.
- Several constraints have been identified limiting the extent of service improvements that can be proposed; principal among these is the single-track section of the Poacher Line leading into Grantham.
- Accessibility and P&R facilities are key concerns for stakeholders, the latter of which could lever greater demand for the rail service.
- The East Midlands Train Re-franchise presents an opportunity for improving the Poacher Line service, and East Midlands Councils are working to ensure the franchise delivers the best possible outcomes for the region.
- The A52 suffers considerable congestion near Nottingham, and rail is competitive compared to road travel, particularly in the AM peak.

What does this mean for the Poacher Line?

- Any proposed options need to be designed within the identified constraints to service improvements.
- Bottesford, Bingham and Aslockton have seen significant recent growth and/or have the highest absolute numbers of commuters, and have a strong case for increased levels of service.
- It can be assumed that there is latent demand for rail travel, limited by poor frequency, and, in some cases, accessibility issues and inadequate P&R. These should be considered in this Strategic Outline Business Case.

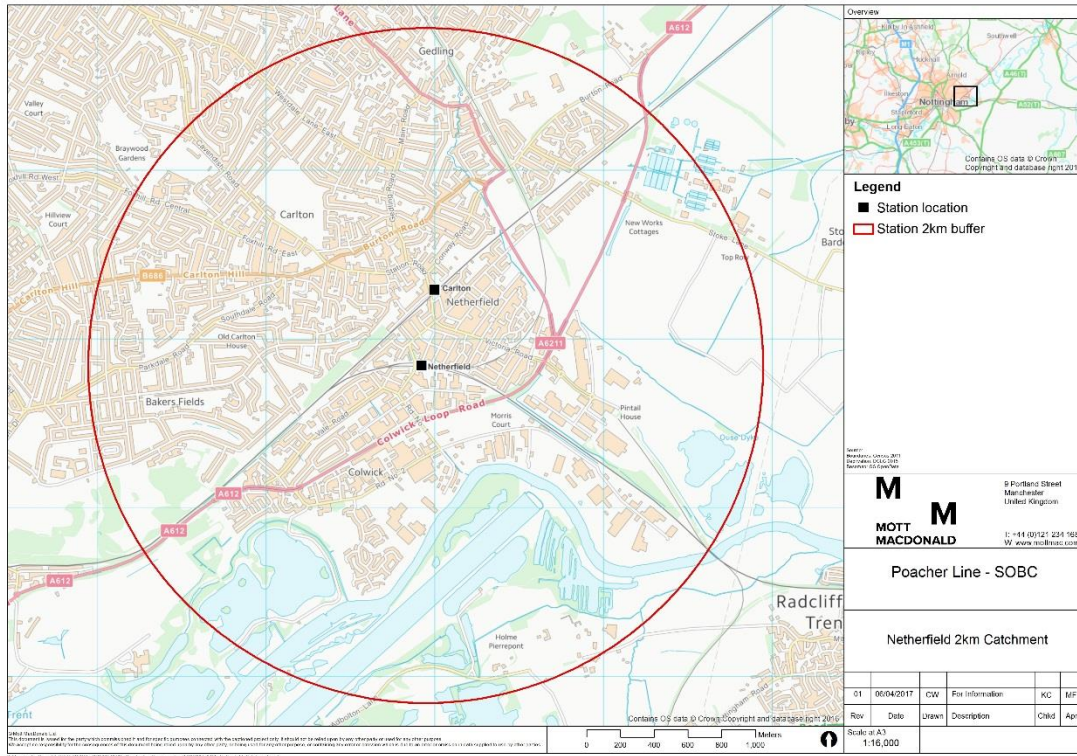
3.5 Connectivity Issues and Opportunities for the Communities along the Poacher Line

3.5.1 Understanding the Line by Community

The transport connectivity issues and facilities along the Poacher Line communities vary, across both the road and rail network. Each community will be considered in turn in the following sub-sections, running east to west based on the study area map shown in Figure 3, and considering each town or village with a station on the line. Both transport movements and facilities will be considered, focused on the 2km buffer zone used for socio-economic and rail modelling analysis in this SOBC.

3.5.2 Netherfield

Figure 10: Netherfield



Source: Mott MacDonald

Netherfield (shown in Figure 10) is a small town subsumed into the Nottingham city conurbation. Having been previously reliant on industry and a nationally significant railway depot, the town has experienced socio-economic decline since the 1960's-70's. It forms part of Gedling Borough Council's Colwick and Netherfield Ward, and is one of the top 20% most deprived communities in England. Netherfield is therefore an area of focus for Gedling Borough Council and has a Locality Plan and Coordinator focused on regeneration.

Its two stations are on different lines: Carlton is on the Nottingham to Lincoln Line, and Netherfield is on the Nottingham to Skegness via Grantham Line. Neither station is staffed. It's issues for transport are as follows:

Connectivity Issues – Transport Movements

Rail issues

- Very few stopping trains (just 7 per day on a weekday), particularly in contrast to many of the other trains on this section of the Poacher Line and in contrast to its neighbouring station, Carlton. Carlton is served hourly all day Monday-Saturday.

Highways issues

- Locally congested highways in the peak hours.
- Well served by bus network, with buses to the city centre on average every 10 minutes during weekdays.

Connectivity Issues – Transport Facilities

Rail issues

- Footbridge is not DDA compliant and restricts access to the rail network by those with mobility impairments, the infirm and people with buggies.
- Station's immediate surrounds are considered unattractive and off-putting after dark, when concerns have been raised (particularly amongst the elderly) about fear of anti-social behaviour and crime.

Highway issues

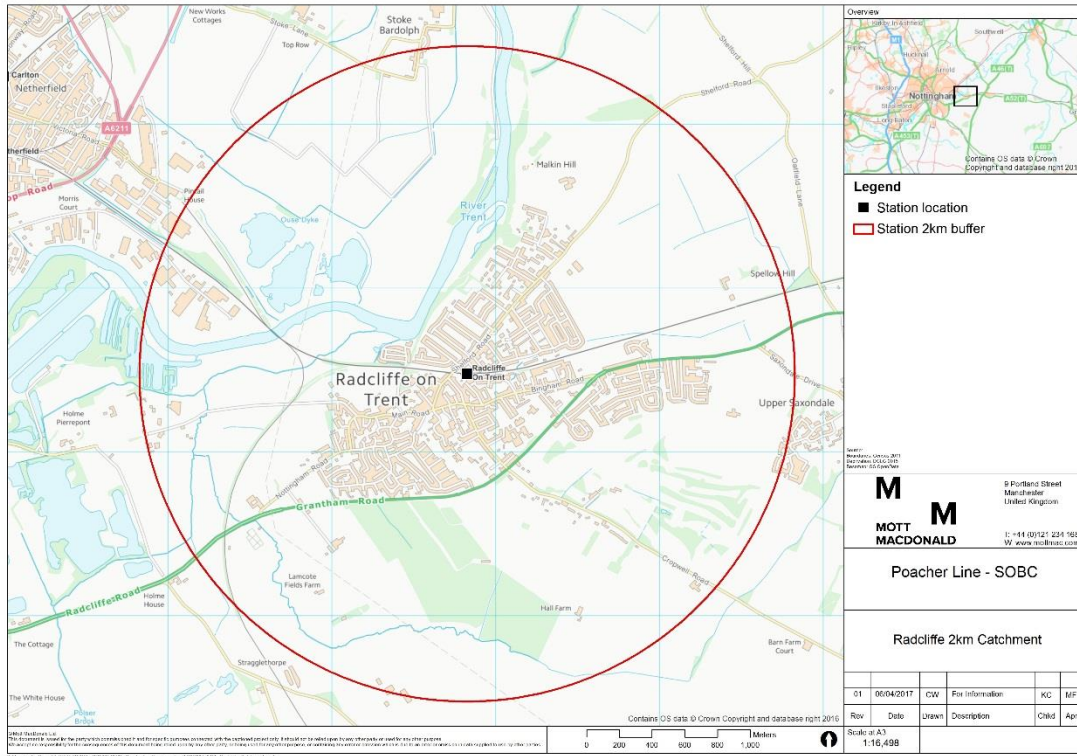
- No designated station parking available.

What does this mean for the Poacher Line?

- Any solution for Netherfield will need to consider accessibility and facilities at the fore.
- Patronage numbers are low (see Figure 4) and may be a reflection of the station's proximity to the city centre, the regular bus service, the lack of ticketing facilities, or the availability of another station just a short distance away. Given all this, it is considered more difficult to make the case for a high level of service (such as two per hour) at Netherfield than some of the other stations on the Line. However, the particular regeneration needs of Netherfield need to be considered in terms of rail's ability to support economic growth (see Chapter 2).

3.5.3 Radcliffe on Trent

Figure 11: Radcliffe on Trent



Source: Mott MacDonald

Radcliffe on Trent (shown in Figure 11) is a large village approximately 5 miles from Nottingham city centre. Radcliffe on Trent station has recently experienced an increase in train services, with the number of stopping services rising from 11 to 16.

The southern edge of Radcliffe on Trent is bordered by the A52, a trunk road running in parallel to this section of the Poacher Line. The A52 at Radcliffe on Trent suffers from air quality issues. The community is well served by bus services but these suffer from the A52 congestion, as does the private car. Radcliffe on Trent can be considered a potential natural P&R location for commuters into the city centre.

Connectivity Issues – Transport Movements

Rail issues

- Radcliffe on Trent has 16 stopping services per day, following an increase of 5 additional services at the end of 2016.
- The Local Parish Council aspires to half-hourly service in the weekday peaks, hourly all day and a later service than they currently receive (see Table 2).

Highways issues

- The A52 from Radcliffe on Trent suffers from considerable congestion in the morning peak, and particularly just west of Radcliffe on Trent at West Bridgford. Travelling by road from the Radcliffe on Trent station to Nottingham station takes approximately 14-18 minutes if setting off at 8pm on a typical weekday, but 18-35 minutes if leaving at 8am. The train journey takes 12 minutes.
- Bus services run every 10 minutes for most of the day (except Sundays). However, journey times to Nottingham city centre by bus are reported by residents to be 35 minutes in the peak hours, compared to rail journey times of 12 minutes.

Connectivity Issues – Transport Facilities

Rail issues

- There are no ticketing facilities at the station and this has been described as a disincentive to travel by the Parish Council.
- The Radcliffe on Trent Neighbourhood Plan & Community Plan noted that “Rail services from the village are substandard both in quality and frequency and are not coupled with an attractive station environment. The station has potential to provide some dedicated all-day parking for commuters. It was noted that over 75% of the population use a car or van for their daily commute compared to 65% nationally (Census 2011)”.

Highway issues

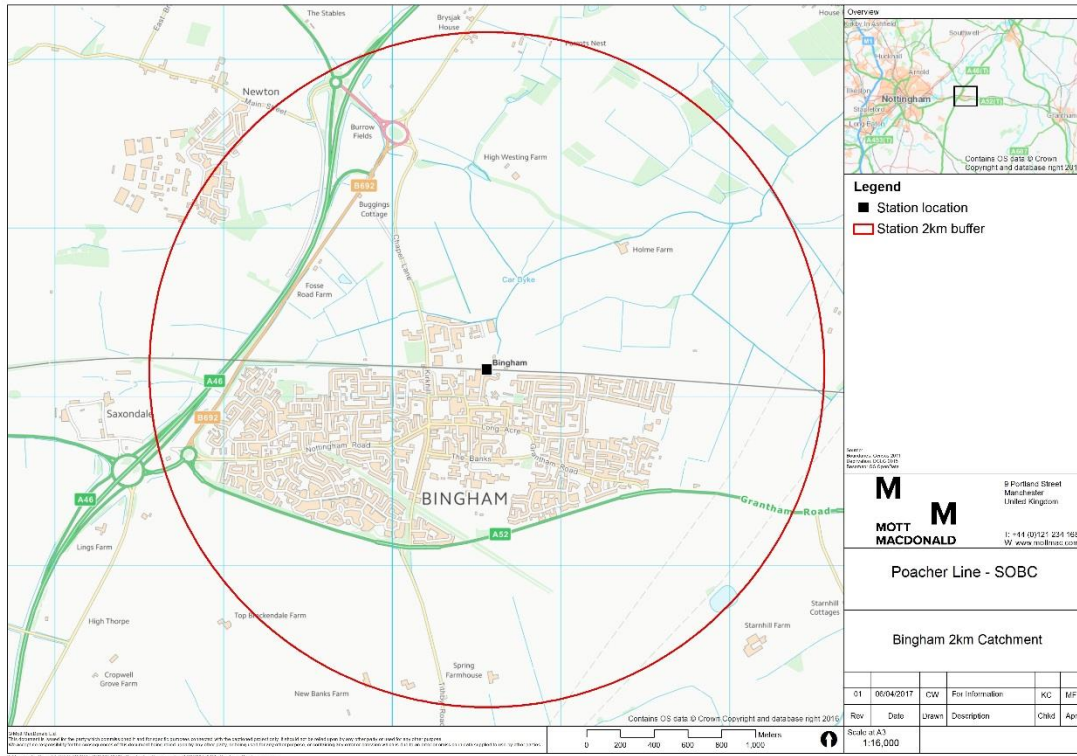
- The station at Radcliffe on Trent has informal parking to the southern side, with number of parking spaces available currently at 13. Rushcliffe Council believes this could be expanded to approximately 32, if properly marked out. The local Parish Council supports the formalisation for the car park.

What does this mean for the Poacher Line?

- Although well-served by a bus service, the peak hour delays caused by A52 congestion mean travelling by rail to Nottingham is comparatively much more attractive.
- There is capacity for additional parking at Radcliffe on Trent to accommodate the expected growth in housing (shown earlier in Figure 2).

3.5.4 Bingham

Figure 12: Bingham



Source: Mott MacDonald

Illustrated in Figure 12, Bingham is a market town nine miles east of Nottingham, situated near the junction of the A46 (the old Fosse Way) and A52. It has a many thriving businesses, a weekly market and a busy town centre. There are a number of new developments being built or planned in and around the town, shown earlier in Figure 2.

Connectivity Issues – Transport Movements

Rail issues

- Bingham has 35 stopping services per day, the highest of all the Poacher Line stations along this stretch. It is also the only station to benefit from a Sunday service.
- The level of service is not considered by its Town Council to be enough to meet latent demand, nor the demand brought by new developments near Bingham (see Figure 2). The Council are asking for half-hourly services in the peaks to make commuting by rail more viable.

Highways issues

- Bingham suffers from the impact of heavy congestion and air pollution issues on the approaches to the nearby Saxondale Roundabout (shown just to the west of the town in Figure 12). Journey times from Bingham station to Nottingham station by road are 22-28 minutes if leaving at 8pm but 24-50 minutes if leaving at 8am. The same journey by train takes 14-17 minutes.
- Highways England has recognised the problems along the A52 from Bingham to Nottingham and is constructing several junction schemes to help mitigate these. Ten years ago, the A46 between Saxondale (A52) and Newark and A52 between Wheatcroft roundabout (A606) and Saxondale (A46) were identified as having 'high daily stress (over 90%)' levels. The current junction improvement schemes respond to these problems.

Connectivity Issues – Transport Facilities

Rail issues

- The Community Led Plan for Bingham included a survey of resident, and found that 51% of respondents wanted better accessibility of the footbridge at the station, and many asked for P&R.

Highway issues

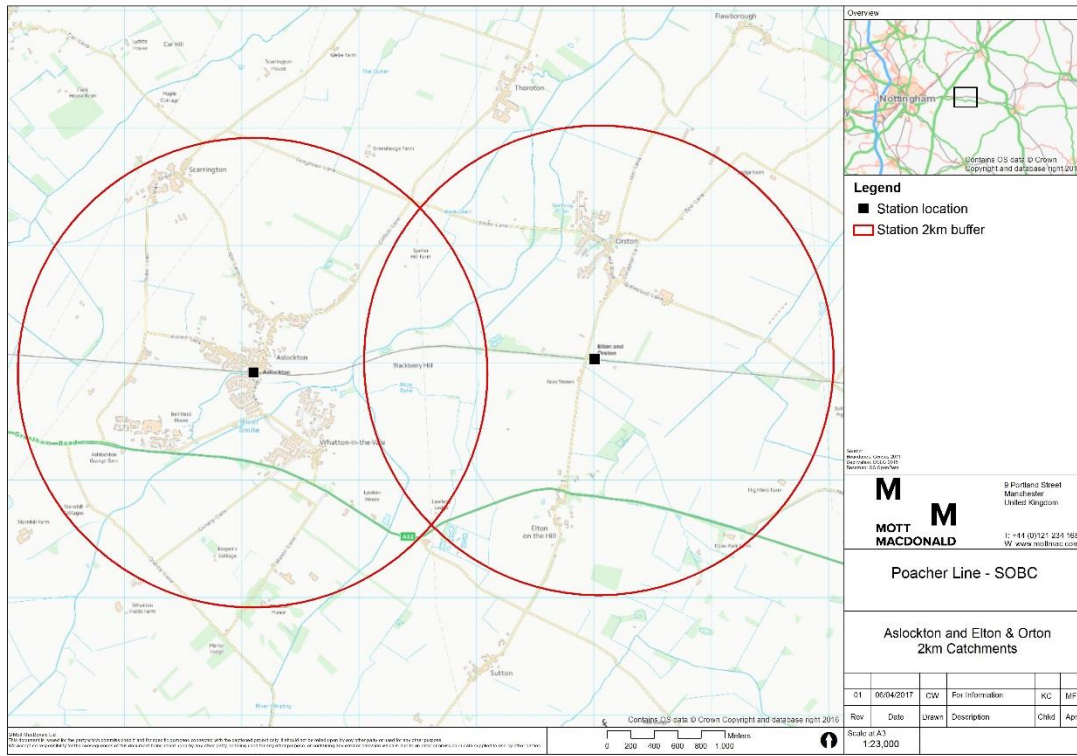
- Bingham currently has 6 parking spaces, but Rushcliffe Council believe it could accommodate considerably more, were a site to the north of the station (owned by the council) to be developed and include parking as planned.
- There is considerable on-street parking at Bingham, with the nearby streets observed to be full of cars during site visits.

What does this mean for the Poacher Line?

- Bingham is the largest settlement along the Line, with just over 9,000 residents (2011 census). It has the best level of train service but this is still considered inadequate for its needs and potential.
- There is potential for more P&R provision at this station.
- The frequent bus service compares unfavourably in terms of journey times during the peak periods, compared to rail.

3.5.5 Aslockton, and Elton & Orston

Figure 13: Aslockton, and Elton & Orston



Source: Mott MacDonald

Aslockton, Elton and Orston are the smallest settlements along this section of the Line, with a population of just over 1,000, under 300, and 450 on the 2011 census figures, respectively. Aslockton’s station is central to the village, but Elton and Orston lies between the two villages in a largely settlement-free area. Neither location has planned housing or employment sites in their Local Plan.

Aslockton is 12 miles east of Nottingham and two miles east of Bingham. Orston is 15 miles east of Nottingham and Elton 14 miles east. Aslockton has 11 parking spaces and 21 trains per day, but Elton & Orston has just a skeleton service of just one train each way each day.

The Parish Council of Aslockton have made a formal request to have no additional stopping services promoted as part of this SOBC. This is because they believe more trains would weaken their case against any existing and future requests for planning permission to build any new properties in the village. It is their belief that the local residents do not wish for any more trains, except possibly for one returning from Nottingham later in the evening than the current service, for theatre goers and others. However, Rushcliffe Borough Council support the improvement of service for all stations along the Poacher line between Nottingham and Grantham which supports the growth, development and vitality of communities along the line.

Connectivity Issues – Transport Movements

Rail issues

- Elton & Orston has just one train each way per day.
- Aslockton has one train an hour in the weekday peak and one every two/three hours in the inter-peak. Neither station has a Sunday service.

Highways issues

- While the A52 near both settlements does not suffer from high levels of congestion, journeys using this road to access Nottingham and, to a lesser extent, Grantham, will be impacted by congestion, and particularly in the peak hours.

Connectivity Issues – Transport Facilities

Rail issues

- Neither station has ticketing facilities.

Highway issues

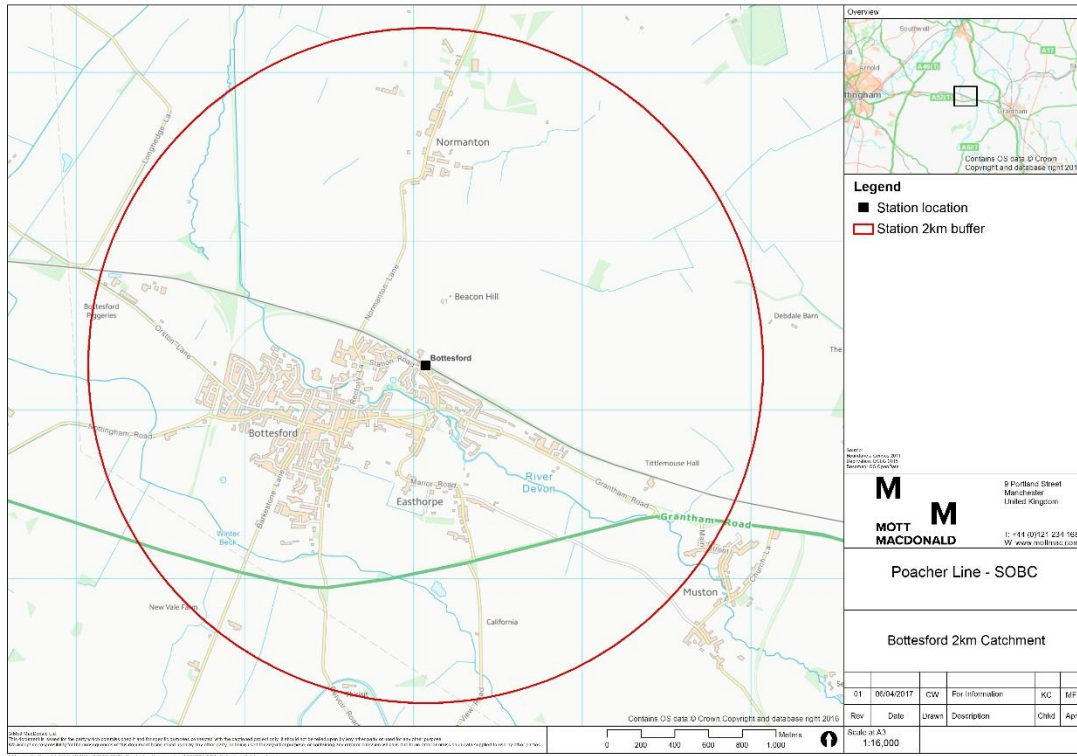
- Aslockton has 11 parking spaces and Elton & Orston has none.

What does this mean for the Poacher Line?

- With the number of people living in these settlements, and the lack of planned development, these stations may be less important for additional services than the other stations in this SOBC.
- With all three settlements over 10 miles from Nottingham however, they are natural train commuting markets.

3.5.6 Bottesford

Figure 14: Bottesford



Source: Mott MacDonald

The village of Bottesford is the only station included in this SOBC that is not in Nottinghamshire. It is in a small northern promontory of Leicestershire, sandwiched between Nottinghamshire and Lincolnshire. Located approximately 7.5 miles west of Grantham, stakeholders report that some people park and ride from Bottesford before changing at Grantham to access the east coast mainline, rather than at Grantham station itself where parking is £11/day. Stakeholders also report a considerable number of vehicles parked at the station on weekdays, and overspill parking on the grass verges.

There are 23 stopping trains a day at Bottesford on weekdays, and 13 parking spaces in the station car park.

Connectivity Issues – Transport Movements

Rail issues

- Bottesford, situated 20 miles east of Nottingham, is a natural rail commuter village for the city. However, it does not have a level of service attractive to commuters.

Highways issues

- The A52 leading into Grantham can become congested.
- It typically takes 26-25 minutes to travel to Nottingham by car if leaving on a weekday at 8pm. If leaving at 8am the same day, the journey takes 30-55 minutes. The train journey, by comparison, takes about 25 minutes.

Connectivity Issues – Transport Facilities

Rail issues

- There are no ticketing services at Bottesford.

Highway issues

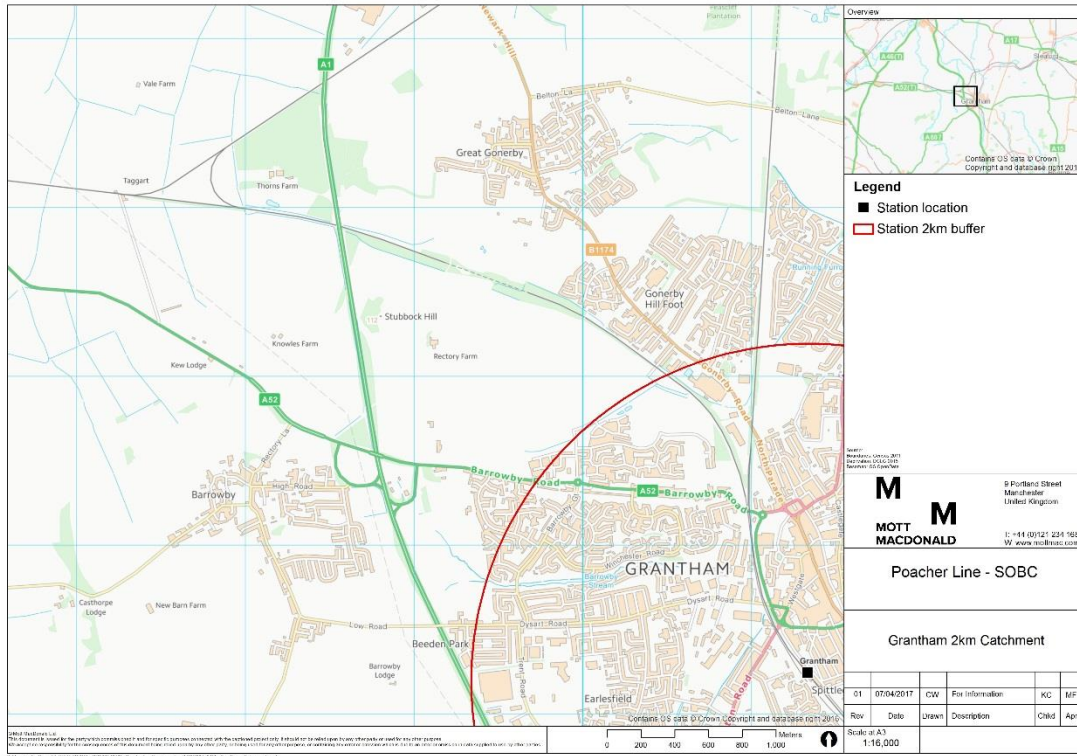
- There are 13 car parking spaces at Bottesford, but vehicles are known to park on nearby streets on weekdays.

What does this mean for the Poacher Line?

- Bottesford is a natural rail commuting market for Nottingham.
- The station could benefit from additional transport facilities.
- The local Parish Council has expressed a strong desire to have more services at Bottesford station.

3.5.7 Heading into Grantham

Figure 15: Heading into Grantham



Source: Mott MacDonald

Although Grantham station is not being considered for improvements as part of this SOBC, the physical characteristics of the track between Bottesford and Grantham are an important consideration in determining a preferred option. As previously mentioned, a section of single track leading into Grantham is constrained (due to train pathing and safety guidelines) to a maximum of eight train movements in any direction per hour. With six of these paths already in use by train services, any future improvements to the service on Poacher Line are therefore limited to one additional train to and from Grantham per hour.

Connectivity Issues – Transport Movements

Rail issues

- Single-track constraints limiting the scale of improvements to the Poacher Line between Nottingham and Grantham.
- Duelling this section of the track may be considered at the long-listing of options, but is unlikely to be financially viable in terms of cost-benefit analysis.

Highways issues

- The A52 into Grantham has a small amount of congestion in the AM peak. From Bottesford station to Grantham at 8pm on a typical weekday, the journey should take about 18 minutes. At 8am it is 18-22 minutes. The train journey takes 14 minutes.

Connectivity Issues – Transport Facilities

Not applicable

What does this mean for the Poacher Line?

- Any proposed upgrade to the Poacher Line must be considered within the constraints imposed by the single-track section leading into Grantham.

3.6 Socio-Economic Issues

3.6.1 Introduction

This section provides a socio-economic snapshot of the settlements along the Poacher line to further understand demographic and economic patterns as context for examining growth plans. The settlements, for the purpose of data collection and assessment of wider economic benefits, have been defined based on creating a 2-km buffer around each station⁷. The study area along the Poacher Line encompasses a diverse range of settlements, largely rural in nature with the exception of Netherfield, which means the economic role of each is slightly different. Here, the settlements are benchmarked against Gedling and Rushcliffe local authorities, Nottinghamshire, the East Midlands and England⁸.

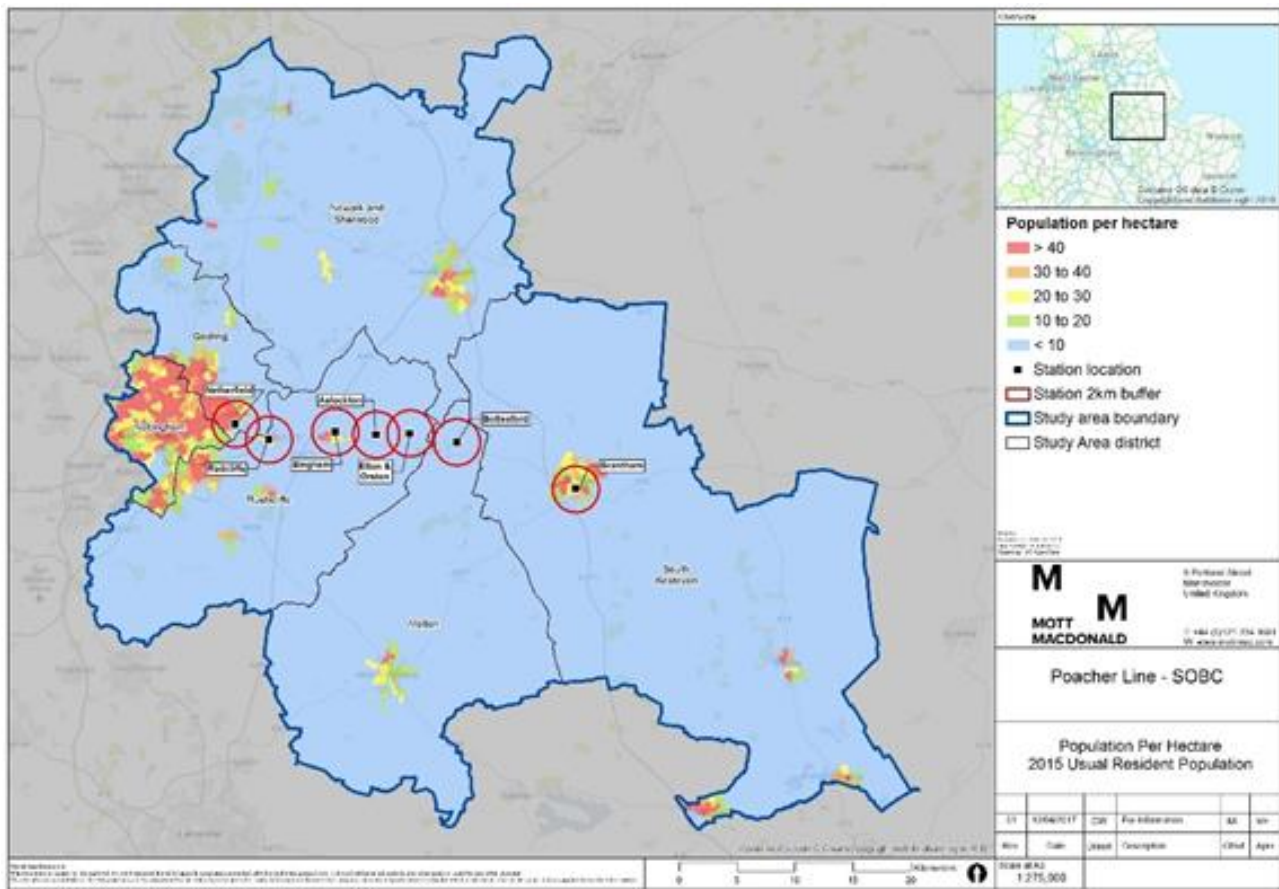
3.6.2 Population and demographics

The largest settlements along the line are Netherfield, Radcliffe on Trent and Bingham, with the remaining settlements - Aslockston, Elton & Orston and Bottesford – very rural in nature and sparsely populated. Population density in the study area is shown in Figure 16.

⁷ Due to the rural nature of the study area, population weighted LSOA centroids were used to define the LSOA's that were present in each station catchment. Any LSOA centroid that fell within the 2km buffer was considered to be part of that zone. The only exception was for the Elton and Orston catchment, where the only LSOA centroid close to the catchment zone was slightly north of the 2km boundary. This has been manually defined as the catchment for Elton and Orston station.

⁸ The settlements fall across numerous administrative boundaries including Melton and South Kesteven local authorities and Lincolnshire and Leicestershire counties. For the purpose of this socio-economic outline these benchmarks are excluded.

Figure 16: Population Density, 2015



Source: Population Estimates, ONS, 2015

The working age population, an indication of the available workforce, is highest as a proportion of overall population in the larger settlements of Netherfield and Grantham and in contrast smallest in Radcliffe on Trent, Bottesford and Bingham.

Table 5: Total and working age population, 2015

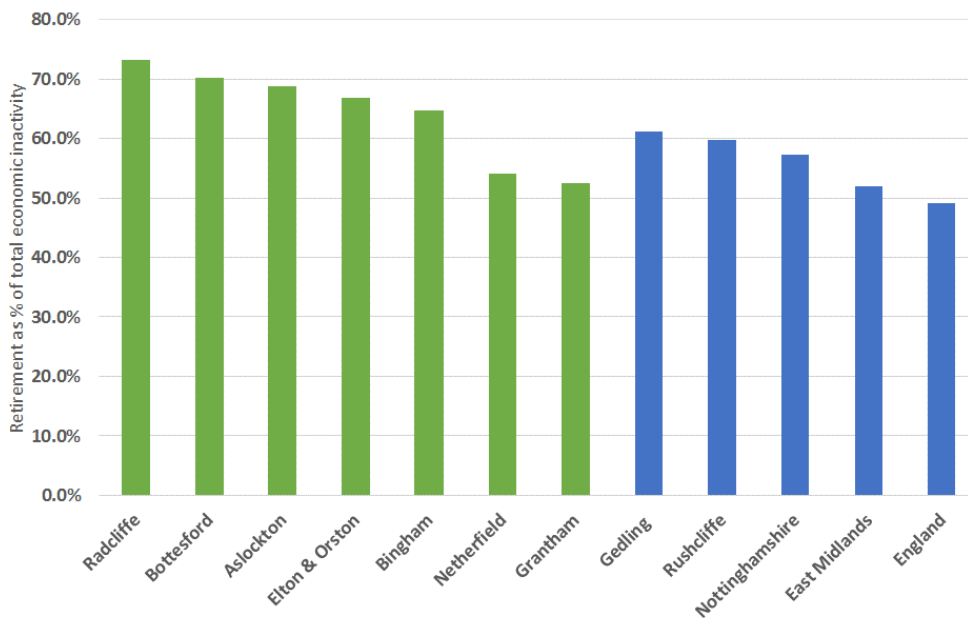
	Total population	Working age population (16-64)	As % of total
Settlements			
Netherfield	32,658	20,849	63.8%
Radcliffe on Trent	9,340	5,229	56.0%
Bingham	9,916	5,945	60.0%
Aslockton	1,965 (Estimate*)	-	-
Elton & Orston	2,130	1,332	62.5%
Bottesford	3,625	2,094	57.8%
Grantham	27,711	17,478	63.1%
Comparators			
Gedling	115,889	71,794	62.0%
Melton	50,912	31,235	61.4%

	Total population	Working age population (16-64)	As % of total
Nottinghamshire	805,848	499,947	62.0%
East Midlands	4,677,038	2,937,792	62.8%
England	54,786,327	34,669,641	63.3%

Source: Population Estimates, ONS, 2015. Note the population figures for Aslockton from Population Estimates include HMP Whatton prison and therefore have been adjusted using the 2011 Census which recorded 857 residents in the establishment. The working age population has not been possible to estimate accurately as there is no Census data available on the age distribution of the prison population.

These settlements, via examining 2011 Census data, also tend to be those with the highest levels of economic inactivity due to retirement demonstrating the older demographic of these areas⁹. Only Netherfield and Grantham have retirement rates (as percentage of total economic inactivity) lower than the regional average. The prevalence of an older demographic in many of the station settlements suggests there is significant potential for leisure rail travel during the week.

Chart 1: Retirement as percentage of overall economic inactivity, 2011



Source: 2011 Census, ONS

3.6.3 Employment and travel to work

As all the settlements, except Netherfield and Grantham, are small and rural in nature, the overall employment density is low with noticeably less jobs per 1,000 population than the benchmark areas. The data further indicates (although not displayed) that employment tends to be concentrated in the public sector, retail, professional services and some manufacturing across the settlements. It should be noted, however, that Colwick and Teal Close development areas near Netherfield are earmarked for a considerable scale and density of housing and

⁹

employment, and the potential to serve these destinations and achieve modal shift should not be underestimated.

Table 6: Total employment, 2015

	Employees	Jobs per 1,000 population
Settlements		
Netherfield	10,385	318
Radcliffe on Trent	1,700	182
Bingham	2,170	219
Aslockton	700	248
Elton & Orston	500	235
Bottesford	750	207
Grantham	16,025	578
Comparators		
Gedling	30,000	259
Melton	21,000	412
Nottinghamshire	287,000	356
East Midlands	1,994,000	426
England	24,867,000	454

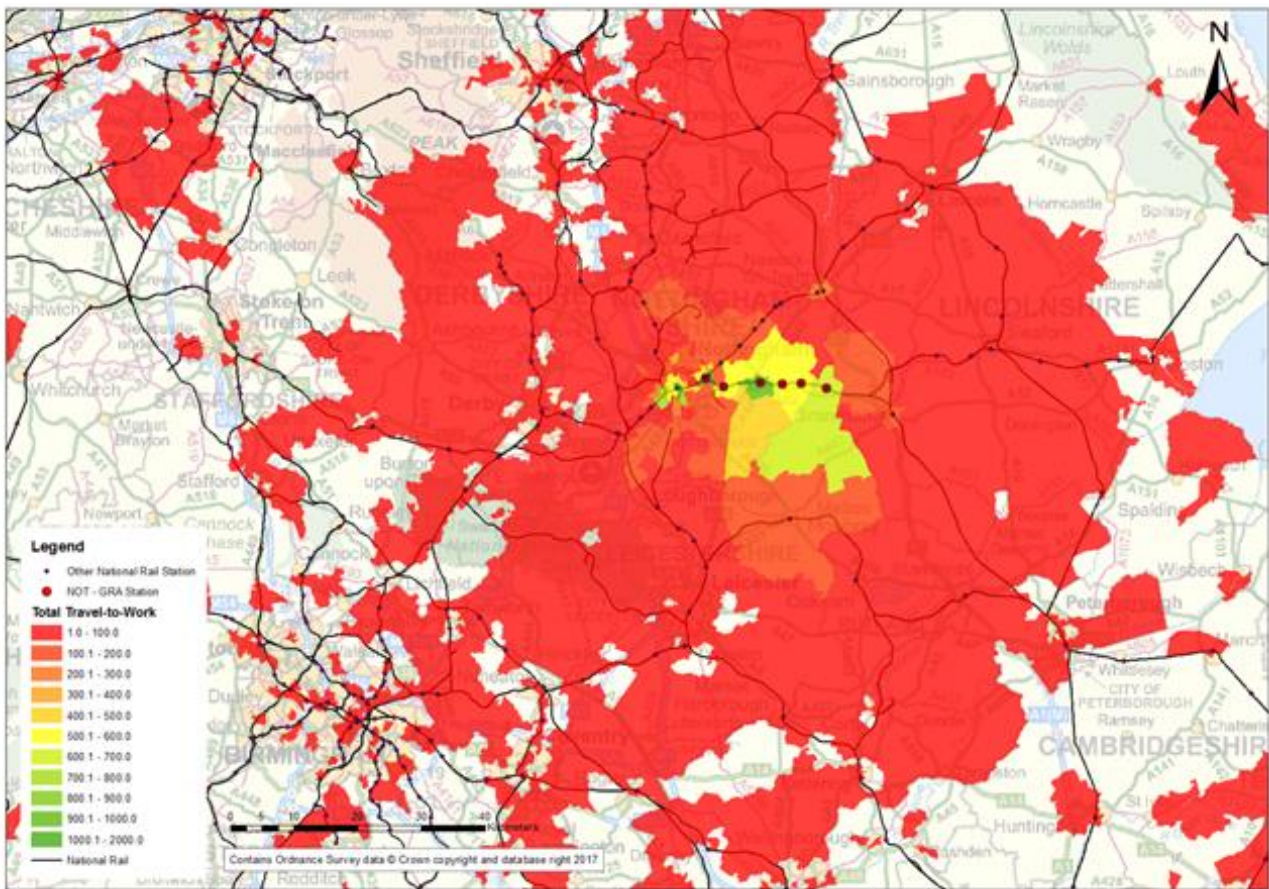
Source: BRES, ONS, 2015

Figure 17 shows the destinations for travel to work (t-t-w) trips of all residents within 2km of intermediary stations on the Poacher Line between Nottingham and Grantham. It is apparent that most destinations are very local, with only Nottingham attracting any significant volume of passengers outside of the main communities and their immediate hinterlands. This could be a function of either:

- The existing employment opportunities meaning that there is little need for longer distance commuting; or
- Current levels of service, across all modes (i.e. inclusive of highway congestion et al), meaning that transport acts as a barrier to accessing a wider range of, potentially higher value, opportunities.

Naturally the former is predicated on the existing population rather than the potential travel needs of residents newly attracted to the East Midlands or the settlements on the Poacher Line itself.

Figure 17: Travel-To-Work Destinations for All Residents of Poacher Line Settlements (all modes)



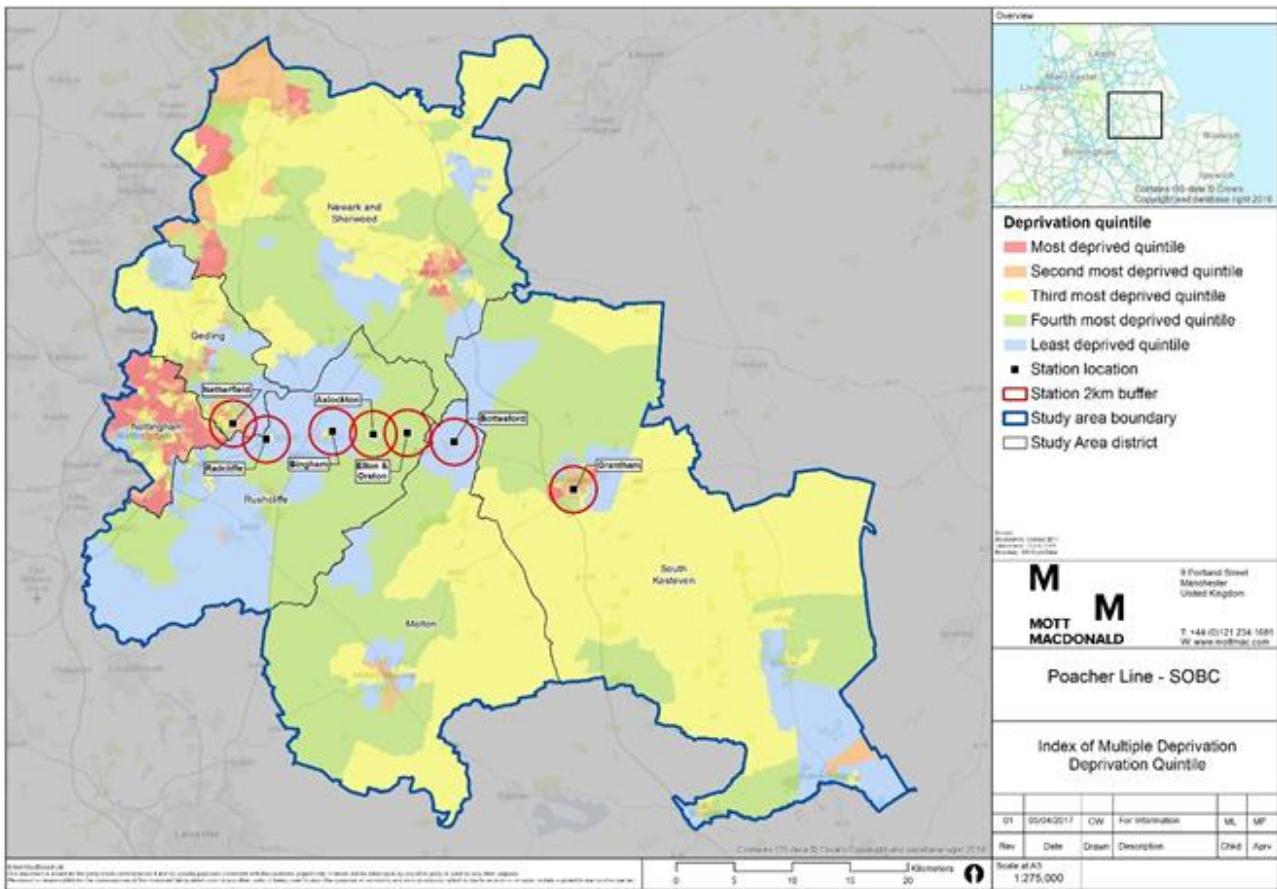
Source: ONS 2011 Census

3.6.4 Deprivation

Deprivation¹⁰ levels in the study area (shown in Figure 18), with the exception of clusters within Netherfield and Grantham, are very low. Overall Gedling’s deprivation rank is 203 of 326 English Local Authorities although there are several severe concentrations of deprivation with 11.7% of the constituent LSOAs within 30% of the most deprived LSOAs nationally.

¹⁰ The Index of Multiple Deprivation (IMD) measures relative deprivation across England. The IMD combines domains of deprivation, such as economic, health and housing to rank every lower super output area (LSOA) in England, these LSOAs can then be grouped into quintiles ranging from the most to the least deprived.

Figure 18: Deprivation, 2015



Source: Index of Multiple Deprivation, Department for Communities and Local Government, DCLG

3.6.5 Future Economic Growth

3.6.5.1 Planned Growth

The growth plans for each of the settlements, in terms of housing and employment, have been reviewed using the latest Local Plans where possible and through consultation with planning officers. The overall indicative housing and employment targets are set out in Table 7 below which relate to those within a 2km radius of the station and exclude Grantham. These numbers have directly fed into the demand modelling within the economic case including analysis of the likely phasing of the sites and outputs. Most of these relate to the sites and growth numbers identified in the existing or emerging local plans, although two sites have been added in by Rushcliffe Borough Council (Land South of Moorebridge Road and Land South of Abbey Road). The RAF Newton site is included in Table 7 below for reference, given Newton is nearby to Bingham, but is not considered in the growth numbers as it is not judged to be within close enough proximity to the station (i.e. it is external to the 2km boundary).

Table 7: Housing and economic growth planned

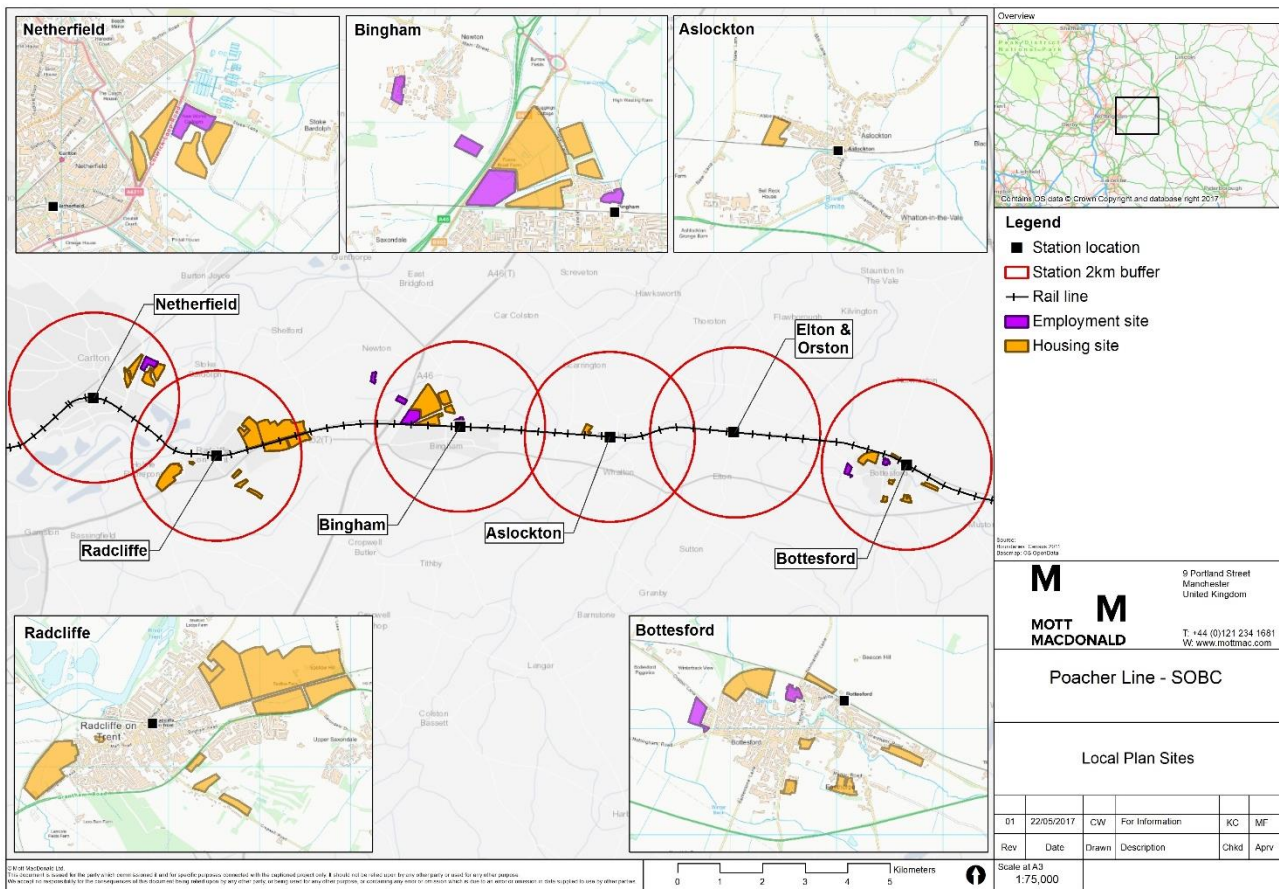
District	Settlement	Site	Housing	Employment	Source
Gedling		Borough wide	7,250 dwellings (2011-2028)		Greater Nottingham: Aligned Core Strategies, Part 1 Local Plan, 2014
	Netherfield	Teal Close – Sustainable Urban Extension (SUE)	830 dwellings (2018-2028)	7ha Mixed B-Use (18,000m ²)	
Rushcliffe			13,150 dwellings (2011-28)	67,900m ² of employment land (20 ha B1, B2 or B8)	Local Plan Part 1: Core Strategy, Dec 2014 and Local Plan Part 2 ¹¹ : Land and Planning Policies, 2016, both Rushcliffe Borough Council Rushcliffe Borough Council for smaller applications.
	Radcliffe on Trent	10 proposed greenfield development sites RAD1-RAD10	400 (min.) dwellings (2019- 2027)	None	
	Bingham	Land North of Bingham	1,050 dwellings (2018-2026)	15.5 ha of employment. Mix of B1, B2 & B8	
	Bingham	Land South of Moorebridge Road		B2 & B8 development (no further details but anticipated to create 100 jobs)	
	Newton (outside study area)	Former RAF Newton	550 dwellings (2018-2026)	6.5 ha of employment (B1, B2 and B8)	
	Aslockton	Land South of Abbey Lane	74 dwellings (2018-2020)	None	
	Elton & Orston		None	None	
Melton			6,125 dwellings (2011-2036)	51 ha employment land (2011-2036)	Local Plan still being prepared – assessment based on Pre-Submission Draft, Melton Borough Council, 2016
	Bottesford	Various sites identified – BOT1-BOT5 and EAST1-EAST2	427 (timescales unknown)	None	
	Bottesford	Normanton Lane		0.7 ha (B1, B2 & B8)	
	Bottesford	Orston Lane		0.48 ha (B1, B2 & B8)	
	Bottesford	Normanton Airfield – to be assessed at any Local Plan Review. The Council will prioritise exploring this site with others in terms of their suitability, availability, infrastructure and deliverability.			

Source: Various as stated.

Figure 12 below displays the location of these sites across the study area.

¹¹ Rushcliffe Local Plan 2 is currently being prepared.

Figure 19: Planned and Proposed Development sites (shown before in Chapter 2)



Source: Mott MacDonald

3.6.6 TEAM and economic impact analysis

Using Mott MacDonald’s in-house Transparent Economic Assessment Model (TEAM) site level analysis has been undertaken to understand the resulting land use changes and how this translates into potential job creation in and around the station settlements. This then in turn allows consideration of the impact of these potential job creation changes on the train service required by the communities on the Poacher Line. These jobs are reported at a gross level only and relate to workplace employment at these sites. Given the early stages of the business case they do not make any allowance for additionality or attribute a level of growth to the service enhancements.

The gross impacts have been calculated through using best practice assumptions relating to the following:

- Development footprints / plot ratios – the development footprint has been fed into the model or alternatively the site area and translated into a footprint using plot ratios.
- Employment land densities – these follow those within the Homes & Communities Agency (HCA) Employment Land Density Guide 2015¹² for B1, B2 and B8 land uses. Given the lack

¹² <https://www.gov.uk/government/publications/employment-densities-guide-3rd-edition>

of information over specific uses for all sites it has been assumed an equal split across B1 Office, B2 Industrial and B8 Warehousing class uses.

- Occupancy – it is assumed that these sites would be 100% occupied to provide an indication of the maximum level of employment that could be accommodated.

These are indicative numbers and subject to change if more detailed plans emerge and further work to understand the specific level of growth that could be attributed to the scheme. The gross jobs associated with the Land South of Moorebridge Road were directly supplied by Rushcliffe Borough Council.

Table 8: Gross impacts associated with development sites

Settlement	Site	Gross jobs	Gross GVA, £m
Netherfield	Teal Close	706	£30.4
Bingham	Land North of Bingham	2,108	£90.8
Bingham	Land South of Mooreside Road	100	£4.3
Bottesford	Normanton Lane	95	£4.1
Bottesford	Orston Lane	65	£2.8
TOTAL		3,074	£132.5

Source: Mott MacDonald

Overall a significant level of jobs, approximately 3,100, could be accommodated on the development sites which could generate in the region of £132.5m of Gross Value Added (GVA)¹³.

In terms of housing growth, using average household sizes from the 2011 Census provides an indication of the overall change in resident population from the planned housing growth. Clearly, the SUE planned at Netherfield and housing planned in Bingham, a key settlement within Rushcliffe. In Bingham and Bottesford planned housing growth is particularly significant with the potential to increase the current resident population by over 25% once the proposed sites are fully developed.

Table 9: Housing and indicative population growth

	Current dwellings	Proposed dwellings	Dwelling size	Current population	Indicative residential population growth	
					Total	As % of current population
Netherfield	14,497	830	2.23	32,282	1,848	5.7%
Radcliffe on Trent	3,978	400 (min.)	2.23	8,878	893	10.1%
Bingham	4,018	1,050	2.27	9,131	2,386	26.1%
Bottesford	1,596	427	2.25	3,587	960	26.8%
Aslockton	842	74	2.35*	1,965	176	9.0%
TOTAL	24,931	2,782	-	55,843	6,263	11.2%

Source: Mott MacDonald. Current dwellings, dwelling size and population are all taken from the 2011 Census, ONS, using the 5km settlement definitions (as earlier). * Given the issues with population data for Aslockton the average dwelling size for Rushcliffe local authority is used.

¹³ Using average GVA per worker for East Midlands, 2014, using Annual Business Survey and Workforce Jobs data, ONS.

Socio-Economic Issues and Economic Growth – Key Points

- The Poacher line encompasses a diverse range of settlements. Netherfield and Grantham are more densely populated with one a suburb of Nottingham and the other its own market town. The other settlements of Radcliffe on Trent, Bingham, Aslockton, Elton & Orston and Bottesford are more rural in nature and sparsely populated.
- There is a high proportion of retired persons within the smaller locations, suggesting potential for leisure rail travel during the week. There is a higher level of out-commuting for work given the limited employment opportunities.
- Parts of Netherfield do exhibit high levels of deprivation and social need which public transport investments could help address if targeted effectively.
- Despite the rural nature of many of the settlements a significant level of development is planned along the route. There are significant employment developments planned in Netherfield and Bingham and the housing development planned will significantly add to the resident populations of Bingham and Bottesford in particular.
- Overall taking into account all the developments planned up to 3,100 gross jobs could be created along the route which could be supported by the planned upgrades. Further work would need to be undertaken to understand the exact relationship between these developments and the planned infrastructure upgrades to understand the level of inter-dependency. However, clearly an enhanced railway line will reinforce sustainable transport modes between new areas of housing and established and emerging areas of employment.

3.7 Summary: The Problems and Needs of the Communities on the Poacher Line

This chapter has expounded on the issues and opportunities for the Poacher Line between Nottingham and Grantham as a whole, and for the individual communities at each of its stations. It has considered rail issues in particular, but also highway and socio-economic issues. In taking this analysis and applying it to an options assessment process, the following key summary messages must be considered:

Issues and Opportunities – Key Messages

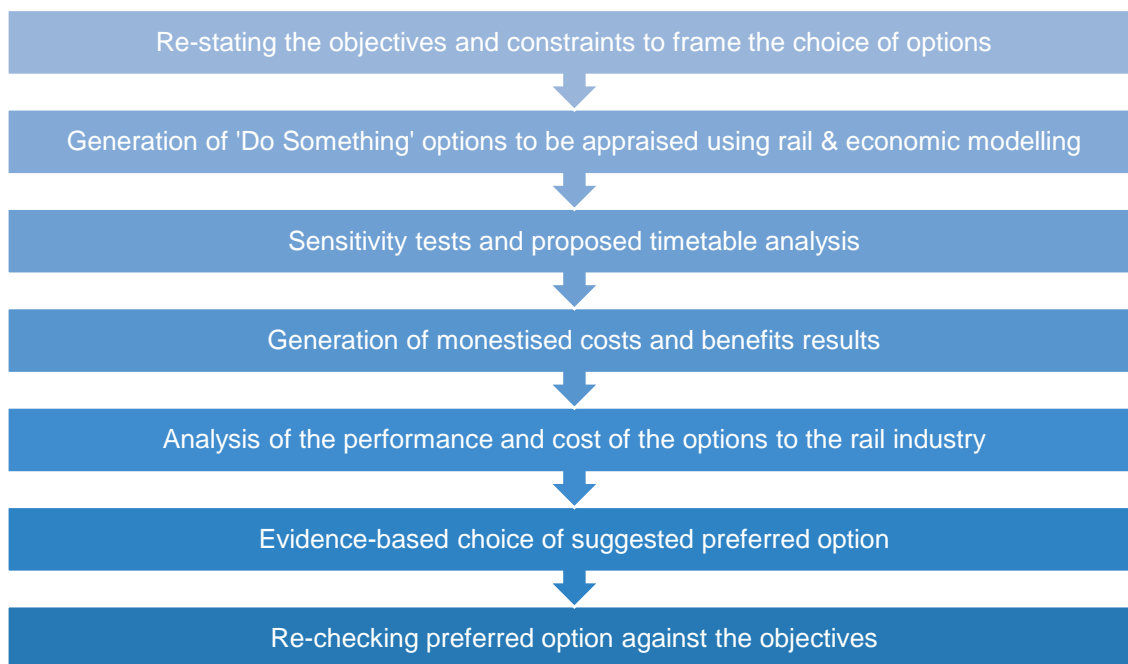
- Many, but not necessarily all, of the stations along the Poacher Line need an increased level of service to meet the needs of current and future commuters, and to ensure these commuters travel sustainably. Currently, stakeholder reports (and an intuitive analysis of rail passenger statistics) suggests that there is latent demand for rail travel amongst a commuting population that probably do not currently consider it to be a viable option.
- The level of service will be constrained by the single-track section between Bottesford and Grantham.
- Local communities would also like to see trains operating later into the evening and a greater frequency of service on Sundays.
- The greatest level of benefit to be derived from increasing the rail service is likely to be found in those towns and villages that are furthest from Nottingham (particularly Bottesford) and those that are natural P&R locations (particularly Radcliffe on Trent and Bingham).
- There is capacity and need for more parking at some of the stations, to act as a P&R inducement and provide for the additional expected development.
- Many of the stations are also in need of improvements in terms of accessibility and ticketing facilities.
- The congestion on the A52 is a problem at the eastern end of the line. This congestion delays journeys and make rail a more attractive option than rail, were the service more regular and frequent. The impact of this congestion on the economy and environment can also be mitigated if some of these vehicle journeys switched to rail.

The options considered in the next Chapter, subject to the constraints outlined in Section 3.3, need to be cognisant of all these key messages.

4 Strategic Case – Options Assessment and Preferred Option

4.1 Introduction

The following flowchart illustrates the steps undertaken to develop and assess the options. Each of these steps is addressed in the sub-sections below.



4.2 Improving the Poacher Line to Serve its Communities and Enable the Wider Economic Growth of the Area

In order to generate options to improve this section of the Poacher Line to serve its communities more effectively and enable the wider economic growth of the Poacher Line study area, the objectives set in Section 2.3.2 of this SOBC were used to assist in option generation. The objectives against which options were developed were:

- Objective 1:** Support the growth, development and vitality of communities along the Poacher Line;
- Objective 2:** Support the regeneration of Netherfield;
- Objective 3:** Enable commuters and leisure travellers to choose rail travel over car travel;
- Objective 4:** Make the case for efficient, cost-effective and practicable delivery of a preferred option for this section of the Poacher Line.

These objectives were supplemented with an additional set of requirements to elaborate on Objective 4 in particular:

- Stakeholder aspirations for service provision which matches existing need;
- Consideration of proposed development along the line, and better matching rail provision to growth;
- Feasibility considerations, particularly in relation to the constraints of the network (see Section 3.3);
- Potential disbenefits to through travellers from additional calls on current services and/or the benefit from removing these where they currently exist; and
- Affordability considerations, principally in relation to revenue versus operating costs and the likely requirement for ongoing public subsidy.

In addition, the issues and opportunities identified in Chapter 3 had to be considered in framing the choice of options too.

4.3 Options Assessment Methodology

In the context of developing options that can be subsumed within the Terms of Reference for the re-franchising of the East Midlands rail service, it is also possible to consider complementary infrastructure and facilities at stations that help ensure the viability and success of the options proposed. It is clear from the analysis of evidence, constraints and expected growth in the study area, that a combination of the following should be considered for most options:

- Improvements to the level of service, particularly at stations where the settlements are larger, the number (and future number) of commuters are greater, and where there is opportunity and a market for Park and Ride (P&R);
- Additional P&R facilities at some stations (based on opportunity and market) to facilitate use of the station by a wider catchment, and particularly where new developments require it; and
- Improvements to accessibility at some stations, again based on opportunity and need.

It should be noted, however, that the last of these elements (accessibility) cannot be modelled and analysed using Rail Modelling techniques and WebTAG appraisal, in terms of generating Benefit Cost Ratios (BCRs) or other metrics.

4.3.1 'Do Something' Options for the Poacher Line between Nottingham and Grantham

Given all the above, the final options chosen to be 'modelled' using MOIRA (Model of Inter-Regional Activity), the standard UK rail industry tool for forecasting demand and revenue impacts of changes to rail timetables, were as follows:

Table 10: Nottingham-Grantham Rail Enhancements: 'Do Something' Options

Option	Peak Service	Off-Peak Service	Sunday Service	Park & Ride
Do Minimum	Hourly at all stations barring Elton & Orston	Hourly at Bingham 1 every 2/3 hours at Aslockton, Bottesford, & Radcliffe on Trent No service at Netherfield	Bingham only (5 tpd* in each direction)	Aslockton: 11 Bingham: 6 Bottesford: 13 Others: 0
Do Something 1	1 per hour at all stations barring Elton & Orston	1 per hour, except Netherfield (every 2/3 hours)	Minimum, e.g. single Derby-Grantham service every 3 hours	Aslockton: 11 Bingham: 25 Bottesford: 25

Option	Peak Service	Off-Peak Service	Sunday Service	Park & Ride
				Radcliffe on Trent: 15
Do Something 2	As per DS1 but half hourly peak service from Radcliffe on Trent, Bingham, Aslockton, and Bottesford	1 per hour, except Netherfield (every 2/3 hours)	Minimum, e.g. single Derby-Grantham service every 3 hours	Aslockton: 30 Bingham: 50 Bottesford: 50 Radcliffe on Trent: 30
Do Something 3	As per DS2 but retimes Nottingham-Skegness to provide even interval	As per DS2 but retimes Nottingham-Skegness to provide even interval	Minimum, e.g. single Derby-Grantham service every 3 hours	Aslockton: 30 Bingham: 50 Bottesford: 50 Radcliffe on Trent: 30
Do Something 4	As per DS3 but adds PM peak returns from Nottingham	As per DS3	Minimum, e.g. single Derby-Grantham service every 3 hours	Aslockton: 30 Bingham: 50 Bottesford: 50 Radcliffe on Trent: 30

Source: Mott MacDonald

Each of these 'Do Something' scenarios are described in technical detail in the Economic Case (Chapter 5), but, to summarise:

- **'Do Minimum'** replicates the existing level of service and P&R provision.
- **'Do Something 1'** (DS1) provides an hourly service at almost all the stations throughout the day (currently this is only the case in the peak), and some additional parking at Bingham, Bottesford and Radcliffe on Trent.
- **'Do Something 2'** (DS2) is the same as DS1, but additionally provides a half-hourly service at Radcliffe on Trent, Bingham, Aslockton and Bottesford, and a greater amount of parking at each of these stations.
- **'Do Something 3'** (DS3) and **'Do Something 4'** (DS4) are both variants on DS2, but both include some re-timing and DS4 includes some additional return services. These are more minor changes than the step changes from 'Do Minimum' to DS1, and from DS1 to DS2.

The additional P&R provision in DS1 is at a level considered commensurate with the need generated by planned local development. The higher level of P&R in DS2-DS4 is increased to a level that caters for the assumed additional commuters generated by the improved service on offer in each of these options.

The stakeholders who participated in the engagement events, including Parish Councillors for many of the stations communities, articulated a strong desire for DDA-compliant footbridges, particularly at Bingham and Netherfield stations. We are not able to economically appraise and model these options, but suggest that these requests are noted and considered by the DfT and future franchisee, should the recommendations of this SOBC be taken forward.

4.3.2 Sensitivity Tests

The above four options were modelled using MOIRA, and standard analytical metrics, such as BCRs, were generated. In addition, the following sensitivity tests were carried out:

- **Sensitivity Test 1:** Increasing the demand expected at Radcliffe on Trent to 'transformational' levels, based on real examples of similar increases in service at comparable stations and the observed impact this had.

- **Sensitivity Test 2:** Retaining the current AM peak and PM peak service levels at Aslockton, to reflect Aslockton Parish Council's request to be eliminated from any proposed service improvements in case these provide impetus or justification for new development.

4.3.3 Extending the Poacher Line Service to Benefit Travellers Later in the Day

The local stakeholders expressed a strong requirement to improve the level of service not just in terms of frequency during the day and particularly the peaks, but in terms of stretching the service further into the evening to allow for leisure and other social activities. This would provide benefit to the communities above and beyond the needs of commuters. While the casting of timetables within MOIRA for the purposes of this assessment should just be viewed as indicative, since it is likely to be re-cast by a potential franchisee, it is clear that all the DS options can provide some degree of improvement, and in all cases a significant improvement to the late running of trains. Our analysis suggests the following last train times may be possible:

Table 11: Potential Indicative Last Train Times in Each of the 'Do Something' Scenarios

Last train of the day arrives at...	Netherfield	Radcliffe on Trent	Bingham	Aslockton	Elton & Orston	Bottesford
Do Minimum (current situation)	17.50	21.01	21.06	21.11	17.10	21.17
DS1	22.10	22.15	22.21	22.25	17.08	22.31
DS2	21.55	22.00	22.06	22.10	17.08	22.16
DS3	21.55	22.00	22.06	22.10	16.42	22.16
DS4	21.55	22.00	22.06	22.10	16.42	22.16

Source: Mott MacDonald

It is clear from Table 11 that a substantial improvement can be made to the late running of services through all DS options at most stations, through the proposals in this SOBC.

4.4 Options Assessment Results

Each of the four 'Do Something' options were assessed in detail using MOIRA and standard WebTAG compliant methodology. The full assessment is provided in Chapter 5, the Economic Case. However, here we present the headline results as justification of the choice of final preferred option.

4.4.1 Summary of Monetised Costs and Benefits

Table 12 summarises the principal economic metrics for each of the four Do Something options, using 'unadjusted' figures.

Table 12: Economic Appraisal of 'Do Something' Options (£'000s in discounted 2010 market prices)

Metric	DS1	DS2	DS3	DS4
Present Value of Costs (PVC)	3,433	5,725	5,721	5,879
Present Value of Benefits (PVB)	3,276	6,141	5,953	5,733
Net Present Value (NPV)	-157	416	233	-146
Benefit:Cost Ratio (BCR)	0.95	1.07	1.04	0.98

Source: Mott MacDonald

Full economic appraisal tables are provided in Appendix A. In practice, we would expect the differences in the economic outcomes between DS2 and DS4 to be minimal, on the principle that they include additional Derby-Grantham services which will be accommodated around other

longer distance services, and potentially joined to other local services, rather than involving any timetable optimisation for communities between Nottingham and Grantham as attempted in DS3 and DS4.

Overall, if decisions were made on which 'Do Something' to carry forward as the final preferred option based purely on the Economic Appraisal results, it is noted that DS2 is the best performing option (albeit only marginally better than DS3).

The sensitivity tests generated the following headline BCR results:

Table 13: Economic Appraisal BCR Results of 'Sensitivity Tests' 1 & 2 (£'000s in discounted 2010 market prices)

Metric	DS2	DS3	DS4
Initial Economic Appraisal Results for comparison			
Benefit:Cost Ratio (BCR)	1.07	1.04	0.98
Sensitivity Test 1: Additional Demand at Radcliffe on Trent			
Benefit:Cost Ratio (BCR)	1.13	1.09	1.00
Sensitivity Test 2: No additional services in DS2-4 for Aslockton			
Benefit:Cost Ratio (BCR)	1.02	0.98	0.91

Source: Mott MacDonald

It is noted from the sensitivity tests that excluding Aslockton from service improvements have a negative impact on the headline economic appraisal results for the Poacher Line between Nottingham-Grantham as a whole.

4.5 Financial Case Considerations

A full analysis on the Financial Case for each of these options is made in Chapter 6. Headline results are provided here to inform analysis of the performance and cost implications of the options.

4.5.1 Financial Performance of the Options, for the Rail Industry

Table 14 indicates the capital and operational expenditure, additional rail revenue and net change to implement each of the Do Something scenarios' service improvements. It is provided in the Financial Case as Table 21 with a number of caveats, some of which are explained below.

Table 14: Do Something Options Financial Performance, 2019 to 2028 (£'000s in 2010 prices)

Option	Capital Expenditure (CAPEX)	Operational Expenditure (OPEX)	Additional Rail Revenue	Net Change (Rev' – OPEX)
Do Minimum	N/A	N/A, but costs may not rise in line with inflation	N/A, but background growth due to development	0
Do Something 1	120	6,747	2,215	-4,532
Do Something 2	220	13,494	6,126	-7,366
Do Something 3	220	13,494	6,132	-7,360
Do Something 4	220	13,494	5,918	-7,576

Source: Mott MacDonald

The forecast requirement for operational subsidy on a regional rail line of this nature would not make additional services between Nottingham and Grantham unique in this respect when

compared to other regional rail services, and the subsidy per passenger km may well be significantly lower than other lines with a comparable level of service to the DS options. Therefore, the fact that a subsidy is required should not be considered a deterrence to implementation of the 'Do Something' options.

Furthermore, the data in Table 14 assumes that one additional unit is required for DS1 and two are required for DS2-DS4. However, as explained in the Financial Case, it may be possible to provide DS2-DS4 with just one additional unit, which would reduce the operational and capital expenditure in line with DS1.

As described later in Section 5.5, there are reasons to believe that the forecasts of passenger growth are a conservative lower end estimate, and the financial case may be stronger on both the revenue and cost sides of the equation.

4.6 Preferred Options

As a result of the analysis and context provided in this and the preceding Chapters, combined with the analysis in the Economic and Financial Cases in particular, a case has been made for improvements to the Poacher Line between Nottingham and Grantham.

On the basis of the Economic Appraisal results, combined with the qualitative evidence presented in the Strategic Case, **we recommend that the DfT and potential East Midlands Trains franchisees take forward 'Do Something 2' or 'Do Something 3'**. Both with a positive BCR of 1.07 and 1.04 respectively, these two options would deliver enhanced sustainable transport options and access to economic opportunity for the communities of the Poacher Line and the study area as a whole. DS2 delivers the best economic appraisal results, but DS3 re-times the services to create less 'bunching' in the timetable, to the benefit of passengers (delivering on the Franchise Prospectus' imperative to 'put the customer first').

These two options deliver an hourly service for almost all the stations throughout the day from approximately 6.30am until 10pm, depending on the station. They deliver a half-hourly service during the peak hours at Radcliffe on Trent, Bingham, Aslockton and Bottesford, and additional Park and Ride at these stations to accommodate and encourage the additional demand for rail travel, brought about both by these improvements and the expected growth in the settlements' populations.

There is strong political and stakeholder support from the communities along this section of the Poacher Line for the increased services proposed in DS2 and DS3, and the improvements in infrastructure. Sensitivity Test 1 shows that the impacts of the improvements in service could exceed those expected in the standard economic appraisal (see Table 13).

4.7 Realising the Benefits

DS2 and DS3 would deliver the objectives for the Poacher Line between Nottingham and Grantham. If either preferred option is delivered, we would expect their success to produce these benefits:

Objective 1: Support the growth, development and vitality of communities along the Poacher Line

The preferred options deliver capacity and infrastructure improvements designed to accommodate the levels of growth allocated in the study areas' Local Plans. They will encourage more travel to and from each of the station's towns and villages, and make these places more attractive locations for commuter-based families and individuals to settle. Local people will be able to access the leisure and service economy in larger urban areas such as Nottingham more conveniently and later into the evening. The economic development and vitality of each of the settlements, and the larger districts and regions they are part of, will be supported.

Objective 2: Support the regeneration of Netherfield

Netherfield will have two viable, convenient train stations, with Netherfield station more than doubling its stopping trains per day, and its last stopping train from Nottingham now four hours later than is currently provided. These will benefit new and existing residents as the town regenerates. The DfT and the franchisee will consider accessibility improvements at the station. Although we cannot provide a level of service at Netherfield through DS2 or DS3 that is comparable with some of the other stations on the Line, since it would lead to a much poorer economic case, the improvements that are proposed for services at Netherfield station can be seen within a wider sustainable transport offer to Netherfield's population, in combination with Carlton station and their regular bus service.

Objective 3: Enable commuters and leisure travellers to choose rail travel over car travel

Rail travel will be more frequent and more convenient, and present a more attractive option than currently, when compared to travelling by car. Congestion and its associated delays and air pollution could be reduced as people choose to travel by a more reliable and frequent rail alternative. People will be able to combine car and rail travel using the additional P&R capacity to avoid delays and unreliability on the road network when travelling to congested areas such as Nottingham City Centre. The improvements to the Poacher Line's level of service will not significantly dis-benefit other travellers coming in to (or returning from) Nottingham from further afield than Bottesford.

Objective 4: Make the case for efficient, cost-effective and practicable delivery of a preferred option for this section of the Poacher Line

The proposed service changes re-cast the Poacher Line timetable as efficiently as possible and work within the practical constraints set out earlier in the Strategic Case. The economic appraisal shows DS2 and DS3 provide value for money and although some subsidy is required, there is capacity to reduce this from our forecast levels, and this subsidy is in line with (and in fact less than) many other examples from across the country. The improvements it will generate for the Poacher Line communities and study area will, in our opinion, provide economic, social and environmental benefits that are worth investing in.

5 Economic Case

5.1 Introduction

To support the assessment of potential improvements to services between Nottingham and Grantham on the Poacher Line we have undertaken a full economic appraisal which is consistent with the DfT's Transport Analysis Guidance (TAG) and underpinned by supporting evidence from the UK rail industry's Passenger Demand Forecasting Handbook (PDFH). The TAG compliant outputs provide an assessment of the overall Value for Money (VfM) of the proposed options, inclusive of:

- Benefits to both users and non-users of the rail services; and
- Changes in revenue, costs, and subsidy for both the public and private sector accounts.

5.2 Long-list of Options

5.2.1 Guiding Principles

Our initial option generation was guided by the objectives described in Section 2.3 and:

- Stakeholder aspirations for better matching provision to existing needs;
- Proposed development along the line, and better matching rail provision to growth;
- Feasibility considerations, particularly in relation to the constraints of the network (see Section 3.3);
- Potential disbenefits to through travellers from additional calls on current services and/or the benefit from removing these where they currently exist; and
- Affordability considerations, principally in relation to revenue versus operating costs and the likely requirement for ongoing public subsidy.

5.2.2 Options Considered

Our option generation and sifting process focused solely on solutions which maximised the benefit derived from National Rail infrastructure, not a multi-modal assessment which considered bus or road-based interventions.

The potential for additional calls on the Norwich-Liverpool service was removed at an early sifting stage, as these were deemed contradictory to the wider stakeholder aspirations for this service, potential amendments within the next franchise period, and the likelihood that they will impose significant dis-benefits on through travellers. The remaining options therefore focus on:

- Amendments to the Nottingham-Skegness service, adding or removing calls at the intermediary stations and potential re-timing;
- Addition of new infill services between Derby and Grantham, with the aim of providing standard levels of service at approximately even intervals; and
- Provision of additional Park & Ride (P&R) capacity to align with both existing demand potential and cater for residential growth beyond a walk catchment of 800m to 1km.

The new infill services were only specified as Derby to Grantham services, with no intermediary calls between Derby and Nottingham. In practice the most efficient solution is likely to be the joining together of such service with another local services which currently, or could, terminate at Nottingham or Derby; however, at this stage we have not undertaken such coding as this is a

matter for the bidders for the EMT franchise, and ultimately the next franchisee. On a similar vein, we have not considered wholesale recasting of the timetable, but largely fitted the new services within the existing timetable subject to the following:

- Amendments to the Norwich-Liverpool services where calls are removed to speed up these services; and
- Parallel amendments to Nottingham-Skegness journey times when calls are removed or added, plus overall re-timings to provide an even interval alongside the new Derby – Grantham services.

Table 15 summarises the current situation, assumed to continue as a Do Minimum (DM) in the next franchise, and four Do Something (DS) options. In considering the level of service to be provided at each station, we accounted for the volume of through travellers affected – the nearer a station is to a major attractor such as Nottingham the greater the volume of existing passengers who would be inconvenienced by an additional call, latent levels of demand, competition from bus, and complementary stations, e.g. options to use Carlton as well as Netherfield combining to create a level of service which is at least as good, if not better, than other stations along the route. We assumed that Elton & Orston would retain its current ‘skeleton’ service, albeit with the occasional, non-modelled, infill, where timetabling permits.

Table 15: Nottingham-Grantham Rail Enhancements: ‘Do Something’ Options

Option	Peak Service	Off-Peak Service	Sunday Service	Park & Ride
Do Minimum	Hourly at all stations barring Elton & Orston	Hourly at Bingham 1 every 2/3 hours at Aslockton, Bottesford, & Radcliffe on Trent No service at Netherfield	Bingham only (5 tpd* in each direction)	Aslockton: 11 Bingham: 6 Bottesford: 13 Others: 0
Do Something 1	1 per hour at all stations barring Elton & Orston	1 per hour, except Netherfield (every 2/3 hours)	Minimum, e.g. single Derby-Grantham service every 3 hours	Aslockton: 11 Bingham: 25 Bottesford: 25 Radcliffe on Trent: 15
Do Something 2	As per DS1 but half hourly peak service from Radcliffe on Trent, Bingham, Aslockton, and Bottesford	1 per hour, except Netherfield (every 2/3 hours)	Minimum, e.g. single Derby-Grantham service every 3 hours	Aslockton: 30 Bingham: 50 Bottesford: 50 Radcliffe on Trent: 30
Do Something 3	As per DS2 but retimes Nottingham-Skegness to provide even interval	As per DS2 but retimes Nottingham-Skegness to provide even interval	Minimum, e.g. single Derby-Grantham service every 3 hours	Aslockton: 30 Bingham: 50 Bottesford: 50 Radcliffe on Trent: 30
Do Something 4	As per DS3 but adds PM peak returns from Nottingham	As per DS3	Minimum, e.g. single Derby-Grantham service every 3 hours	Aslockton: 30 Bingham: 50 Bottesford: 50 Radcliffe on Trent: 30

Source: Mott MacDonald

Table 16 summarises the resulting two-way trains per day under each of the DS options, with:

- DS1 adding a single additional unit to run the Derby-Grantham service, and thereby improving overall weekday levels of service to approximately hourly in each direction at Radcliffe on Trent, Aslockton and Bottesford, and also adding further calls at Bingham.

Apart from existing Bingham calls, all stops on the Norwich-Liverpool service are removed and any Nottingham-Skegness calls which coincide with the new services are also removed;

- DS2 adds a second additional unit between Derby and Grantham, increasing the number of calls slightly and enabling further calls to be removed from the Nottingham to Skegness services and a half hourly AM peak service to be provided;
- DS3 retiming the Nottingham-Skegness services to provide an even interval at the intermediary stations, but with no change in the overall number of tpd; and
- DS4 adding additional PM peak calls at the intermediary stations out of Nottingham towards Grantham on the Nottingham-Skegness services.

P&R provision increases in DS1 to cater for local development and more aspirationally in DS2 to DS4 in order to cater for the improved peak period offer.

Radcliffe on Trent 'current' services are inclusive of the additional calls introduced as part of the December 2016 timetable change, whereas previous demand data will be exclusive of any demand uplift from this. This was accounted for in subsequent modelling, by adjusting the DM timetable to reflect the pre-December 2016 scenario.

Table 16: Nottingham-Grantham 'Do Something' Options Trains per Day (two-way total)

Station	Current	DS1	DS2 & DS3	DS4
Netherfield	7	15	15	15
Radcliffe on Trent	16	33	34	36
Bingham	35	47	56	57
Aslockton	21	35	36	38
Bottesford	23	35	36	38

Source: Mott MacDonald

5.3 Rail Modelling Methodology

The approach to forecasting future rail demand in response to the DS proposals follows standard PDFH and TAG methodologies. Demand forecasting is undertaken at a station-to-station level using Production-Attraction (P-A) matrices extracted from the EMT version of MOIRA, kindly supplied for this study by the incumbent TOC. Excepting local development proposals, other factors are captured using the elasticity-based approach to demand forecasting encapsulated in PDFH guidance, using an equation of the form:

$$V_{ij}^k = f(\text{Fare}_{ij}^k, \text{GJT}_{ij}^k, \text{FuelCost}, \text{CarTime}, \text{BusTime}, \text{Bus Head}, \text{BusFare}, \text{NCA}_i)$$

Where:

V_{ij}^k = the demand for rail between stations i and j for segment k

Fare_{ij}^k = the average fare for rail between stations i and j for segment k

GJT_{ij}^k = the Generalised Journey Time for rail between stations i and j for segment k

GDP = the GDP per capita trend at attraction station j

FuelCost = the car fuel cost trend

CarTime = the car time trend

BusTime = the bus time trend

Bus Head = the bus headway (service-kms or frequency) trend

BusFare = the bus fare trend

NCA_i = the proportion of non-car owning households at the production station *i*

Demand is segmented into the available ticket types of season, full, and reduced.

5.3.1 Timetable Changes

Generalised Journey Time (GJT) combines all the railside elements of travel time plus a 'pure' interchange penalty, in minutes which captures the inconvenience of rail to rail interchange over and above the connection and wait times which are involved. This includes:

- Initial wait time at the station;
- In-Vehicle Time (IVT) onboard the service; and
- Any connection and wait time where the passenger is required to interchange.

Weights for different elements of GJT are inbuilt into MOIRA in accordance with PDFH guidance. Changes in the timetable are coded into MOIRA and extracted as a set of DS GJT skims for comparison against the DM, and the relevant elasticity applied.

All of the above exogenous and competing mode sensitivities are handled at an aggregate level with time-series data sourced from the latest release of the TAG databook. All endogenous and competing mode variables have standard PDFH v5.0 elasticities applied to them using the formulation:

$$V_{ij}^{t+1} = V_{ij}^t \cdot \left(\frac{X_{ij}^{t+1}}{X_{ij}^t} \right)^{e_x}$$

Where:

V_{ij}^{t+1} = the demand for rail between stations *i* and *j* in year *t*

V_{ij}^t = the demand for rail between stations *i* and *j* in year *t+1*

X_{ij}^{t+1} = the value for input X for rail between stations *i* and *j* in year *t*

X_{ij}^t = the value for input X for rail between stations *i* and *j* in year *t+1*

e_x = the elasticity of demand to changes in input X

5.3.2 Local Planning Data

The standard approach to population and employment data is to map TEMPRO level data, now at Census MSOA level, to station catchments and from there estimate future year changes in their values and apply the elasticity approach above; however, for this study we adopted a more nuanced approach to better reflect the proximity, or otherwise, of local development to the intermediary stations and the decay of rail trip rates with distances from the station as access/egress times increase.

This firstly required analysis of existing rail demand relative to the number of residential dwellings within 100m distance bands of the station. We assumed that the proportion of

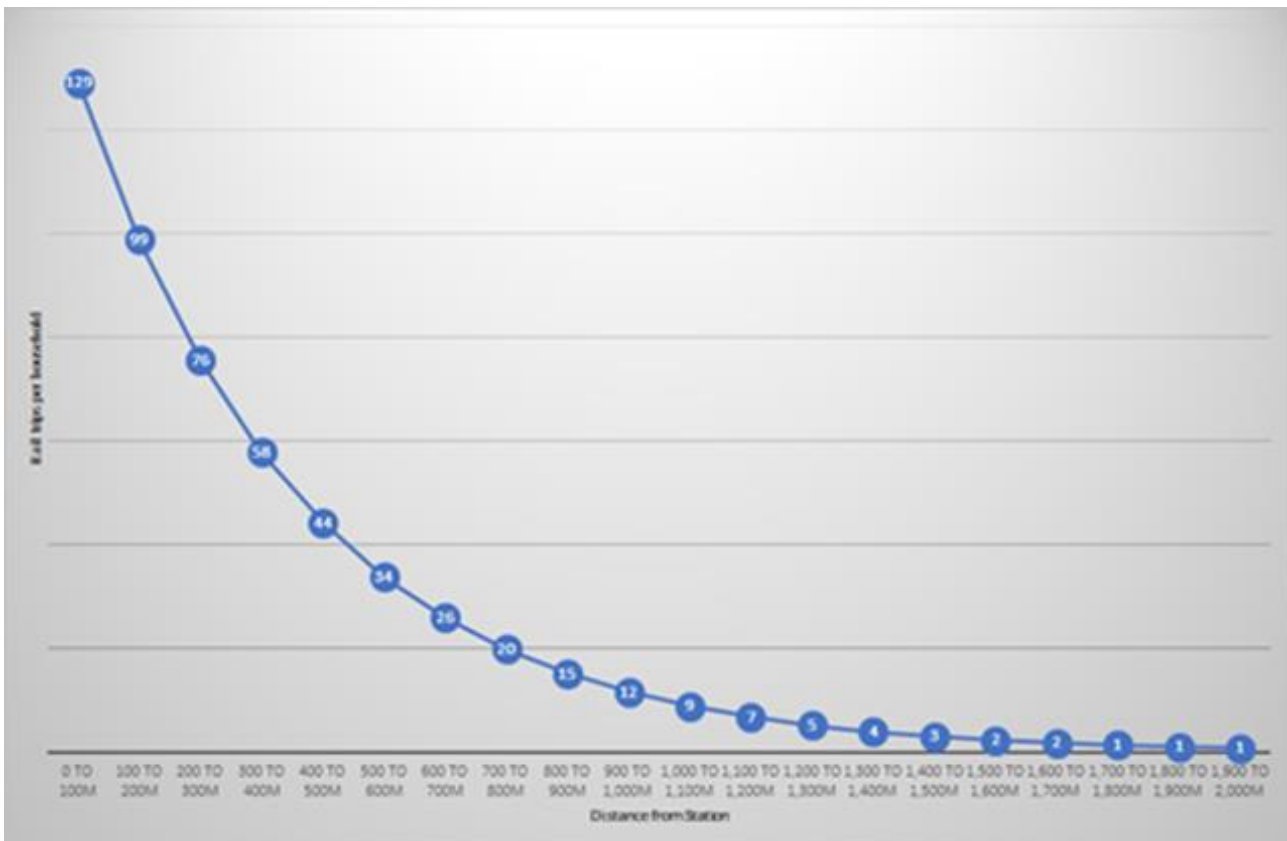
demand within more aggregate distance bands from PDFH v4.0 (Table B6.2), by type of station, apply as controls and then generate a 'decay' curve as shown in Figure 19 for Bottesford. The relevant assumptions on the demand distribution by distance band from the station are:

- 72% from within 800m; and
- 28% from 800 to 2km.

We may expect some existing, and future, demand to be generated from locations 2km or more from the station; however, for the purposes of this calculation, and computational efficiency, we restrict the catchment to 2km.

Any new residential dwelling within each distance band is assumed to generate the same number of rail trips as an existing dwelling [and the same existing level of service]. Demand from the new dwellings can then vary in line with proposed service changes under the DS options.

Figure 20: Modelled Rail trip rate per dwelling per annum by 100m distance band at Bottesford



Source: Mott MacDonald analysis of MOIRA demand data with GM AddressBase data from Ordnance Survey

5.3.3 Consistency with TEMPRO Data

Data on the scale and location of future development was sourced from the Local Plan and comparable documents (see Section 3.4), and mapped to individual X and Y coordinates and from there to the 100m distance bands around each station. Comparable data from the DfT standard planning input software/database TEMPRO is now available at a Census MSOA level, supporting a direct comparison with the data and two approaches. It can be seen that not only will the local analysis more accurately represent the proximity of development to stations, and

therefore the likelihood to use rail, but also that the numbers from the local analysis are higher than the equivalent MSOA numbers from TEMPRO.

These differences are likely to have a significant influence on the demand forecasts and subsequent economic and financial appraisals due to a higher level of base demand in the DM and DS scenarios.

Table 17: Comparison of Latest Local Planning Inputs and TEMPRO Dataset

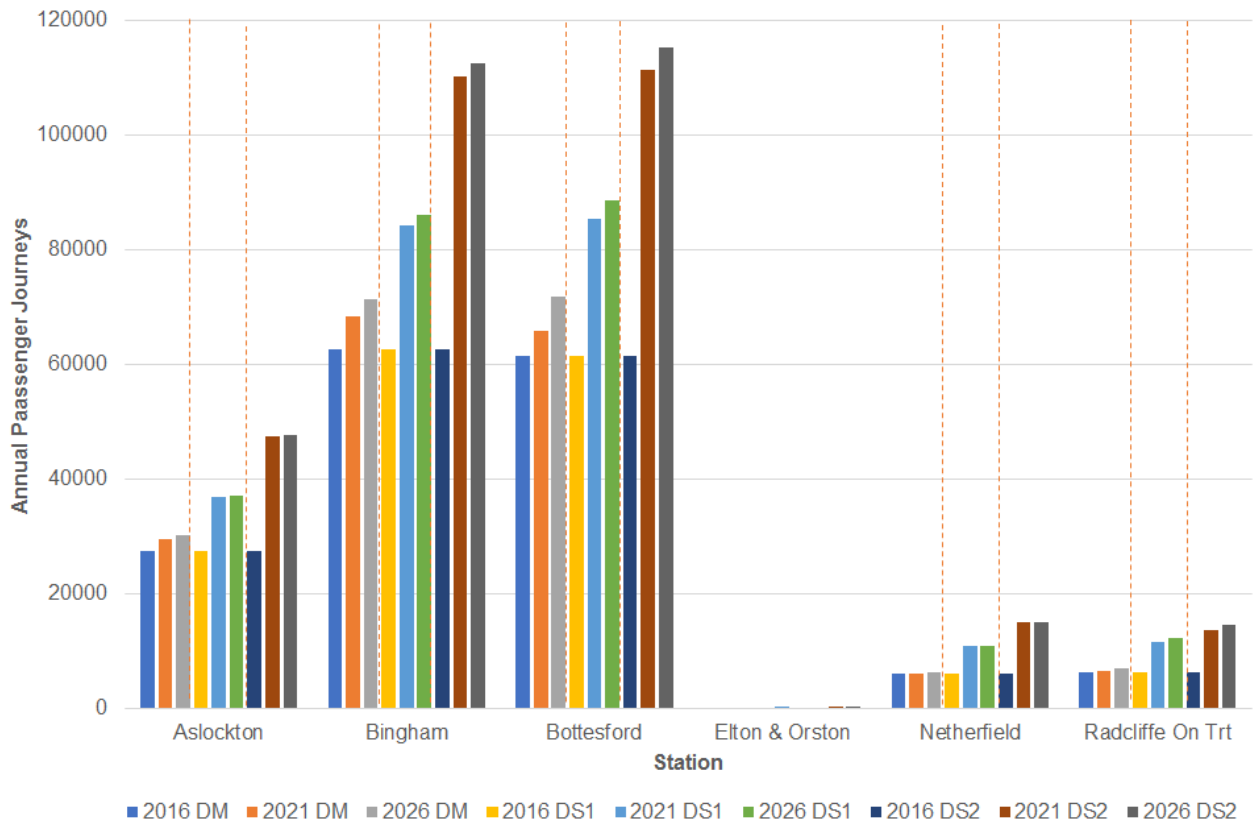
Station	Local Planning Inputs			TEMPRO Dataset		
	To 2021	To 2026	TOTAL	To 2021	To 2026	TOTAL
Netherfield	581	249	830	360	396	756
Radcliffe on Trent	200	150	350	0	0	0
Bingham	825	150	975	292	135	427
Aslockton/ Elton & Orston	70	0	70	165	75	240
Bottesford	214	214	427	109	89	198
TOTAL	1960	763	2722	926	695	1621

Source: Mott MacDonald Local Planning Data analysis and TEMPRO v7.0

5.4 Demand Forecasts

Figure 21 shows the demand forecasts for the DM, DS1, and DS2 in the base (2016) and 2021 and 2026 future years. Demand forecasts on the Poacher Line stations between Nottingham to Grantham are slightly higher in DS3 and DS4 due to the timetable optimisation, but this is offset by demand losses elsewhere from re-timings.

Figure 21: Demand Forecasts for the DM, DS1 and DS2 Scenarios



Source: Mott MacDonald

5.5 Appraisal

5.5.1 10 Year Appraisal Period

To accord with the potential length of the new EMT franchise, and the lack of major capital investment for which to consider a ‘lifespan’ prior to major renewals, we undertook the economic appraisal over a 10-year period, between 2019 and 2028. Demand forecasts and other inputs from the modelling are linearly interpolated between, and extrapolated from, the two modelled years of 2021 and 2026 to produce a full 10-year appraisal from the assumed ‘opening’ year of 2019. We assume a small ramp-up rate of 95% in the opening year, representing that these are primarily incremental improvements.

All Present Value of Benefits (PVB) appraisal metrics are in 2010 values and prices.

5.5.2 Assumptions

5.5.2.1 Discounting

Discount rates are taken from the latest TAG Databook release:

- 3.5% per annum for the first 30 years to 2046; and
- 3.0% thereafter to 2080.

5.5.2.2 RPI Series

All values have been converted to 2010 prices using the RPI series from the TAG Databook March 2017 release.

5.5.2.3 Marginal External Costs of Car Use

Standard diversion factors to/from bus and car are taken from TAG. It was assumed that any changes in car-kms, due to mode shift to/from rail, was:

- 25% from 'other A roads'; and
- 40% from 'rural A roads'; and
- 35% from 'other rural roads'.

Values, in pence per km, for the relevant road types and locations, were taken from the TAG Databook March 2017 release for the following marginal external costs of car use:

- Congestion;
- Infrastructure;
- Road traffic accidents;
- Local air quality;
- Noise; and
- Greenhouse gases.

5.5.2.4 Indirect Taxation

Changes in indirect taxation revenues accruing to HM Treasury were also estimated for the changes in:

- Car-kms; and
- Public transport revenue

5.5.2.5 Transport User Benefits

All changes in consumer surplus (user benefits or disbenefits) are converted into hours in the model, and monetised for the appraisal using VoTs for each journey purpose from the TAG Databook March 2017 release.

5.5.2.6 Changes in Public Transport Revenue

Changes in revenue accruing to the new franchisee, plus accompanying changes to local bus operators from abstraction to/from rail, are estimated using the existing revenue per journey information in MOIRA and analysis of bus fares for localised movements where abstraction is most likely to occur. All revenue is converted to 2010 values in market prices, and has been discounted to 2010 using the latest TAG rates.

5.5.2.7 Scheme Costs

For the economic case, all costs are in the 'Present Value' metric, having been converted to 2010 market prices and discounted using the latest rates. Costs are inclusive of:

- Operating expenditure from the additional units, estimated at c£615,000 per additional two-car unit in 2010 prices;

- Capital expenditure on the additional P&R provision, estimated at £2,000 per additional space; and
- Optimism bias applied at 1% per annum on operating costs and 44% on capital expenditure.

5.6 Summary of Monetised Costs and Benefits

Table 18 summarises the principal economic metrics for each of the four DS options, using ‘unadjusted’ figures.

Table 18: Economic Appraisal of ‘Do Something’ Options (£’000s in discounted 2010 market prices)

Metric	DS1	DS2	DS3	DS4
Present Value of Costs (PVC)	3,433	5,725	5,721	5,879
Present Value of Benefits (PVB)	3,276	6,141	5,953	5,733
Net Present Value (NPV)	-157	416	233	-146
Benefit:Cost Ratio (BCR)	0.95	1.07	1.04	0.98

Source: Mott MacDonald

Full economic appraisal tables are provided in Appendix A. In practice we would expect the differences in the economic outcomes between DS2 and DS4 to be minimal, on the principle that additional Derby-Grantham services will be accommodated around other longer distance services, and potentially joined to other local services, rather than any timetable optimisation for communities between Nottingham and Grantham as attempted in DS3 and DS4.

5.6.1 Value for Money

DfT Value for Money (VfM) guidance on local transport funding¹⁴ advises that the ‘unadjusted’ BCRs, without any quantification of wider economic or qualitative impacts, represent ‘low’ VfM under the standard criteria [all being close to the threshold of 1.0]. This is not unsurprising for regional rail services, existing or proposed; indeed, we would expect evaluations of some existing services to produce much lower VfM. Instead it emphasises the need to take a holistic view which also includes less readily quantifiable wide economic, social, and environmental criteria to quantitatively or qualitatively adjust the BCR in the Appraisal Summary Table (AST). In tandem, the tendency for standard UK rail industry demand forecasting approaches to underestimate growth, in both the DM and DS scenarios, should also be considered.

5.6.2 Commentary

There are a number of reasons why we believe that the estimated economic and financial impacts of the DS options may be deemed to be conservative, including:

- Potential for operational efficiencies meaning the assumption of 1 or additional two-car units may be an overestimate, and/or the capability to spread costs with other emerging proposals for revisions to timetabling in the EMT franchise;
- Parallel scope for small scale infrastructure enhancements to deliver journey time or capacity improvements which in turn allow greater operational efficiency;
- The potential that current demand may be understated in ticket sales data, and that expansions of multi-modal/operator ticketing from Nottingham and Nottinghamshire may offer further growth potential;

¹⁴ Available at: <https://www.gov.uk/government/publications/value-for-money-advice-for-local-transport-decision-makers> [Accessed: 4/5/17].

- A tendency for standard UK rail industry forecasting techniques to underestimate demand due to exogenous influences, i.e. the hypotheses that changing natures of the labour market and ubiquity of mobile devices have both favoured rail travel, which have proved difficult to capture in forecasts;
- A focus on the major centres as drivers of economic [and leisure-related] growth meaning an increased demand for travel to Nottingham, not fully articulated in the planning inputs; and
- A likelihood that future congestion may be more acute than currently forecast [especially if alternatives such as rail are not improved].

5.7 Sensitivity Tests

5.7.1 ST1 – Radcliffe on Trent Demand

Cumulatively the proposed improvements at Radcliffe on Trent could represent a transformational change in rail demand, opening up new modal and destination alternatives. PDFH approaches are unlikely to capture this effect in full, and we therefore looked at other stations where in the last five years the service had gone from a skeleton offering to a much higher level of service. We investigated ramp-up of demand at the following stations:

- Blaydon;
- Broughty Ferry;
- Dunston;
- Gowerton;
- Melksham; and
- South Bank.

On average, these showed expected ramp-ups of 276%, 325% and 341% in the first three years after the improvement. In Table 19 we show the effect of an additional multiplier on Radcliffe on Trent demand to reflect this transformational effect observed at other stations. The demand increase naturally leads to a concurrent increase in revenue/reduction in subsidy, and increases in benefits to both users and non-users resulting in higher NPVs and BCRs.

Table 19: Economic Appraisal of Sensitivity Test 1

Metric	DS2a	DS3a	DS4a
Present Value of Costs (PVC)	5,513	5,494	5,676
Present Value of Benefits (PVB)	6,221	5,987	5,696
Net Present Value (NPV)	708	493	20
Benefit:Cost Ratio (BCR)	1.13	1.09	1.00

Source: Mott MacDonald

5.7.2 ST2 - Removal of Peak Period Calls at Aslockton

Local stakeholders for Aslockton indicated that there may not be the need for any new services to call at the station during the peak, i.e. retaining the current AM and PM peak levels of service. To reflect this, we undertook a sensitivity test for DS2 to DS4 removing calls on the Nottingham-Skegness services, but retaining them on the new Derby-Grantham services. Table 20 summarises the results. The net effect is to reduce demand and thereby the PVB, and, with no parallel change in the PVC, the NPV and BCR falls accordingly.

Table 20: Economic Appraisal of Sensitivity Test 2

Metric	DS2b	DS3b	DS4b
Present Value of Costs (PVC)	5,786	5,792	5,970
Present Value of Benefits (PVB)	5,929	5,700	5,409
Net Present Value (NPV)	143	-92	-561
Benefit:Cost Ratio (BCR)	1.02	0.98	0.91

Source: Mott MacDonald

6 Financial Case

6.1 Introduction

In this chapter, we describe the expected financial performance of the DS options, comparing projected revenue and operating cost increases in comparison to the DM.

6.2 Assessment of Financial Performance

Operating cost assumptions for the DS options are detailed in Section 5.3, and for the purposes of the financial case are non-market prices, undiscounted, and in a 2010 price base. Revenue is in the corresponding units. Both costs and revenue are presented over the 10-year period for each scenario. It is important to recognise that the DM scenario itself includes background, exogenous, growth in rail demand due to local development, albeit any growth in revenue could be offset by corresponding above inflation rises in operating costs.

As discussed previously, we assume a 'worst case' scenario on operating costs in that entirely new units will be required; in practice, there may efficient solutions to delivering the options which means that the costs could be less than stated. In summary:

- All options are forecast to require an operational subsidy. Leaving aside CAPEX, the average estimate is circa £450,000 per annum for DS1 and £750,000 for DS2 to DS4 – we believe these three options to be largely similar, should they be implemented in practice, for reasons discussed in the economic case;
- The marginal increment in subsidy for running an additional unit in DS2 to DS4 is circa £300,000 per annum (£750,000 - £450,000), and therefore the incremental frequency improvement does more to cover costs than the original single unit option; and
- If DS2 to DS4 could be delivered with a single unit, as per DS1, through an overall recasting of the timetable and operations, then OPEX and rail revenue are likely to be broadly parallel to one another.

The forecast requirement for operational subsidy on a regional rail line of this nature would not make additional services between Nottingham and Grantham unique in this respect when compared to other regional rail services, and the subsidy per passenger km may well be significantly lower than other lines with a comparable level of service to the DS options.

Table 21: Do Something Options Financial Performance, 2019 to 2028 (£'000s in 2010 prices)

Option	Capital Expenditure (CAPEX)	Operational Expenditure (OPEX)	Additional Rail Revenue	Net Change (Rev' – OPEX)
Do Minimum	N/A	N/A, but costs may not rise in line with inflation	N/A, but background growth due to development	0
Do Something 1	120	6,747	2,215	-4,532
Do Something 2	220	13,494	6,126	-7,366
Do Something 3	220	13,494	6,132	-7,360
Do Something 4	220	13,494	5,918	-7,576

Source: Mott MacDonald

As per earlier discussion (see Section 5.5), there are reasons to believe that these forecasts are a conservative lower end estimate, and the financial case may be stronger on both the revenue and cost sides of the equation.

7 Commercial and Management Cases

7.1 Introduction

Commercial viability and deliverability are commonly assessed in the Commercial and Management cases of a SOBC. In this case, they are less applicable as they will be considerations for the new franchisee of the East Midlands Trains franchise.

The franchisee will be able to consider this SOBC's recommendations in combination with all the Invitation to Tender documentation (should this SOBC be included by the DfT) to model a 'best fit' for the franchise as a whole. It is possible that through actions such as re-timing, the recommended options could become more commercially viable and deliverable than currently predicted, as this SOBC can only consider the implications for this section of the franchise.

7.2 Specification & Procurement

The development, funding, and management issues relating to the East Midlands Trains franchise will be supplied to the three short-listed franchisees through the Invitation to Tender (ITT). The published timetable for this, as found in the East Midlands Franchise Prospectus, is as follows:

Table 22: East Midlands Trains Franchise Competition Timetable

Stage	Date
Publication of this Prospectus	November 2016
Bidder Day	November 2016
Public consultation starts	December 2016
Franchise Expression of Interest (EOI) Pack released	December 2016
Deadline for receipt of completed EOI Packs	January 2017
Identification of short-listed bidders	March 2017
Issue ITT to bidders	May 2017
Receipt of ITT submissions	August 2017
Contract award	March 2018
Anticipated franchise start date	22 July 2018

Source: East Midlands Franchise Prospectus

It is known, however, that this timetable has already 'slipped', and the surprise announcement of June 2017's General Election has caused an additional new delay to the timetable. It is extremely unlikely that the ITT will be issued until after the General Election.

The bidders will produce Delivery Plans, explaining how they will meet the DfT's specification for the franchise. There will also be an assessment of Financial Deliverability (or 'robustness').

Prospective franchisees will be expected to take the following into account in their bids:

- Supporting the local economy;
- Putting rail within the reach of customers;
- Being an employer of choice;
- Adopting a customer-driven attitude; and

- Providing a positive social impact.

The precise specification and procurement issues for this SOBC's preferred option, therefore, is beholden to the DfT's franchising process, whether they choose to include this SOBC's recommendations in their ITT, whether the franchisees consider this and to what extent, and whether the franchisee chooses to include the preferred option even if it is not included in the ITT.

7.3 Management of the Preferred Scheme

A full Management Case is not required. But given the position and timing of the re-franchising of the Line, the following need to be considered should this Business Case be developed through the ITT or Franchising processes:

- Dependencies – this scheme is not dependent on any other schemes, although the re-franchising itself provides an opportunity to implement changes to the Poacher Line that may not otherwise have come about. The Economic Case is dependent on the developments that have been considered through the Local Plans and other inputs, but these can be assumed as a 'given'.
- Governance – the proposed service improvements would be under the governance of the new franchisee, but improvements to accessibility at the station would be in the remit of Network Rail, and P&R improvements would likely be a combination of Network Rail, the local Council with planning and highways responsibility, and the landowner. Since this is a SOBC and the P&R volumes included in the Economic Case are indicative and have not been considered in terms of feasibility (other than at a high level), these issues of governance are more a consideration for an Outline or Full Business Case, or for the DfT and Franchisee once the contract has been decided.
- Risk Management – while the future franchisee is undecided, it would not be appropriate to develop a full risk management table. Fuller understanding would be required of how the proposals in this SOBC would be transmuted by the franchisee.
- Stakeholder Management – two stakeholder engagement sessions have been held with two groups of local councillors, the interested public, and local rail experts. These groups have expressed a strong and well-evidenced case for change, and the process of developing this SOBC has provided momentum to those desires. The new franchisee may need to manage and meet many of those expectations.

Appendices

A. Economic Appraisal Tables

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A. Economic Appraisal Tables

A.1 Do Something 1 – Transport Economic Efficiency

Economic Efficiency of the Transport System (TEE)		Poacher Line - DS1					
Non-business: Commuting		ALL MODES	ROAD	BUS and COACH	RAIL	OTHER	
<u>User benefits</u>		TOTAL	Private Cars and LGVs	Passengers	Passengers		
Travel time	£ 1,590,789	£	115,119	£	1,475,671		
Vehicle operating costs	£ -						
User charges	£ -						
During Construction & Maintenance	£ -						
NET NON-BUSINESS BENEFITS: COMMUTING	£ 1,590,789 (1a)	£	115,119	£ -	£ 1,475,671	£ -	
Non-business: Other		ALL MODES	ROAD	BUS and COACH	RAIL	OTHER	
<u>User benefits</u>		TOTAL	Private Cars and LGVs	Passengers	Passengers		
Travel time	£ 696,131	£	59,659	£	636,472		
Vehicle operating costs	£ -						
User charges	£ -						
During Construction & Maintenance	£ -						
NET NON-BUSINESS BENEFITS: OTHER	£ 696,131 (1b)	£	59,659	£ -	£ 636,472	£ -	
Business			Goods Vehicles	Business Cars & LGVs	Passengers	Freight	Passengers
Travel time	£ 1,366,084	£		36,975			1,329,110
Vehicle operating costs	£ -						
User charges	£ -						
During Construction & Maintenance	£ -						
Subtotal	£ 1,366,084 (2)	£	-	36,975	£ -	£ -	1,329,110
Private sector provider impacts					Freight	Passengers	
Revenue	£ 1,547,378				-£ 93,586	£ 1,640,965	
Operating costs	-£ 4,969,920					-£ 4,969,920	
Investment costs	£ -						
Grant/subsidy	£ 3,328,955					£ 3,328,955	
Subtotal	-£ 93,586 (3)					£ -	
Other business impacts							
Developer contributions	£ - (4)						
NET BUSINESS IMPACT	£ 1,272,498 (5) = (2) + (3) + (4)						
TOTAL							
Present Value of Transport Economic Efficiency Benefits (TEE)	£ 3,559,419 (6) = (1a) + (1b) + (5)						

Notes: Benefits appear as positive numbers, while costs appear as negative numbers.
All entries are discounted present values, in 2010 prices and values

A.2 Do Something 1 – Public Accounts

Public Accounts (PA) Table		Poacher Line - DS1					
Local Government Funding		ALL MODES	ROAD	BUS and COACH	RAIL	OTHER	
<u>TOTAL</u>		INFRASTRUCTURE					
Revenue	£ -						
Operating Costs	-£ 2,780		-£ 2,780				
Investment Costs	£ 106,611				£ 106,611		
Developer and Other Contributions	£ -				£ -		
Grant/Subsidy Payments	£ -						
NET IMPACT	£ 103,831 (7)		-£ 2,780	£	-£ 106,611	£ -	
Central Government Funding: Transport							
Revenue	£ -						
Operating costs	£ -				£ -		
Investment Costs	£ -				£ -		
Developer and Other Contributions	£ -						
Grant/Subsidy Payments	£ 3,328,955				£ 3,328,955		
NET IMPACT	£ 3,328,955 (8)		£ -	£ -	-£ 3,328,955	£ -	
Central Government Funding: Non-Transport							
Indirect Tax Revenues	£ 349,080 (9)		£ 87,077	£	-£ 262,003	£ -	
TOTALS							
Broad Transport Budget	£ 3,432,786 (10) = (7) + (8)						
Wider Public Finances	£ 349,080 (11) = (9)						

Notes: Costs appear as positive numbers, while revenues and 'Developer and Other Contributions' appear as negative numbers.
All entries are discounted present values in 2010 prices and values.

A.3 Do Something 1 – Analysis of Monetised Costs and Benefits

Analysis of Monetised Costs and Benefits: Poacher Line - DS1		
Noise	£ 2,708	(12)
Local Air Quality	£ 18	(13)
Greenhouse Gases	£ 19,503	(14)
Journey Quality		(15)
Physical Activity		(16)
Accidents	£ 42,995	(17)
Economic Efficiency: Consumer Users (Commuting)	£ 1,590,789	(1a)
Economic Efficiency: Consumer Users (Other)	£ 696,131	(1b)
Economic Efficiency: Business Users and Providers	£ 1,272,498	(5)
Wider Public Finances (Indirect Taxation Revenues)	-£ 349,080	- (11) - sign changed from PA table, as PA table represents costs, not benefits
Present Value of Benefits (see notes) (PVB)	£ 3,275,564	(PVB) = (12) + (13) + (14) + (15) + (16) + (17) + (1a) + (1b) + (5) - (11)
Broad Transport Budget	£ 3,432,786	(10)
Present Value of Costs (see notes) (PVC)	£ 3,432,786	(PVC) = (10)
OVERALL IMPACTS		
Net Present Value (NPV)	-£ 157,222	NPV=PVB-PVC
Benefit to Cost Ratio (BCR)	0.95	BCR=PVB/PVC

Note : This table includes costs and benefits which are regularly or occasionally presented in monetised form in transport appraisals, together with some where monetisation is in prospect. There may also be other significant costs and benefits, some of which cannot be presented in monetised form. Where this is the case, the analysis presented above does NOT provide a good measure of value for money and should not be used as the sole basis for decisions.

A.4 Do Something 2 – Transport Economic Efficiency

Economic Efficiency of the Transport System (TEE)		Poacher Line - DS2					
Non-business: Commuting		ALL MODES	ROAD	BUS and COACH	RAIL	OTHER	
User benefits	TOTAL	Private Cars and LGVs	Passengers	Passengers			
Travel time	£ 3,068,953	£	327,853	£	2,741,100		
Vehicle operating costs	£ -						
User charges	£ -						
During Construction & Maintenance	£ -						
NET NON-BUSINESS BENEFITS: COMMUTING	£ 3,068,953 (1a)	£	327,853	£ -	£ 2,741,100	£ -	
Non-business: Other		ALL MODES	ROAD	BUS and COACH	RAIL	OTHER	
User benefits	TOTAL	Private Cars and LGVs	Passengers	Passengers			
Travel time	£ 1,478,804	£	169,907	£	1,308,897		
Vehicle operating costs	£ -						
User charges	£ -						
During Construction & Maintenance	£ -						
NET NON-BUSINESS BENEFITS: OTHER	£ 1,478,804 (1b)	£	169,907	£ -	£ 1,308,897	£ -	
Business			Goods Vehicles	Business Cars & LGVs	Passengers	Freight	Passengers
User benefits							
Travel time	£ 2,556,789		£	105,303			£ 2,451,486
Vehicle operating costs	£ -						
User charges	£ -						
During Construction & Maintenance	£ -						
Subtotal	£ 2,556,789 (2)		£	105,303	£ -	£ -	£ 2,451,486
Private sector provider impacts					Freight	Passengers	
Revenue	£ 4,345,733				-£ 179,524	£ 4,525,257	
Operating costs	-£ 10,063,977					-£ 10,063,977	
Investment costs	£ -						
Grant/subsidy	£ 5,538,721					£ 5,538,721	
Subtotal	-£ 179,524 (3)					£ -	
Other business impacts							
Developer contributions	£ - (4)						
NET BUSINESS IMPACT	£ 2,377,265 (5) = (2) + (3) + (4)						
TOTAL							
Present Value of Transport Economic Efficiency Benefits (TEE)	£ 6,925,022 (6) = (1a) + (1b) + (5)						

Notes: Benefits appear as positive numbers, while costs appear as negative numbers.
All entries are discounted present values, in 2010 prices and values

A.5 Do Something 2 – Public Accounts

Public Accounts (PA) Table		Poacher Line - DS2					
Local Government Funding		ALL MODES	ROAD	BUS and COACH	RAIL	OTHER	
	TOTAL	INFRASTRUCTURE					
Revenue	£ -						
Operating Costs	-£ 7,888	-£	7,888				
Investment Costs	£ 194,681				£	194,681	
Developer and Other Contributions	£ -				£	-	
Grant/Subsidy Payments	£ -						
NET IMPACT	£ 186,792 (7)	-£	7,888	£	-	£ 194,681	£ -
Central Government Funding: Transport							
Revenue	£ -						
Operating costs	£ -				£	-	
Investment Costs	£ -				£	-	
Developer and Other Contributions	£ -						
Grant/Subsidy Payments	£ 5,538,721				£	5,538,721	
NET IMPACT	£ 5,538,721 (8)	£	-	£	-	£ 5,538,721	£ -
Central Government Funding: Non-Transport							
Indirect Tax Revenues	£ 969,190 (9)	£	246,671	£	-	£ 722,520	£ -
TOTALS							
Broad Transport Budget	£ 5,725,513 (10) = (7) + (8)						
Wider Public Finances	£ 969,190 (11) = (9)						

Notes: Costs appear as positive numbers, while revenues and 'Developer and Other Contributions' appear as negative numbers.
All entries are discounted present values in 2010 prices and values.

A.6 Do Something 2 – Analysis of Monetised Costs and Benefits

Analysis of Monetised Costs and Benefits: Poacher Line - DS2		
Noise	£ 7,711	(12)
Local Air Quality	£ 50	(13)
Greenhouse Gases	£ 55,337	(14)
Journey Quality		(15)
Physical Activity		(16)
Accidents	£ 122,166	(17)
Economic Efficiency: Consumer Users (Commuting)	£ 3,068,953	(1a)
Economic Efficiency: Consumer Users (Other)	£ 1,478,804	(1b)
Economic Efficiency: Business Users and Providers	£ 2,377,265	(5)
Wider Public Finances (Indirect Taxation Revenues)	-£ 969,190	(11) - sign changed from PA table, as PA table represents costs, not benefits
Present Value of Benefits (see notes) (PVB)	£ 6,141,094	(PVB) = (12) + (13) + (14) + (15) + (16) + (17) + (1a) + (1b) + (5) - (11)
Broad Transport Budget	£ 5,725,513	(10)
Present Value of Costs (see notes) (PVC)	£ 5,725,513	(PVC) = (10)
OVERALL IMPACTS		
Net Present Value (NPV)	£ 415,581	NPV=PVB-PVC
Benefit to Cost Ratio (BCR)	1.07	BCR=PVB/PVC

Note : This table includes costs and benefits which are regularly or occasionally presented in monetised form in transport appraisals, together with some where monetisation is in prospect. There may also be other significant costs and benefits, some of which cannot be presented in monetised form. Where this is the case, the analysis presented above does NOT provide a good measure of value for money and should not be used as the sole basis for decisions.

A.7 Do Something 3 – Transport Economic Efficiency

Economic Efficiency of the Transport System (TEE)		Poacher Line - DS3					
Non-business: Commuting		ALL MODES	ROAD	BUS and COACH	RAIL	OTHER	
User benefits	TOTAL	Private Cars and LGVs	Passengers	Passengers			
Travel time	£ 3,255,339	£	321,853	£	2,933,486		
Vehicle operating costs	£ -						
User charges	£ -						
During Construction & Maintenance	£ -						
NET NON-BUSINESS BENEFITS: COMMUTING	£ 3,255,339 (1a)	£	321,853	£ -	£ 2,933,486	£ -	
Non-business: Other		ALL MODES	ROAD	BUS and COACH	RAIL	OTHER	
User benefits	TOTAL	Private Cars and LGVs	Passengers	Passengers			
Travel time	£ 1,274,827	£	166,797	£	1,108,030		
Vehicle operating costs	£ -						
User charges	£ -						
During Construction & Maintenance	£ -						
NET NON-BUSINESS BENEFITS: OTHER	£ 1,274,827 (1b)	£	166,797	£ -	£ 1,108,030	£ -	
Business			Goods Vehicles	Business Cars & LGVs	Passengers	Freight	Passengers
User benefits							
Travel time	£ 2,395,860		£	103,375		£	2,292,485
Vehicle operating costs	£ -						
User charges	£ -						
During Construction & Maintenance	£ -						
Subtotal	£ 2,395,860 (2)		£	103,375	£ -	£ -	£ 2,292,485
Private sector provider impacts						Freight	Passengers
Revenue	£ 4,341,398					-£ 188,534	£ 4,529,932
Operating costs	-£ 10,063,977						-£ 10,063,977
Investment costs	£ -						
Grant/subsidy	£ 5,534,045						£ 5,534,045
Subtotal	-£ 188,534 (3)						£ -
Other business impacts							
Developer contributions	£ - (4)						
NET BUSINESS IMPACT	£ 2,207,326 (5) = (2) + (3) + (4)						
TOTAL							
Present Value of Transport Economic Efficiency Benefits (TEE)	£ 6,737,492 (6) = (1a) + (1b) + (5)						

Notes: Benefits appear as positive numbers, while costs appear as negative numbers.
All entries are discounted present values, in 2010 prices and values

A.8 Do Something 3 – Public Accounts

Public Accounts (PA) Table		Poacher Line - DS3					
Local Government Funding		ALL MODES	ROAD	BUS and COACH	RAIL	OTHER	
	TOTAL	INFRASTRUCTURE					
Revenue	£ -						
Operating Costs	-£ 7,744	-£	7,744				
Investment Costs	£ 194,681				£	194,681	
Developer and Other Contributions	£ -				£	-	
Grant/Subsidy Payments	£ -						
NET IMPACT	£ 186,937 (7)	-£	7,744	£	-	£ 194,681	£ -
Central Government Funding: Transport							
Revenue	£ -						
Operating costs	£ -				£	-	
Investment Costs	£ -				£	-	
Developer and Other Contributions	£ -						
Grant/Subsidy Payments	£ 5,534,045				£	5,534,045	
NET IMPACT	£ 5,534,045 (8)	£	-	£	-	£ 5,534,045	£ -
Central Government Funding: Non-Transport							
Indirect Tax Revenues	£ 965,437 (9)	£	242,171	£	-	£ 723,266	£ -
TOTALS							
Broad Transport Budget	£ 5,720,981 (10) = (7) + (8)						
Wider Public Finances	£ 965,437 (11) = (9)						

Notes: Costs appear as positive numbers, while revenues and 'Developer and Other Contributions' appear as negative numbers.
All entries are discounted present values in 2010 prices and values.

A.9 Do Something 3 – Analysis of Monetised Costs and Benefits

Analysis of Monetised Costs and Benefits: Poacher Line - DS3		
Noise	£ 7,569	(12)
Local Air Quality	£ 49	(13)
Greenhouse Gases	£ 54,326	(14)
Journey Quality		(15)
Physical Activity		(16)
Accidents	£ 119,933	(17)
Economic Efficiency: Consumer Users (Commuting)	£ 3,255,339	(1a)
Economic Efficiency: Consumer Users (Other)	£ 1,274,827	(1b)
Economic Efficiency: Business Users and Providers	£ 2,207,326	(5)
Wider Public Finances (Indirect Taxation Revenues)	-£ 965,437	(11) - sign changed from PA table, as PA table represents costs, not benefits
Present Value of Benefits (see notes) (PVB)	£ 5,953,932	$(PVB) = (12) + (13) + (14) + (15) + (16) + (17) + (1a) + (1b) + (5) - (11)$
Broad Transport Budget	£ 5,720,981	(10)
Present Value of Costs (see notes) (PVC)	£ 5,720,981	$(PVC) = (10)$
OVERALL IMPACTS		
Net Present Value (NPV)	£ 232,951	$NPV = PVB - PVC$
Benefit to Cost Ratio (BCR)	1.04	$BCR = PVB / PVC$

Note : This table includes costs and benefits which are regularly or occasionally presented in monetised form in transport appraisals, together with some where monetisation is in prospect. There may also be other significant costs and benefits, some of which cannot be presented in monetised form. Where this is the case, the analysis presented above does NOT provide a good measure of value for money and should not be used as the sole basis for decisions.

A.10 Do Something 4 – Transport Economic Efficiency

Economic Efficiency of the Transport System (TEE)		Poacher Line - DS4				
Non-business: Commuting		ALL MODES	ROAD	BUS and COACH	RAIL	OTHER
User benefits	TOTAL	Private Cars and LGVs	Passengers	Passengers		
Travel time	£ 3,263,348	£	304,971	£	2,958,377	
Vehicle operating costs	£ -					
User charges	£ -					
During Construction & Maintenance	£ -					
NET NON-BUSINESS BENEFITS: COMMUTING	£ 3,263,348 (1a)	£	304,971	£ -	£ 2,958,377	£ -
Non-business: Other		ALL MODES	ROAD	BUS and COACH	RAIL	OTHER
User benefits	TOTAL	Private Cars and LGVs	Passengers	Passengers		
Travel time	£ 1,131,110	£	158,049	£	973,061	
Vehicle operating costs	£ -					
User charges	£ -					
During Construction & Maintenance	£ -					
NET NON-BUSINESS BENEFITS: OTHER	£ 1,131,110 (1b)	£	158,049	£ -	£ 973,061	£ -
Business			Goods Vehicles	Business Cars & LGVs	Passengers	Freight
User benefits	TOTAL				Passengers	
Travel time	£ 2,282,371		£	97,953	£	2,184,418
Vehicle operating costs	£ -					
User charges	£ -					
During Construction & Maintenance	£ -					
Subtotal	£ 2,282,371 (2)		£	97,953	£ -	£ 2,184,418
Private sector provider impacts					Freight	Passengers
Revenue	£ 4,184,218				-£ 188,119	£ 4,372,337
Operating costs	-£ 10,063,977					-£ 10,063,977
Investment costs	£ -					
Grant/subsidy	£ 5,691,640					£ 5,691,640
Subtotal	-£ 188,119 (3)					£ -
Other business impacts						
Developer contributions	£ - (4)					
NET BUSINESS IMPACT	£ 2,094,252 (5) = (2) + (3) + (4)					
TOTAL						
Present Value of Transport Economic Efficiency Benefits (TEE)	£ 6,488,710 (6) = (1a) + (1b) + (5)					

Notes: Benefits appear as positive numbers, while costs appear as negative numbers.
All entries are discounted present values, in 2010 prices and values.

A.11 Do Something 4 – Public Accounts

Public Accounts (PA) Table		Poacher Line - DS4				
Local Government Funding		ALL MODES	ROAD	BUS and COACH	RAIL	OTHER
Revenue	TOTAL	INFRASTRUCTURE				
Revenue	£ -	£				
Operating Costs	-£ 7,339	-£	7,339			
Investment Costs	£ 194,681			£	194,681	
Developer and Other Contributions	£ -			£	-	
Grant/Subsidy Payments	£ -					
NET IMPACT	£ 187,342 (7)	-£	7,339	£	£ 194,681	£ -
Central Government Funding: Transport						
Revenue	£ -					
Operating costs	£ -					
Investment Costs	£ -					
Developer and Other Contributions	£ -					
Grant/Subsidy Payments	£ 5,691,640				£	5,691,640
NET IMPACT	£ 5,691,640 (8)	£	-	£	-	£ 5,691,640
Central Government Funding: Non-Transport						
Indirect Tax Revenues	£ 927,625 (9)	£	229,521	£	-	£ 698,104
TOTALS						
Broad Transport Budget	£ 5,878,982 (10) = (7) + (8)					
Wider Public Finances	£ 927,625 (11) = (9)					

Notes: Costs appear as positive numbers, while revenues and 'Developer and Other Contributions' appear as negative numbers.
All entries are discounted present values in 2010 prices and values.

A.12 Do Something 4 – Analysis of Monetised Costs and Benefits

Analysis of Monetised Costs and Benefits: Poacher Line - DS4		
Noise	£ 7,173	(12)
Local Air Quality	£ 46	(13)
Greenhouse Gases	£ 51,485	(14)
Journey Quality		(15)
Physical Activity		(16)
Accidents	£ 113,653	(17)
Economic Efficiency: Consumer Users (Commuting)	£ 3,263,348	(1a)
Economic Efficiency: Consumer Users (Other)	£ 1,131,110	(1b)
Economic Efficiency: Business Users and Providers	£ 2,094,252	(5)
Wider Public Finances (Indirect Taxation Revenues)	-£ 927,625	(11) - sign changed from PA table, as PA table represents costs, not benefits
Present Value of Benefits (see notes) (PVB)	£ 5,733,442	(PVB) = (12) + (13) + (14) + (15) + (16) + (17) + (1a) + (1b) + (5) - (11)
Broad Transport Budget	£ 5,878,982	(10)
Present Value of Costs (see notes) (PVC)	£ 5,878,982	(PVC) = (10)
OVERALL IMPACTS		
Net Present Value (NPV)	-£ 145,539	NPV=PVB-PVC
Benefit to Cost Ratio (BCR)	0.98	BCR=PVB/PVC

Note : This table includes costs and benefits which are regularly or occasionally presented in monetised form in transport appraisals, together with some where monetisation is in prospect. There may also be other significant costs and benefits, some of which cannot be presented in monetised form. Where this is the case, the analysis presented above does NOT provide a good measure of value for money and should not be used as the sole basis for decisions.

