Nottingham to Lincoln
Stakeholder Board

Upgrade of the Nottingham, Newark and Lincoln Railway

A Strategic Overview

Upgrade of Nottingham, Newark and Lincoln Railway – A Strategic Overview

EXECUTIVE SUMMARY

- This paper sets out a strategy to upgrade the Nottingham, Newark and Lincoln railway line to give faster journey times and increased service frequencies.

- The objective of the strategy is to generate economic growth in the Nottingham – Lincoln corridor for a more flexible workforce, providing easier access to work, education and training in the region by upgrading the railway line that connects Nottingham, Newark and Lincoln.

- It is proposed that average journey times between Nottingham and Lincoln are reduced by around 20 minutes on a staged basis through improvements to the infrastructure.

- It is also identified that the reduced journey times would improve rolling stock utilisation and facilitate the restoration of two trains per hour between Nottingham, Newark and Lincoln AND an hourly service between Lincoln and Newark Northgate to facilitate greatly improved connections into/out of trains on the London to Edinburgh railway.

- The background to the strategy is explained and the need for economic development in the region is summarised.

- **The stages for the strategy are:**

  Stage 1 – The hourly Matlock to Nottingham service to be extended to Newark Castle from December 2013 to serve intermediate stations and provide faster journey times for the hourly Leicester to Lincoln trains - (requires local funding),
  Stage 2 – Network Rail propose to re-signal the line between Nottingham and Newark Castle, and hope to make passive provision for a higher linespeed – Target Date December 2016,
  Stage 3 – Upgrade track and level crossings between Nottingham and Newark Castle to increase the line speed from 60mph to 75mph or more – Target Date December 2016,
  Stage 4 - Upgrade signalling, track and level crossings between Newark Castle/Newark Northgate and Lincoln to increase line speed from 50/70mph to 85/90mph – Target date Dec 2017,
  Stage 5 – Electrify line from Nottingham to Lincoln as an add-on to the Midland line electrification.

- **The benefits from the strategy are:**

  Potential journey time from Nottingham to Lincoln with a stop at Newark Castle – around 50 minutes from December 2013, further reducing to 36 minutes from December 2016,
  An increase in the service between Nottingham, Newark and Lincoln to two trains per hour with an average journey time between the two cities of 44 minutes,
  An hourly service between Lincoln and Newark Northgate,
  The journey time and frequency improvements can be delivered with the same level of rolling stock required to operate the December 2013 service,
  Electric operation of trains from Lincoln to Derby, Leicester and London King's Cross via Newark Northgate.

- **To make progress, it is essential that local funding of £700k per annum for three years is urgently identified to implement stage 1 in December 2013.**

- Stakeholders have identified the need for an improvement in the service from Lincoln and Newark to destinations to the west of Nottingham including Birmingham.

OBJECTIVE:

- To generate economic growth in the Nottingham – Lincoln corridor for a more flexible workforce, providing easier access to work, education and training in the region by upgrading the railway line that connects Nottingham, Newark and Lincoln.

BACKGROUND:

- Following a meeting between Newark Business Club, Nottinghamshire County Council and Newark and Sherwood District Council with the Department of Transport it is now very clear that the strong case to improve the train service between Nottingham, Newark and Lincoln will only be delivered with robust political support.

- In 2010/11 government spending on transport in the East Midlands was the second lowest of any region in the UK at £235 per head; the national average is £344.

- During a visit to Derby on 2nd November 2012, the Chancellor of the Exchequer, the Rt. Hon. George Osborne MP stated that "I am really willing to work with the East Midlands to improve the quality of bids, make sure that they get the money and funding that they deserve".

- When announcing a second wave of City Deals, the Deputy Prime Minister, the Rt.Hon. Nick Clegg MP stated that he wanted the 20 cities and wider areas invited to bid for City Deals status "to come up with ambitious and innovative proposals to help them make changes that will be felt by everyone across their region".

- Whilst we have not been invited to bid for City Deal status, this paper sets out a strategy for improving the train service on the Nottingham to Lincoln railway in a way that would certainly make changes that would be felt across the East Midlands.

- In the light of the announcements by two senior Government Ministers, the strategy appears to be exactly the locally driven proposals that they are seeking.

- The issues were raised following a meeting of the East Midlands Councils on 16th November and will be the subject of a more focussed discussion at an infrastructure meeting on 14th December.

THE NEED FOR ECONOMIC DEVELOPMENT

- The Nottingham – Lincoln Line serves a population of around 1 million[i]. The Nottingham conurbation is the biggest centre of economic activity in the entire East Midlands, and Lincoln is the 5th biggest city. The corridor currently hosts 350,000 jobs[ii].

- Lincoln's economy suffers from its relative isolation from the rest of the UK, with below average GDP/GVA. The need for improved connectivity is long established as crucial for promoting economic growth in and around Lincoln. The Lincoln – Nottingham corridor is the main east-west route connecting Lincoln and its hinterland to half of England.

- Lincoln, Newark and Nottingham are all designated housing 'Growth Points', in which an additional 59,800 houses are planned to be built over the next twenty years – 18,800 in Lincoln, 11,000 in Newark and 30,000 in Nottingham. Growth Point plans incorporate very substantial development of business and employment sites, which will be particularly concentrated around stations on this railway line at Lincoln, Hykeham, Newark and Nottingham. The Nottingham – Newark – Lincoln line is unique amongst Britain's railway lines in serving 3 'Growth Points' within 35 miles.

- Lincoln University is one of the UK's fastest growing universities, with a 40% increase in students planned for the next ten years. A science park of around 1 million square feet is being developed for spin-off and related industries.

- Defence is a key employer around Lincoln, with several bases including RAF Waddington in close proximity. Good access to the wider region and the national rail network is vital to enable service personnel and families to maintain links established across the UK.

- Newark is a centre for small and medium size enterprises, with customers spread right across the UK and worldwide. Newark Business Club, with over 1000 members, regards substantial enhancement to east-west rail as crucial to Newark's economic future[iii]. Growth Point plans are for 220 hectares of land for business development, 157 hectares of which will be in the urban area around Newark station.

- Nottingham City Council has extensive plans for redevelopment, focussed around the station, where 290,000 square feet of floorspace for business & employment in the 'Eastside', 'Southside' and NG2 areas – all within walking distance of the station. In addition, the extensions to the NET tram system which will open in 2013 will put the station at the nexus of public transport for the whole of Nottingham.

- In March 2011 the Government designated Beeston as one of Britain's first Enterprise Zones, which the LEP expects will "create between 5,000 and 10,000 new jobs". Lincoln – Newark – Nottingham trains serve Beeston, but they currently fail to offer a cross-Nottingham commuter service to the enterprise Zone.

- The D2N2 LEP[iv] has identified "Nottingham to Newark and Lincoln (rail) infrastructure and service improvements (with improved linkage to Derby and Matlock)" as one of its select "Strategic transport infrastructure priorities critical to the LEP area"[v].

- DfT has long recognised the importance of this corridor, with investment of hundreds of millions of pounds in the parallel A46, most recently (2012) £340million on the Newark – Widmerpool section.

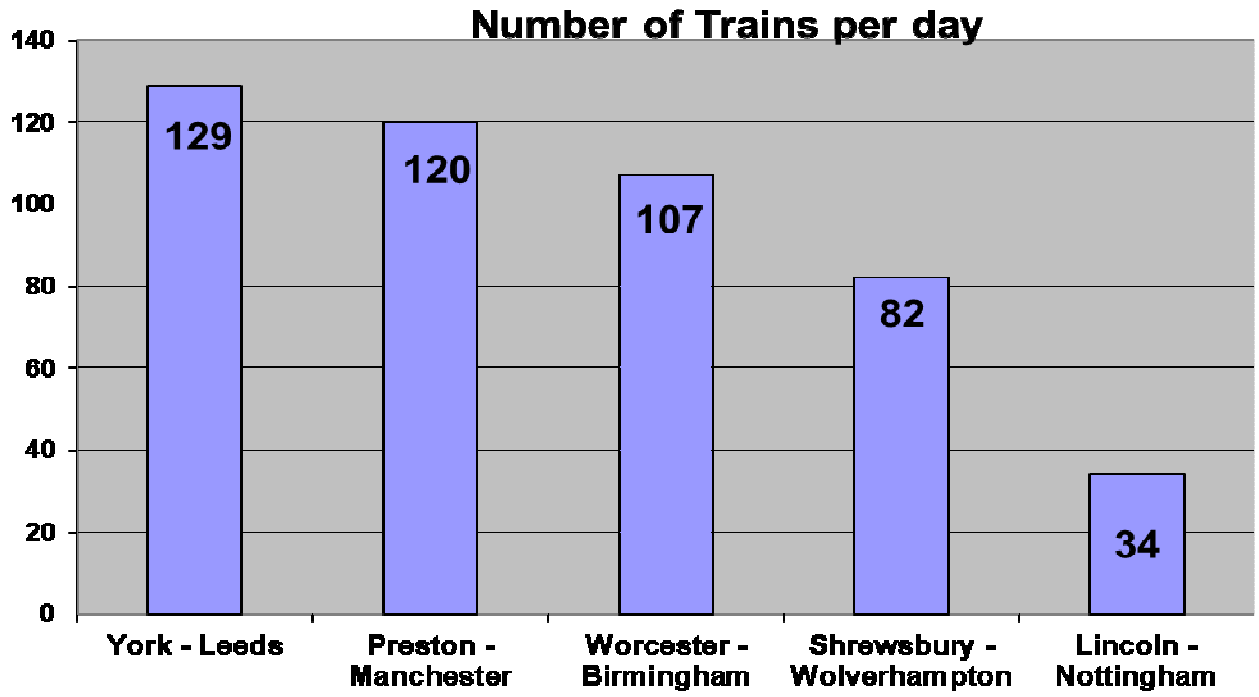
- Following a meeting between Newark Business Club and East Midlands Trains, a Stakeholder Board was formed in November 2009 to develop the case for improving the train service on the route. The Board is chaired by the Managing Director of East Midlands Trains (who have been consistently helpful) and has representatives from Local Authorities, Business Clubs and Passenger User Groups as well as Network Rail.

THE CURRENT RAIL SERVICE

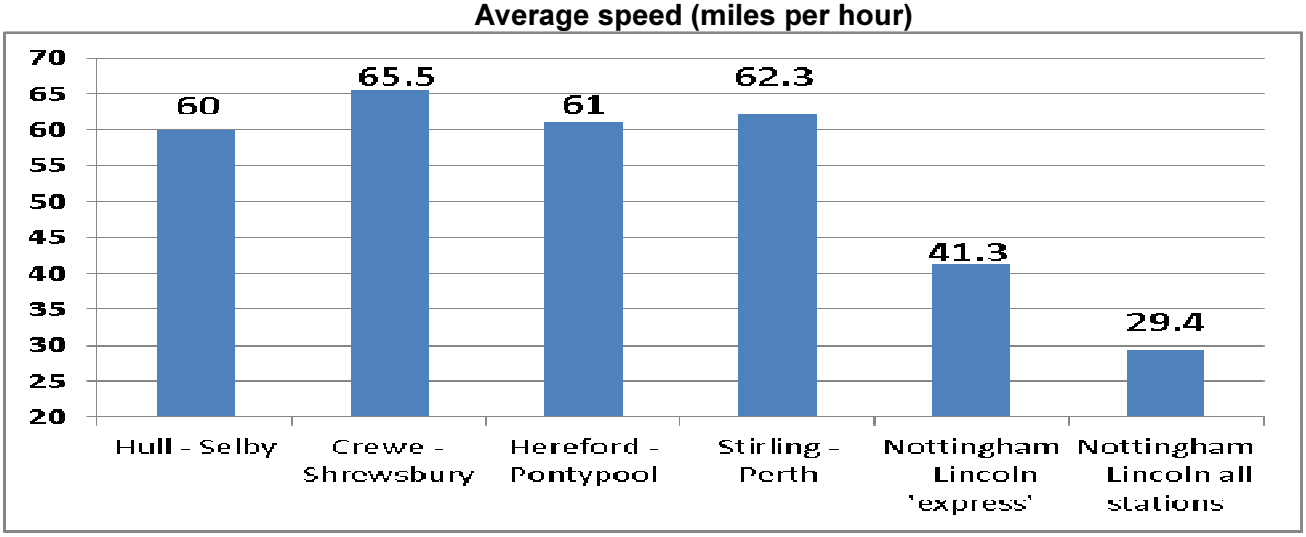
The Lincoln – Newark – Nottingham service is well below the standards that are normal for other comparable routes, in all key respects:

- Frequency,
- Speed,
- Capacity, and
- Onward connections

Lincoln has one train per hour to its core city (Nottingham), whereas most similar places have 2, 3 or 4 trains per hour to their core cities (Birmingham, Manchester, Leeds etc.)



Moreover, the trains between Nottingham and Lincoln take much longer than is achieved between other places that are a similar distance apart[vi]. This is compounded by the fact that what ought to be an express service also serves the intermediate stations, so around half of the trains stop every few miles/minutes.



Trains already carry standing loads in the peaks, on Saturdays, and in school holidays. For Lincoln Christmas market additional demand is so heavy that additional trains have to be operated by HST sets, but 8-coach Inter-City trains are not available for deployment on a daily basis.

THE SCOPE FOR IMPROVING RAIL CONNECTIVITY

It would be perfectly possible to address all the problems on this route. In 1912 fast Lincoln – Nottingham trains took 45 minutes, so there should be no reason why, after a century of technological progress it is slower now. The line has the spare capacity for additional trains to be run, albeit that times for crossing the ECML are limited. And enhancements to the infrastructure could allow higher speeds. These improvements could be delivered on a staged basis.

The first step is to increase the service frequency between Nottingham and Newark to two trains per hour. This would enable one train every hour to be an 'express', running non-stop (Newark – Nottingham), with the second train serving the intermediate stations. Thus having a second train per hour would improve frequency, and provide extra capacity, and provide a first step in speeding up the service through to Lincoln.

East Midlands Trains has managed to identify a spare train set that could be acquired to operate the additional services from December 2013. Together with Network Rail they have developed a timetable that would extend the current hourly Matlock – Nottingham service to Newark serving the intermediate stations, and allow the existing Lincoln – Leicester trains to run non-stop Newark to/from Nottingham every hour.

In 2011 the Department for Transport adopted a standard procedure whereby any enhanced rail service either had to be provided commercially or, if funding was required then that funding had to be provided from local stakeholders - essentially the relevant local Council(s) – for an initial period of 3 years, after which the Government would make it a standard part of the franchise subject to it having a satisfactory business case. In this case, £700,000 per annum would need to be found by local stakeholders for 3 years.

Once a regular express train every hour is established, then it would become worth investing in the track to raise line speeds (stage 2). At present the trains that operate the route have a top speed of 75mph[vii] or 90mph[viii], but there is not one single inch on which they can go at their top speed. Instead the prevailing speed limit is just 60mph Nottingham – Newark, 50mph Newark – Swinderby and 70mph Swinderby – Lincoln.

Nottinghamshire County Council, with support from Lincolnshire, has commissioned a study (to Network Rail's Guide to Railway Investment Projects [GRIP] (former) Stage 3) into what investment would be needed to raise the speed limit from 60mph to 90mph. The study showed that raising the linespeed to 90mph could cut the 'express' Lincoln – Nottingham journey time to 36 minutes – a massive (40%) reduction on the current average time (for all trains) of around 60 minutes.

Such a journey time benefit would only be for express trains, so it would require the successful introduction of the stage 1 additional service to serve the intermediate stations. Moreover, the additional passengers and revenue from the second train each hour would substantially improve the business case for enhancing the infrastructure to permit higher speeds/quicker journeys.

If the linespeed could be raised to 90mph and journey times cut in this way that would open up the real possibility of one of the Lincoln - Newark – Nottingham trains per hour being joined to a Nottingham - Birmingham train, thereby giving Newark (and Lincoln) a direct express train every hour to Derby & Birmingham, with a Lincoln – Birmingham journey time of around 100 minutes - around ¾ of an hour quicker than the present rail journey times which range between 134 and 153 minutes (including waiting for connections at Nottingham), and half an hour quicker than the road time as given by the AA Route Planner.

Network Rail is currently assessing the renewal of all the 100-year old signalling between Nottingham and Newark. Following completion of the Council's linespeed study Network Rail is now actively considering if/how the information from the study might be used to enhance the re-signaling scheme so that the new signalling was fit for much higher speeds. Network Rail is expecting to make its decision on the signalling in the spring of 2013. If the signalling was enhanced in this way it would still require works to level crossings and track between Nottingham and Newark, and between Newark and Lincoln. The Council will continue to work to find a way that those works could be done cost-effectively, and be funded.

SUMMARY OF PROPOSED STRATEGY:

Stage 1 – Hourly Matlock-Nottingham trains to run to Newark Castle – Target date Dec 2013

- The Stakeholder Board has identified **that the first step to a comprehensive enhancement of this line is extension of the hourly Matlock-Nottingham service to Newark Castle**, which would provide:
  - improved journey times between Nottingham, Newark and Lincoln (further work is currently being undertaken to assess the precise extent of the improvement),
  - an increased service frequency from Newark and intermediate stations to both Nottingham and Beeston,
  - increased capacity,
  - increased service frequency at Collingham and Hykeham,
  - a cross-city service for Nottingham, between Carlton and Beeston, and
  - improved connectivity from Newark to Long Eaton, Derby and beyond.

- East Midlands Trains has confirmed they could operate the additional services from December 2013 subject to funding; it can be delivered without infrastructure improvements.

- Government policy requires Local Authorities to fund additional services for three years before they receive national funding. The cost of operating the additional services is assessed at £700k per annum. There is therefore an urgent need for Local Authorities to agree to fund the improvements so that a major opportunity to kick start service improvements on the route is not lost.

Stage 2 – Network Rail install new signalling between Nottingham and Newark Castle – Target date Dec 2016

- As part of their re-signalling programme, Network Rail intend to re-signal the railway between Nottingham and Newark Castle. It ought to be possible to put the new signalling in fit for 75mph or more at minimal additional cost, whereas it could cost up to £20million if done as a freestanding scheme. Network Rail hopes to make passive provision for 75mph. In addition, but as part of a separate project, NR is carrying out a 'third-way analysis' to develop a strategic linespeed profile for a number of traction types, against linespeeds of 75/90/100mph for all secondary routes, including Newark – Nottingham.

- The re-signalling scheme would require the closure of Rolleston (definitely) and Morton (possibly) level crossings, though this would be subject to public consultation.

Stage 3 – Upgrade track and level crossings between Nottingham and Newark Castle – Target date Dec 2016

- To deliver the opportunities provided by the re-signalling between Nottingham and Newark Castle it will be necessary to upgrade the track and level crossings. The benefits include:
  - higher line speed, 85 or 90mph,
  - A reduction in the journey time between Nottingham and Newark Castle to 17 minutes for non-stop trains (the present service offers times of between 24 and 32 minutes dependent on the stopping pattern),
  - Reduced journey times between Nottingham and Lincoln, the detail being assessed,
  - The possibility of providing an hourly service between Lincoln and Newark Northgate with same number of units required for the December 2013 timetable, this option is currently being evaluated.

- Nottinghamshire County Council propose to:
  - Commission a study at the next Network Rail "GRIP" stage to refine costings,
  - Search for third party or rail industry funding to deliver the physical works.

Stage 4 – Upgrade signalling, track and level crossings between Newark Castle/Newark Northgate and Lincoln – Target date Dec 2019

- Network Rail propose to re-signal the East Coast Main Line between London and Doncaster using ERTMS technology. This will impact on the Nottingham – Lincoln Line as the section between Newark Castle/Newark Northgate and Swinderby is currently under the control of Doncaster Signalling Centre.

- To optimise the benefits from the new signalling it will be necessary to upgrade the track and level crossings between Newark Castle/Newark Northgate and Lincoln to allow a minimum line speed of 90mph. The benefits include:
  - A reduction in the journey time between Newark Castle/Newark Northgate to Lincoln to 18 minutes for non-stop trains (the present service offers times of between 24 and 40 minutes dependent on the stopping pattern),
  - Reduced journey times between Nottingham and Lincoln, the detail being assessed,
  - The ability to provide an hourly service between Lincoln and Newark Northgate with one unit,
  - Reduced journey times for services diverted off the ECML for any reason.

- Combined with the upgrade of the line between Nottingham and Newark Castle the benefits are further improved by:
  - A reduction in the journey time between Nottingham to Lincoln to 36 minutes for trains with one-stop at Newark Castle (the present service offers times of between 53 and 71 minutes dependent on the stopping pattern),
  - The ability to provide a two-trains-per-hour service between Lincoln and Nottingham with the same amount of rolling stock required to operate the December 2013 timetable.

- Nottinghamshire County Council propose to:
  - Commission a study at the next Network Rail “GRIP” stage to refine costings,
  - Search for third party or rail industry funding to deliver the physical works.

Stage 5 – Electrification – Nottingham to Lincoln

- The electrification of the Midland Line will bring many benefits to the region and will almost certainly initiate radical changes to the train service plan at Nottingham and other cities in the East Midlands

- Stakeholders consider that improving east – west connections from Lincoln and Newark through Nottingham are fundamental to economic growth in the corridor. It follows that trains from Nottingham to Derby and Leicester would need to still be operated by diesel trains unless the line from Nottingham to Lincoln is electrified.
- Stakeholders also consider that there is a need to evaluate the case for electrifying the route and that the cost should be modest because:
  - The line is already due to be re-signalled,
  - There are very few over bridges on the route and most of them appear to be suitable for electrification,
  - The track in the Nottingham station area is already due to be electrified and there are only a very small number of connections on the route eastwards to Lincoln,
  - The majority of the route is straight and level.

- The benefits are of electrifying the route are:
  - A further improvement in journey times due to better acceleration/deceleration of electric trains,
  - The ability to run electric trains from Lincoln and Newark to Leicester and Derby maintaining and improving the important east-west service through Nottingham,
  - The ability to operate electric trains from Lincoln to King's Cross via Newark Northgate and the East Coast Main Line,
  - A further extension of the electric spine route for freight trains, possibly as a first step in providing an electrified route to Immingham Docks. In any event, changing locomotives from electric to diesel should be easier at Lincoln than at Nottingham.

Ongoing

- Each stage of the Strategy is valid in its own right, and produces substantial benefits: but each phase is also a step towards the subsequent stages, and each step strengthens the business case of subsequent stages.

- **The initial phase is key to starting the whole virtuous circle**. It increases frequency at Newark and the intermediate stations; provides an initial journey time improvement for Lincoln; and increases capacity. But because it will generate more passengers and revenue it will also improve the business case for infrastructure works that would raise linespeeds. And by improving line speeds on the route it would be possible to both improve journey times and restore a two trains per hour service between Nottingham, Newark and Lincoln, together with an hourly service between Newark Northgate and Lincoln using *the same amount of rolling stock* that will be necessary from December 2013.

- The funding for stage 1 will cover the costs of an additional train set. Once the linespeed works were completed no further rolling stock would be needed to extend the second train per hour to Lincoln.

- It is proposed to identify the business case to reflect the overall strategy.

- It is the intention that the train service improvements be implemented on an incremental basis as physical works to the infrastructure are completed.

- It is a key objective to improve the east-west service through Nottingham from the Lincoln line. A summary of the service specification under consideration is attached as an appendix. Further work is necessary to establish western destinations but it remains as aspiration to restore through trains from Lincoln and Newark to Birmingham

Newark Crossing

- The strategy does not currently include the removal of the flat crossing that takes the Nottingham to Lincoln railway over the East Coast Main Line at Newark Castle as it remains unclear whether it will be possible to restore the two trains per hour service between Lincoln and Nottingham with the crossing in place.

- However, it remains the view of Stakeholders that there are major benefits from grade-separation of the lines at Newark including:
  Improved journey times on the East Coast Main Line,
  Increased capacity on both routes,
  Increased flexibility with planning train services,
  Improved performance,
  Major simplification of the signalling in the area when the East Coast Main Line is re-signalled with ETCMS as there would only be one interface between the two routes on the Newark Chord Line.

Lincoln Area Infrastructure

- Stakeholders consider that the major re-signalling of the Lincoln area failed to deliver the key objective of allowing trains to run to/from the Gainsborough and Newark lines at the same time.

- In the light of their decision to divert some freight services from the East Coast Main Line to operate via Lincoln, we consider that the Network Rail should consider enhancing the layout at Lincoln to allow:
  Trains between Lincoln station and the Gainsborough and Newark lines to operate independently,
  Trains running between the Spalding and Gainsborough lines to operate

independently of those between Lincoln station and the Newark line,
Trains running between the Barnetby and Newark lines to operate independently of those between Lincoln station and the Gainsborough line.

- The benefits are of enhancing the infrastructure at Lincoln are:
  Increased flexibility in both service planning and day-to-day operations,
  Improved performance,
  A possible modest reduction in the time that the barriers at both the High Street and Brayford level crossings are closed against road traffic as two trains in the same direction, as well as in opposite directions, would be able to operate through the crossings at the same time.

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[i] Greater Nottingham population 657,000; Newark 50,000 and Lincoln Travel To Work Area 300,000 (TTWA used because Lincoln station is the station for the whole TTWA)

[ii] The economic benefits of rail interventions in Lincolnshire', Centre for economics and business research', 2009, page74

[iii] Newark Business club presentation to Minister of State for Transport, Theresa Villiers, 9th May 2012.

[iv] D2N2 LEP covers Derby City, Derbyshire, Nottingham City & Nottinghamshire

[v] D2N2 LOCAL ENTERPRISE PARTNERSHIP 'Strategic Transport Priorities' (section 3.2), adopted by the LEP Board 28/9/2011

[vi] Distance (miles)Time Taken (minutes)Average speed (mph)Hull - Selby313160Crewe - Shrewsbury32¾ 3065.5Hereford - Pontypool33½ 3361Stirling - Perth34¼ 3362.3Nottingham – Lincoln calling at Newark only 33¾ 4941.3Nottingham – Lincoln calling all stations33¾ 6929.4

[vii] Class 156, which currently (November 2012) operate 75% of Lincoln – Nottingham services

[viii] Class 158, which currently (November 2012) operate 25% of Lincoln – Nottingham services

APPENDIX

Upgrade of Nottingham, Newark and Lincoln Railway – Service Specification

OBJECTIVES:

- The objectives of the study are to:
  - Establish whether the proposed line speed improvements between Nottingham and Lincoln will permit a 2tph service to operate between the two cities,
  - Confirm that the 2tph service could be operated with the rolling stock fleet required for the December 2013 service,
  - Establish that the 2tph can operate to western destinations with limited dwell times at Nottingham (no more than 5 minutes).

ASSUMPTIONS:

- The assumptions for the study are that:
  - The journey time between Nottingham and Newark Castle (non-stop) will be 17 minutes,
  - The journey time between Newark Castle or Newark Northgate to Lincoln (non-stop) will be 18 minutes,
  - Trains will continue to operate from Lincoln to destinations west of Nottingham, provisionally Leicester and Matlock although Birmingham remains an aspiration,
  - 8x2-car units will be available to operate the service; 2x4-car units from the Leicester – Lincoln cycle and 4x2-car units from the Matlock to Newark Castle cycle,

SUGGESTED STOPPING PATTERN:

- The suggested stopping pattern for the study is:
  - The journey time between Nottingham and Newark Castle (non-stop) will be 17 minutes, Train A (hourly) - Newark Castle, Collingham and Hykeham (Target journey time – 40 mins),
  - Train B (2-hourly to alternate with Train C) - Carlton, Lowdham, Fiskerton, Newark Castle and Swinderby (Target journey time – 44 mins),
  - Train C (2-hourly to alternate with Train B) - All stations to Newark Castle then fast to Lincoln (Target journey time – 50 mins),

- The target journey times have been assessed on the following basis:
  - The journey time non-stop from Nottingham to Newark Castle – 17 minutes,
  - The journey time non-stop from Newark Castle to Lincoln – 18 minutes,
  - The dwell time at Newark Castle is 1 minute,
  - Allowance for each intermediate stop other than Newark Castle – 2 minutes.

OPTION 1:

- Current plans suggest that the infrastructure between Nottingham and Newark will be upgraded before that between Newark and Lincoln:
  - Would that allow a two trains per hour service to operate between Nottingham and Lincoln with the same level of rolling stock as required for the December 2013 service?
  - If not, would the reduced journey time between Nottingham and Lincoln result in improved rolling stock utilisation and allow an hourly service between Newark Northgate and Lincoln with the December 2013 fleet with 5x2-car units cycling Leicester – Lincoln - Newark Northgate – Lincoln – Leicester?
  - To reduce the workload for this study it is suggested that the existing Newark

Northgate service should remain until 10.00 when the 2-car class 156 unit that arrives at Lincoln at 09.59 off the 08.33 Peterborough should enter the Leicester cycle with the 09.20 Grimsby Town – Newark Northgate train being diverted to Peterborough.

OPTION 2:

- Would the 18 minute journey time allow one unit to operate an hourly round trip from Newark Northgate to Lincoln either on a self-contained basis or as part of the Leicester cycle?

- Ideally we would like trains to call at Collingham and Hykeham in the peak.