

<b>Project:</b>	<b>Gedling 'Mineral Line' Greenway Route Assessment</b>		
<b>Subject:</b>	<b>Economic Impact Assessment</b>		
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## 1 Introduction

### 1.1 Appointment and purpose of study

Mott MacDonald was appointed in late March 2016 to undertake a high level assessment of the potential economic impacts of the greenway proposals along the 'Mineral Line', a 3.5km disused rail line from Netherfield Station to Gedling Colliery. This economic impact assessment was carried out to supplement the feasibility study into the project as a whole undertaken by Nottinghamshire County Council. The assessment was required in a short timeframe of three weeks in order to deliver evidence for the feasibility study. The short time period has not allowed for a full and detailed appraisal of the economic impacts and so this analysis should be considered preliminary, based on the best available evidence at the time of the study.

### 1.2 Scheme assessed

We have assessed the potential economic impacts of proposals to convert the Mineral Line route in Gedling into a greenway, focussed on a shared pedestrian and cycle path, with links to the surrounding communities and attractions. The disused branch line, which served the former Gedling Colliery, runs from Netherfield to Gedling in broadly north-south direction for approximately 3.5km. The proposals would be to convert the route to a publicly owned and accessible linear green space or greenway. As described in the May 2015 Feasibility Study, the scheme is anticipated to:

- Create a valuable additional green space and wildlife corridor.
- Connect six existing recreation areas and parks, helping to create a green space network between Gedling Country Park and Netherfield.
- Provide sustainable transport links between housing, employment, schools and recreational sites, and beyond the immediate communities to a wider recreational network as part of Greater Nottingham's 'Big Wheel' initiative.
- Safeguard the linear route for a possible extension of the Nottingham Express Transit (NET) network.
- Provide a focus for development of community based art, interpretation and management projects.

Though we understand a schedule for opening the Mineral Line for cyclists and pedestrians has not been proposed yet, for the purposes of this assessment, we have assumed route opening of 2019. Anticipated capital cost is approximately £1.5M, with an optimism bias adjustment of 44%, and we have assumed that ongoing operating costs of £100,000 per annum will be required to maintain the greenway to the required quality.

To the immediate east of the Mineral Line, on land bounded by Colwick Loop Road and Emerys Road is the proposed Teal Close development, comprising up to 830 dwellings. At the northern end of the Line,

on the site of the former Colliery, are proposals for 1,050 dwellings. It has been assumed that these developments are brought forward.

### **1.3 Document structure**

The remainder of this document is structured as follows:

- Section 2 considers the monetised benefits of cycle route proposals.
- Section 3 assesses the contribution of the scheme to the local economic development objectives of the area.
- Section 4 summarises our findings.

## **2 Monetised benefits of greenway proposals**

### **2.1 Introduction**

In this section we consider the monetised benefits arising from the Mineral Line by:

- providing attractive alternatives to car use for selected journeys; and
- promotion of physical activity through walking and cycling, either for travel to a particular destination or simply from direct use of the Line itself as an attraction.

These benefits are quantified using standard Department for Transport (DfT) appraisal guidance, embodied in WebTAG, including the use of supplementary tools from the World Health Organisation (WHO) and Sport England for physical activity benefits. Both the benefits and costs are presented in 2010 values and prices, discounted to reflect the fact that people prefer benefits now rather than at some point in the future. The appraisal of the scheme is considered over a 60 year period.

Demand forecasts for the greenway have been developed based on pedestrian and cycle counts from comparable sites throughout Greater Nottingham, adjusted to reflect the number of households within 1km of the Mineral Line. These indicate that by 2026, once all local housing development is complete, the greenway is forecast to be catering for approximately 275,000 walk and 155,000 cycle trips per annum, equivalent to 750 and 425 unique trips per day respectively.

### **2.2 Modal shift benefits**

Economic growth brings with it an increasing demand for travel from both existing residents and new developments. Few localities are equipped with sufficient capacity to cater for it by car alone, and efforts to address it solely through major infrastructure investment are unlikely to be viable from economic, environmental and/or social perspectives. In addition there are significant externalities associated with increases in car use, not least the costs that it imposes on other road users and the communities affected by rising road traffic levels. This is especially true in major urban areas such as Greater Nottingham. A balanced package of transport improvements is therefore required to ensure that local economies and communities can continue to function in the face of growth, ensuring that there are attractive alternatives to the private car. While only a proportion of the Mineral Line's users will have transferred from the car, with many changing where they walk or cycle or shifting from public transport, there still exists the potential for a substantial local reduction in car use. This would bring significant benefits to the local economy and communities.

#### **2.2.1 Decongestion**

Road traffic congestion increases travel times and costs to jobs and opportunities, constraining the ability of residents to access employment, and conversely limiting the labour supply available to employers, potentially discouraging inward investment. The congestion Greater Nottingham currently experiences

can only be expected to be exacerbated with the strategic requirement for additional housing and employment to support D2N2 LEP growth aspirations.

Every car-km removed from the network helps to reduce times and costs for other road users. Over a 60 year period, **the greenway is expected to provide £11.3M of decongestion benefits for other road users by removing up to 1.15 million car-kms per annum.**

### 2.2.2 Reduction in road traffic accidents

Road traffic accidents cause losses to society as well as the victims themselves, their friends and their relatives. Losses to society occur due to medical and ambulance costs for the NHS, and because severe and fatal injuries result in a loss of net economic output. The greenway offers an opportunity to lower car-kms through a safe, traffic-free, alternative. Over 60 years, **the reduction in car use is forecast to provide £880,000 of benefits from fewer road traffic accidents.**

### 2.2.3 Reduction in adverse environmental externalities

Road traffic imposes significant adverse impacts on the local communities through which it passes, creating local air quality issues, through particulate matter (PM<sub>10</sub>) and nitrogen dioxide (NO<sub>2</sub>), and noise. At a global level, road traffic provides a significant contribution to greenhouse gas emissions. In totality, **the greenway is forecast to provide £260,000 of environmental benefits** over a 60 year period.

## 2.3 Health benefits

There has been a growing recognition over the past decade of the interrelations between transport choices and public health<sup>1</sup>. **Car dependent communities result in lower levels of walking and cycling, diminishing overall levels of physical activity.** Inactivity is a primary contributor to rising levels of obesity and weight gain in the UK population. These, in turn, lead to higher rates of chronic diseases such as coronary heart disease, strokes, diabetes and selected forms of cancer.

**Physical activity also has a central role to play in mental health and wellbeing**, helping to ameliorate conditions such as depression. Increased walking and cycling brings about increases in quality of life, embodied in the Quality Adjusted Life Year (QALY) measure<sup>2</sup>, and in the long term reduced rates of mortality. A healthier population also imposes fewer costs on the NHS.

### 2.3.1 Improved quality of life and reduced mortality

There is a dose-response relationship between physical activity and most health outcomes, meaning that any increase in activity has some health benefits. Health impacts are greatest among people who become active after having a previously relatively inactive lifestyle. The estimated reduced mortality from the scheme is low, as it is only part of a wider solution; however, the standard value attached to each is high, resulting in an estimated benefit of £2.0M across 60 years.

The improvements in QALYs brought about by the increase in walking and cycling is forecast to deliver £3.8M in benefits, **providing approximately £5.8M of total health benefits from the increase in physical activity.**

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<sup>1</sup> For example, see: Road Transport and Health, British Medical Association, 1997.

<sup>2</sup> See National Institute for Health and Care Excellence (NICE) guidance on QALYs at: <https://www.nice.org.uk/advice/lgb10/chapter/judging-the-cost-effectiveness-of-public-health-activities>. For this appraisal, we have assumed a QALY value £25,000.

## 2.3.2 Cost savings to the NHS

In addition to savings brought about by reductions in road traffic accidents, already quantified in preceding sections, the NHS will also experience lower costs from a healthier population, with **anticipated savings of £360,000 across the 60 years.**

## 2.4 Summary

Table 1 summarises the forecast benefits of the greenway, also including the impact to HM Treasury due to lower receipts from fuel duty and VAT. The total estimated benefits are £18.9M, providing a **Net Present Value (NPV) for the scheme of £15.7M. The Benefit:Cost Ratio (BCR) is 5.92.** DfT guidance on Value for Money (VfM)<sup>3</sup> suggests that **any scheme with a BCR of greater than 4.0 represents ‘very high’ VfM.**

These values are exclusive of further wider economic impacts, which are considered in the next section.

**Table 1: Mineral Lane Greenway – Analysis of Monetised Costs and Benefits (£ks in 2010 values and prices; discounted)**

Impact	Total in £ks
<b>Decongestion</b>	<b>11,295</b>
<b>Reduction in road traffic accidents</b>	<b>881</b>
<b>Environmental outcomes</b>	<b>260</b>
<b>Health benefits</b>	<b>5,987</b>
<b>Wider public finances (NHS and HM treasury due to changes in fuel duty and VAT)</b>	<b>-488</b>
<b>Total benefits</b>	<b>18,911</b>
<b>Total costs (capital and operating)</b>	<b>3,184</b>
<b>Benefit Cost Ratio (BCR)</b>	<b>5.94</b>
<b>Net Present Value (NPV)</b>	<b>15,727</b>

Source: Mott MacDonald

## 3 Economic development impact assessment

### 3.1 Introduction

In this section we assess the potential economic development impacts of the greenway proposals for the Mineral Line scheme. The assessment is high level and focusses on the value of housing, access to employment and the direct construction benefits from the housing programme. To inform this economic development impact assessment, telephone consultations were undertaken with representatives of Gedling Borough Council (GBC) and the Homes and Communities Agency (HCA). These consultations contributed insight that supported the identification and assessment of the potential economic development impact of the Mineral Line scheme.

<sup>3</sup> See: <https://www.gov.uk/government/publications/value-for-money-advice-for-local-transport-decision-makers>

### 3.2 Economic assessment

#### 3.2.1 Economic value of housing – the LEP view

D2N2's Strategic Economic Plan (SEP) identifies that an adequate supply of housing is crucial in realising the LEP's growth ambitions. The housing mix is a key element of the LEP's offer, helping to provide an attractive and aspirational place to live and work, which is complemented by a high quality natural environment and access to key services opportunities.

The LEP also highlights significant economic benefits from housing investment based on increased profits and wages for contractors (direct impacts), as well as supply chain (indirect impacts) and from spending in the wider economy by direct and indirect employees (induced impacts<sup>4</sup>). Levered private sector investment in infrastructure and investment in skills in the form of construction training or apprenticeships are further important benefits of housing construction.

As a result, the LEP aims to accelerate completion of new housing to support growth in D2N2, ensuring this is supported by green infrastructure and multi-modal solutions to encourage sustainable travel and mitigate the adverse effects of additional travel in the faster-growing areas.

#### 3.2.2 Community, leisure and place-making

Due to its role in supporting the development of local communities, sustainable travel options have been suggested by stakeholders to be **intrinsically linked** to delivery of the housing sites of Gedling Colliery and Teal Close sites from a planning perspective.

The Mineral Line will provide an attractive, safe and sustainable route for residents **accessing local schools, including the new school**, to be built at the Colliery site. The Mineral Line provides a **safe route** for students at local schools to walk or cycle to school. The line is to be fully lit; meaning the benefits from access to school can be experienced throughout the year.

The Mineral Line will also provide **access to leisure and community centre facilities** such as Gedling Country Park, Willow Park, Ley Street Open Space and other parks and allotments in the area. **Multiple access points** along the line aim to increase the opportunities for leisure activities for both existing and future residents of the area, ensuring the benefits of the line are shared by anyone living within walking or cycling distance of the Mineral Line. This makes the area a **more attractive place to live** and helps develop a sense of place.

As well as catering for access to employment and education, the Gedling Colliery and Teal Close developments are likely to consist of **family housing**. As such, the Mineral Line cycle/footpath proposals are anticipated to be **highly complementary to delivery of the housing**, providing safe and attractive space and opportunities for all ages.

#### 3.2.3 Sustainable communities – connecting people to jobs

Transport is a barrier to some people when seeking employment, while for those currently in employment there may be lack of alternatives or significant travel times and costs imposed by congestion. The Mineral Line can provide a **direct and safe route through which employment opportunities can be accessed**. As noted previously, providing safe and attractive alternatives to the car will help to free capacity on Greater Nottingham's highway network. This will help to ensure that the additional demand from new developments does not exacerbate existing congestion, potentially constraining the jobs and opportunities which can be accessed by both existing and new residents.

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<sup>4</sup> HCA Additionality Guidance 4<sup>th</sup> Edn, 2014 defines induced impacts as those "associated with local expenditure as a result of those who derive incomes from the direct and supply linkage impacts of the intervention", in this case induced impacts may result from the expenditure in the local economy by the residents of the new houses.

The 3 hectares of employment land identified for the Gedling Colliery site will be directly accessible via the Mineral Line route, allowing residents from across the area to access these jobs using sustainable and healthy options. There are proven links between access to work and education by active modes, such as walking and cycling, providing productivity benefits to employers and increased attentiveness from students.

While it is unlikely that the line would enable a large proportion of Gedling's residents to cycle or walk all the way to Nottingham city centre, some residents will be able to manage the 5.5km, meaning they can better access the employment opportunities in the city.

For others, the Mineral Line **supports access to both Carlton and Netherfield railway stations**. Through these stations, residents are able to access key employment locations including Nottingham, Derby, Grantham, Boston and Skegness, thereby improving their ability to access employment opportunities and do business across a wider geographic area.

### 3.2.4 Viability and value

A key constraint to unlocking new housing identified by the D2N2 LEP is **viability**, with high development costs and contractor profit requirements meaning that many potential developments cannot be progressed.

For Gedling Colliery and Teal Close, other delivery and demand factors such as provision of the Gedling Access Road and flood risk mitigation are 'higher ticket' items to the delivery of the housing and employment sites. However, major schemes such as the Gedling Access Road run the risk of being overburdened unless smaller scale complementary schemes are put in place to provide alternatives.

**Connecting people to jobs and supporting community, leisure and place-making via the Mineral Line**, as described above, **could significantly increase the value of housing in the area**. Through projects that make an area more attractive to live in, the value of housing in the area increases. This increase in value of the houses makes the development more valuable to the developers and so more likely to be delivered.

We understand that further evidence regards the **viability of social housing** on the sites based on expected developer returns will be produced by Gedling Borough Council in late April 2016.

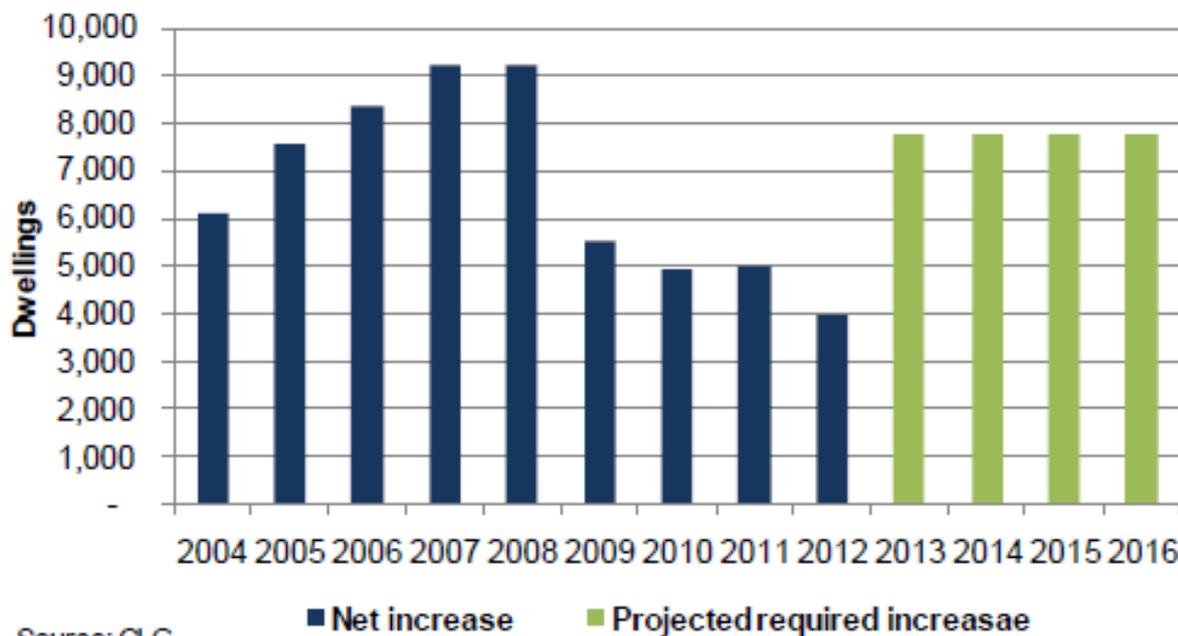
### 3.2.5 Potential economic development impacts

Based on our consultations and assessment, all dwellings are anticipated to be deliverable with or without the provision of the greenway on the Mineral Line.

D2N2's SEP states that the Department for Communities and Local Government's analysis suggest the LEP area requires 7,700 additional houses to be built per year. While the number of housing completions in the LEP area has fluctuated between 2,500 and 3,500 since 2009 and the number of housing starts has been between 2,000 and 3,000 each year<sup>5</sup> (as shown in Figure 1).

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<sup>5</sup> D2N2, Strategic Economic Plan, March 2014 p.41.



Source: CLG

**Figure 1: Recorded supply and projected future demand of housing in the D2N2 LEP area**

Source: D2N2, Strategic Economic Plan, March 2014 p.41

Dwellings delivered after the Gedling Access Road and as the Mineral Line is delivered (assumed to be both in 2019), may be made more attractive for the reasons outlined above, thereby having a higher market value and so be a higher priority for developers.

As a result, **1,265 gross dwellings are anticipated to be supported for development by the Mineral Line (post 2019 developments)**. In terms of the economic impacts for the D2N2 LEP area, we estimate that this investment could support:

- **Over £100 million of capital investment** to deliver the dwellings<sup>6</sup>.
- During the construction phase, **support 71 temporary construction full-time equivalent (FTE) jobs and £29.7m Gross Value Added (GVA)**<sup>7</sup>.
- A further **21 FTE jobs and £8.7m GVA**<sup>8</sup> would be supported through indirect and induced multiplier effects. It is understood that a proportion of the work will be delivered through use of apprentices, thereby improving the skills base in the area.

Temporary construction benefits by housing site are presented in Table 2.

<sup>6</sup> Assuming £995 required per m<sup>2</sup> and an average unit size of 80 m<sup>2</sup>. Assumptions drawn from Table 4 and 5 of "Housing development: the economics of small sites – the effect of project size on the cost of housing construction"; BCIS (2015); <http://www.fsb.org.uk/docs/default-source/Publications/reports/bcis.pdf?sfvrsn=0> [accessed 12<sup>th</sup> April 2015]

<sup>7</sup> Assuming a GVA per worker for construction jobs in the East Midlands economy of £41,591 per annum.

<sup>8</sup> Assuming a GVA per worker for jobs in the East Midlands economy £41,874 per annum.

**Table 2: Temporary employment (construction) impacts of dwellings delivered post-2019**

Impact type		Gedling Colliery	Teal Close	Total
<b>Direct</b>	<b>FTE jobs</b>	<b>41</b>	<b>30</b>	<b>71</b>
	<b>GVA</b>	<b>£17.2m</b>	<b>£12.4m</b>	<b>£29.7m</b>
<b>Indirect and induced (multiplier)</b>	<b>FTE Jobs</b>	<b>12</b>	<b>9</b>	<b>21</b>
	<b>GVA</b>	<b>£5.0m</b>	<b>£3.6m</b>	<b>£8.7m</b>
<b>Total</b>	<b>FTE Jobs</b>	<b>53</b>	<b>39</b>	<b>92</b>
	<b>GVA</b>	<b>£22.3m</b>	<b>£16.1m</b>	<b>£38.3m</b>

Source: Mott MacDonald

Based on the evidence available at this stage, a full assessment of the extent to which housing development could be accelerated by the Mineral Line proposals, or the net additionality to the D2N2 economy, has not been possible to identify. As D2N2 has under-delivered its housing targets since 2009, and identified viability as a major issue, schemes that support the viability and deliverability of housing in the area should be considered a positive investment.

### 3.2.6 Summary

From the above, the following key points can be drawn:

- By supporting access to schools, community facilities and green spaces and providing leisure activities, the Mineral Line **increases the desirability of the area**, including two key housing sites of the Gedling Colliery and Teal Close.
- The Mineral Line increases access to employment locations in Nottingham and beyond by providing increased access to local railway stations, thereby helping to **connect residents to jobs**.
- This would likely increase the value of the houses at the sites making them **more attractive and viable to developers** and therefore more likely to be delivered.
- The D2N2 LEP needs to build houses to accommodate for the increasing demand to live in area with house building providing economic benefits such as construction and supply chain impacts.
- The construction of the proposed dwellings at the Gedling Colliery and Teal Close sites between 2019 and 2026 would support an estimated:
  - a. 92 FTE jobs
  - b. £38.3m of GVA
- The extent to which deliverability of the housing sites is enhanced by the Mineral Line has not been possible to identify as part of this analysis, however the proposals are considered highly complementary.

## 4 Conclusions

Based on the assessment carried out on the Mineral Line proposals, the following conclusions can be drawn:

- After completion of the Gedling Colliery and Teal Close developments, anticipated to be in 2026, the Line is assumed to cater for approximately 275,000 walk and 155,000 cycle trips per annum respectively.
- There are significant benefits to be gained, particularly from decongestion on the local highway network and increased physical activity amongst existing and new residents.

- Decongestion of the local highway network helps to increase access to employment and other opportunities, and conversely the labour market available to employers. Without alternatives to car use, it is likely that congestion will increase and accessibility diminish.
- Health benefits are drawn from the use of the Line as a means of accessing employment and opportunities, and also as a recreational facility itself.
- In addition, there are further environmental benefits from reductions in local car use, and qualitative benefits from use of the Line, including further use of local leisure and recreational facilities for pleasure and exercise, such as Gedling Country Park, and increased productivity for employees and attentiveness amongst students. These have not been quantified for this appraisal.
- In total the Mineral Line is forecast to provide £18.9M of benefits against an anticipated cost of £3.2M, providing a NPV of £15.7M and a BCR of 5.94. These values are in 2010 values and prices, and have been discounted to reflect people's preferences for benefits in the present, as opposed to the future. Costs have been adjusted to reflect standard optimism bias assumptions.
- Under DfT guidance, this represents 'very high' value for money.
- The Mineral Line helps to build communities in Gedling by supporting access to schools, community facilities and green spaces as well as enabling greater access to leisure pursuits such as cycling and walking, this increases the desirability of the area.
- The Mineral Line increases access to employment across the wider area by providing increased access to Netherfield and Carlton railway stations, this connects residents to jobs.
- These impacts of the Mineral Line both increase the desirability of the area as a place to live, this increases the value of the houses in this area and accordingly, makes the housing development more viable to the developers, as the site will be more valuable as there will be sufficient demand for houses in this area.
- The construction of the proposed dwellings at the Gedling Colliery and Teal Close sites after 2019 would support an estimated:
  - a. 92 FTE jobs
  - b. £38.3m of GVA