



Albion Economics

Economic Impacts of
A27 Investment on the
South Downs National
Park

Final Report
March 2017

South Downs National Park
Authority

Our ref: 23027201



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Prepared by:

Steer Davies Gleave
28-32 Upper Ground
London SE1 9PD

+44 20 7910 5000
www.steerdaviesgleave.com

Prepared for:

South Downs National Park Authority
[Company Address]

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Executive Summary

Task

What are the impacts on the South Downs National Park economy from the proposals to increase capacity, improve journey time reliability and road-safety across the A27 at Chichester, Arundel, Worthing and east of Lewes?

Steer Davies Gleave (working with Albion Economics) was asked by the South Downs National Park Authority (SDNPA) to address the above question, to help inform the Authority's position on road intervention proposals that run through and adjacent to the Park.

Mindful of the SDNPA's statutory purposes¹, the context of the work is that the SDNPA has a duty to "seek to foster the social and economic wellbeing of the local communities within the National Park in pursuit of the two Purposes" and that there is a corresponding duty on Highways England when it carries out any work within a National Park to have regard to these purposes.

This is not a forecasting exercise but an overall assessment of the potential economic impacts – both positive and negative – upon the Park, its residents and businesses. The overall approach taken here is to:

- Assess the state of the investment options across the four A27 projects, understand what this would mean for connectivity, and how the options relate to one another;
- Understand the current economic context of the South Downs National Park and assess where connectivity is a constraint on economic objectives;
- Within the context of evidence from elsewhere on the economic impact of road investment, consider the potential economic impacts of the investment options.

Potential Economic Impacts of Road Investment

Connectivity is widely regarded as vital to the functioning of modern economies. Transport provides the means for people to access jobs, services and local businesses, together with the mechanisms linking goods to markets, and therefore plays a key role in the complex decisions of individuals to work, shop or travel, and where people and firms choose to live or locate. Consequently, transport improvements can alter patterns of economic activity, exerting both positive – and negative – effects on local communities and economies.

Traditionally, the standard approach of valuing the benefits of transport investment has been to focus on the savings in journey times and vehicle operating costs, or *user benefits*, associated with the project.

Users can benefit *directly* from journey time savings, especially for business travel, where time can be more easily quantified. Haulage firms, for example, will benefit from reducing vehicle operating costs, and the ability to serve more deliveries in a given timeframe – thereby saving on staff costs and enabling the business to operate more efficiently. Whilst at the national level this represents

¹ Purpose 1 is to conserve and enhance the natural beauty, wildlife and cultural heritage of the NP. Purpose 2 is to promote opportunities for the understanding and enjoyment of its special qualities.

a benefit – as economic efficiency is improved – it should be noted that at a local level the effects could be more mixed, and are extremely difficult to predict.

Whilst user benefits are a good starting point to understand economic effects, there are several caveats to comprehending impacts:

- **Induced Traffic:** Road investment can also encourage induced traffic, consisting of journeys that without the transport scheme would not have been undertaken. Whilst this represents a benefit in itself – those making new trips are experiencing a benefit by making a trip, perhaps accessing a job or conducting business that they would otherwise not have been able to undertake, or changing mode to benefit from a faster journey, this can erode the congestion relief to existing traffic.
- **Mode shift:** easier journeys by car may reduce demand for more sustainable travel modes, and contribute to second order impacts on the viability of, for example, bus services.
- **Time shifting:** greater capacity may allow people to travel at more convenient times. Again, this can be an economic benefit to those travellers, but impose external congestion costs on others that partially erode predicted time savings.
- **Longer trips:** research has shown that travellers often exhibit a ‘time budget’ that allows them to travel further if congestion is reduced. This can be an economic benefit (for example, through accessing jobs further afield) but again may erode predicted decongestion.

Despite renewed emphasis on the wider impacts of transport schemes, including road projects, there is comparatively little academic evidence of the actual impacts of these schemes on local economies following scheme completion. Post-opening studies, tend to focus on direct impacts such as traffic volumes, journey times and accidents, rather than wider economic impacts, where it is hard to disentangle the impact of the transport investment from other factors.

The Standing Advisory Committee on Trunk Road Assessment (SACTRA) report concluded such a contribution is likely to be **modest**. Although positive effects on the real economy can exist, none are guaranteed; the extent to which road investment can benefit local economies is highly dependent on specific local contexts and circumstances². Improved accessibility between two countries, regions or cities can deliver productivity gains, but may sometimes benefit one at the disbenefit of others by exposing indigenous firms to competition from stronger rivals elsewhere, referred to as the ‘two-way road’ effect³.

More recently, in relation to business productivity, Gibbons et al (2012) considered the impacts of major highway improvements constructed in Great Britain between 1998 and 2007 on employment and firm productivity. Through examining the change in employment accessibility within given travel times before and after the construction of highways schemes, they establish that a **10% improvement in accessibility leads to a 3% increase in employment and the number of businesses**, up to 30 km from the location of the highway scheme.

² Standing Committee on Trunk Road Assessment. 1999. Transport and the Economy: Full Report, Department for Transport.

³ Standing Committee on Trunk Road Assessment. 1999. Transport and the Economy: Full Report, Department for Transport.

Transport investment therefore appears to have a beneficial impact on business productivity at a local level, both through delivering transport cost savings to businesses and increased competition between firms. However, it should be noted that the extent to which *employment and business growth* associated with transport investment arises from the displacement of jobs and economic activity from elsewhere, rather than being additional within a national context, is unclear.

Implications for SDNP

Highways investment along the A27 corridor would therefore be expected to deliver a range of impacts on both the national and local economy, including the South Downs National Park.

Any schemes along the A27 would be expected to deliver benefits to users, which would accrue both to those currently travelling along the A27 and parallel routes through reductions in congestion delivering journey time savings. Some of these benefits will accrue to residents and businesses within the South Downs National Park, depending on the exact location of each scheme. The scale of time savings benefits would be moderated by any generated traffic, and there will also be routing impacts whereby some roads will become more attractive. Where traffic increases on some roads (on or affected by the A27 schemes) there could be counterbalancing economic impacts such as the positive effects on local businesses of increased passing trade, and the negative effects of increased congestion and environmental impacts (and vice versa for roads that experience reduction in traffic).

The precise mechanisms through which user benefits ‘trickle down’ into the wider economy will vary, dependent on the location and type of trips in question; whilst a (high) proportion of journey time savings will be passed directly to users, who will benefit from a faster journey, a significant proportion would be expected to be ‘traded’ for the ability to commute further, from a more desirable area, especially to highly-skilled, well-paid jobs where evidence suggests individuals are happy to commute extended distances to. This will likely have further impacts on both land and property markets within the National Park, and consequent impacts on congestion. However, due to the limited scope of the highways schemes, these impacts are likely to be extremely limited, and in any case nearly impossible to quantify.

Whilst some businesses within the park may benefit from improved productivity (such as a small business in Lewes being able to make additional deliveries in one shift due to reduced congestion), due to the small nature of the expected journey time savings the magnitude of this benefit is likely to be small. Similarly, any associated impact on local employment or ‘two-way road’ effects within the park (either positive or negative) are likely to be limited. Investment would hence be expected to deliver some productivity benefits to *specific* businesses, dependent on the *nature* of the business and its location, but is unlikely to have a ‘transformational’ impact on the park as a place to locate, or lead to large-scale changes in the distribution of economic activity. The exception to this is where new development could be considered ‘dependent’ on A27 improvements.

Suppressed and Induced Traffic

Additional traffic generated by these interventions could also erode travel time benefits, and this is most likely to occur where investment delivers a significant initial saving in journey time, or a large increase in new road capacity, which stimulates a large number of additional trips. These trips could have previously been suppressed (such as where congestion dissuades people from

travelling at congested times, such as the peak) or can be induced (where improved accessibility encourages them to make trips they did not previously make, such as a visit to a shopping centre now within an acceptable travel time of an individual's home).

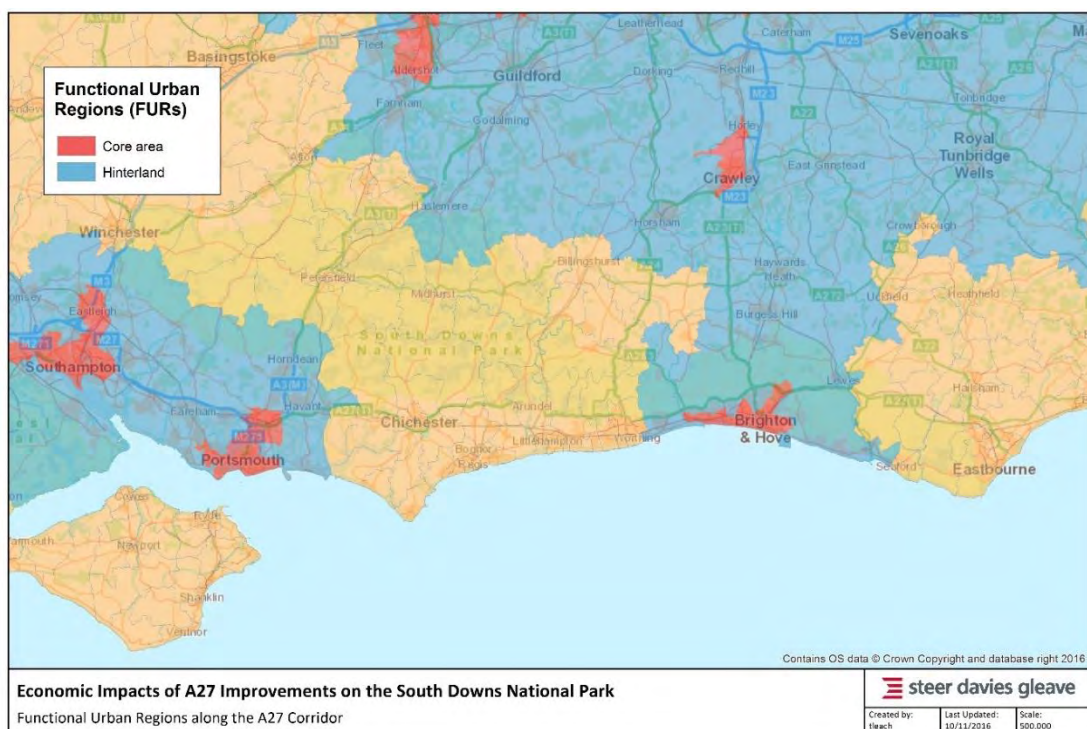
Induced traffic is most likely where a time saving represents a large proportion of the overall journey time (such as three-minute saving on a short ten-minute journey within Chichester). Hence, the A27 which would be expected to generate the most significant induced travel effects would be Lancing / Worthing and Chichester; a significant time saving would be expected to generate a significant volume of additional local trips. Since longer flows to / from / within the park would be expected to receive a smaller proportional journey time saving (such as four minutes on a forty-minute trip between Lewes and Eastbourne, for example), induced traffic effects would be expected to be more limited, and hence have a commensurately limited impact on overall traffic flows within the park.

While traffic flows may increase along the routes included within the A27 upgrades, a proportion of this this would be accounted for by the displacement of traffic from other, less suitable routes (such as the A259). Re-routing of traffic onto the A27 from the wider network is likely to lead to congestion relief along such routes, which pass through numerous towns and villages and are hence less suited to through-traffic (between Lewes and Eastbourne, the A26 / A259 passes through Denton, Seaford and Alfriston), delivering benefits for park residents and businesses.

Agglomeration and Labour Market Effects

Agglomeration benefits associated with the A27 schemes within the SDNP are likely to be very small. Whilst journey time savings along the corridor will result in bringing economic activity – people, firms and businesses along the corridor – closer together, Department for Transport guidance indicates that agglomeration impacts are only likely to be significant within dense urban areas (and their hinterlands) with high concentrations of economic activity. These are referred to as 'Functional Urban Regions' or FURs, as shown in Figure 2.1.

Whilst parts of the South Downs National Park fall within the 'hinterland' of the Brighton, Portsmouth and Southampton FURs, the proposed A27 interventions broadly fall outside of this hinterland, and do not improve the connectivity **within** any of the FURs illustrated. Agglomeration benefits erode rapidly with increasing travel time, and hence time savings are only likely to deliver significant agglomeration benefits if they occur within a FUR, such as a journey from Falmer to Brighton. Due to the obvious absence of dense concentrations of economic activity within the South Downs National Park, any agglomeration impacts on park businesses are expected to be insignificant.

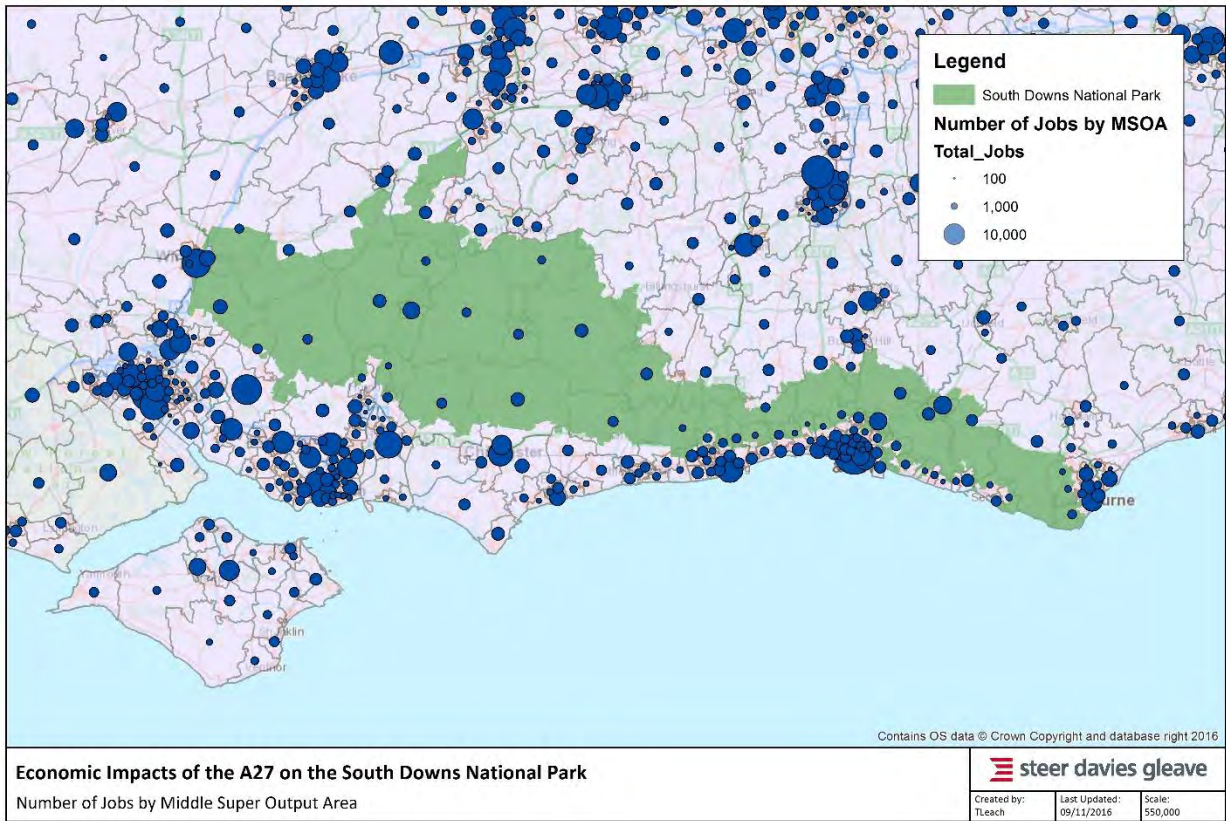
Figure 1.1: Functional Urban Regions along the A27 corridor

Whilst the A27 interventions would be expected to deliver some labour market impacts within the park, the scope of the schemes is not expected to lead to dramatic changes in the geography of commuting patterns, or the location of economic activity. Local impacts would be expected to occur as a result of an increase in commuting catchments (such as increased scope for workers to Lewes to commute from Eastbourne, for example), although this benefit would be included within the ‘trickle down’ of commuter user benefits within the conventional transport business case for the scheme. Wider labour market impacts, associated with the relocation of workers or economic activity, are not expected to be significant.

Economic Performance within the SDNP

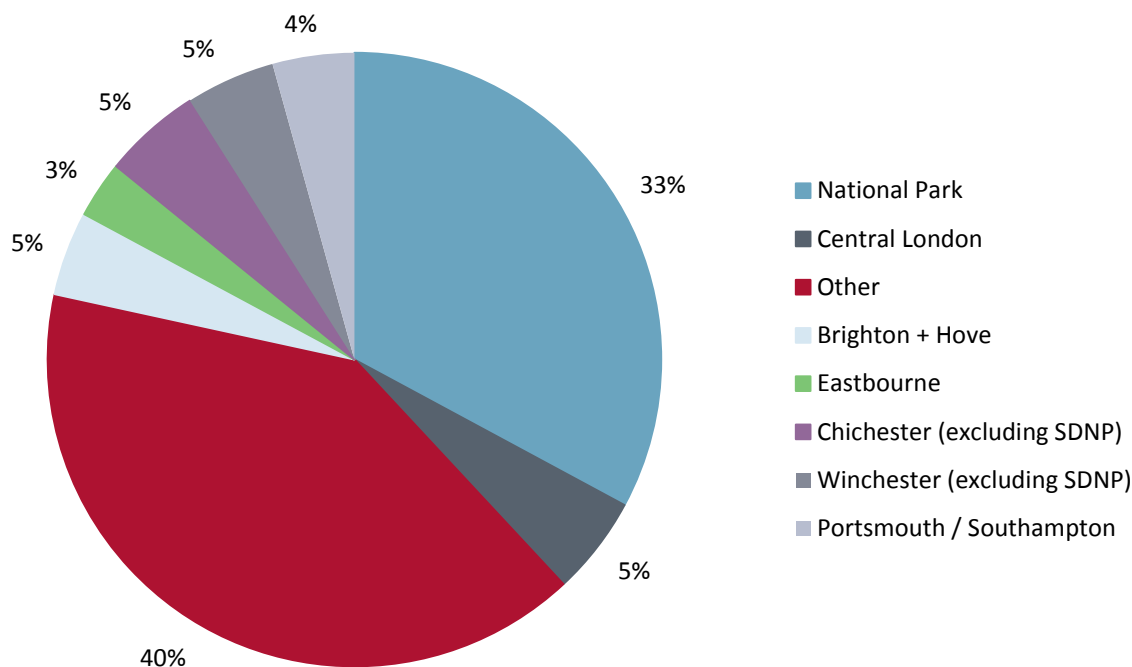
Research shows that most job opportunities for those who live within the Park lie in neighbouring areas. More than 628,000 jobs are located within the twelve local authorities that the park lies within, of which 128,000 fall within Brighton and Hove, with an additional 112,000 jobs in Southampton and 101,000 in Portsmouth. Conversely, only 55,000 jobs are located within the South Downs National Park itself.

Figure 1.2: Total employment along the A27 corridor



National Park residents hence typically commute longer distances than average to work, and are consequently highly dependent on good transport accessibility, by both road and rail. More than 87% of households within the park own one or more cars, well above the national average of 74%, indicating a reliance on road transport; good access to jobs and services, combined with a high quality-of-life, form an important part of the park's continued appeal as a place to live. This attractiveness also explains the high house prices within the SNDP, which has the effect that many lower paid jobs rely on workers from outside the park boundary.

Figure 1.3: Location of work of National Park residents



Conclusions

Overall, the likely economic impacts of the proposed investment on the A27 are therefore likely to be locally specific, and are not likely to impact on the wider economic geography of the park. These impacts are hence expected to include:

- Local congestion relief and journey time savings along both the A27 and parallel routes (as some people re-route onto the A27), which generates:
 - Small productivity impacts on specific businesses within the park, although highly locally and business-specific;
 - ‘Trickle-down’ effects of transport user benefits, as individuals commute further in the same journey time to live or work elsewhere;
 - Improved labour market accessibility, both by car and bus.
- Changes in traffic flows, including minor induced traffic effects, which:
 - Impact on the quality of the local environment in which businesses operate (noise; air quality; landscape), with consequent effects of those businesses (especially within the tourism sector)
 - Rerouting effects, limited induced traffic, and subsequent impacts on passing trade.

One specific concern is the lack of consideration to date of the A27 corridor as a whole, although it is noted that the Arundel and Worthing/Lancing scheme modelling have taken account of each other. This relates both to the effects of individual improvements upon traffic demand elsewhere and to the fact that the busiest sections (Portslade-Lewes) do not have specific investment planned under the HE Phase 1 programme. This could lead to more traffic reaching these busy

sections more quickly, or effectively queues relocating, and placing additional pressure on junctions along the Brighton bypass.

In the absence of detailed and integrated modelling of the schemes across the A27 corridor, it is not possible to form a definitive view as to the balance between the benefits of removing rat-running from unsuitable roads within the Park, and the counter-veiling effects of the schemes generating additional traffic. However, on balance, our professional view is that for the Park itself, the positive re-routing impacts are likely to outweigh induced traffic effects.

Individual Schemes

Details of the economic case for individual schemes are set out in the main body of the report. A summary of the findings for each scheme are as follows:

The **East of Lewes** proposals are primarily designed to address safety concerns and the impact on local communities. Time savings will be less than a maximum of five minutes and this is not expected to have economic impacts beyond small improvements to labour market and business catchments. Effects on local businesses are expected to be mixed, with some options (such as the Selmeston bypass) potentially imposing noise and proximity costs on established businesses within the Park, whilst others would lose passing trade but gain from a more tranquil environment. The value-for-money economic case for a number of components may be insufficient to attract positive funding decisions.

By contrast, the proposals to complete online dualling of the A27 through **Lancing and Worthing** appear to have a strong benefit:cost economic case. The BCR presented is 6.5 : 1 suggesting that there will be net positive economic benefits for a duelled online option. The option would also serve an area of major planned development adjacent to Shoreham airport, where there are published plans for 600 homes, employment and IKEA big box retail. While this has not been demonstrated to be dependent on the dualling scheme under review, the scheme would ease traffic flow to the west. The detail of an online dualling option is not yet in the public domain, but part of the rationale is to limit the number of accesses on to the A27, as this is a significant source of congestion. This potentially has implications for local connectivity, particularly if the junction strategy is a signal-controlled rather than roundabout-based one. Specific local access issues from north of the A27 may occur in relation to Worthing Golf club, and in relation to farm accesses from the SDNP. The extent of these issues would depend on the detail of option design. This would also be the case in relation to severance impacts and access to the Park, which could be net positive or harmful dependent on design.

The planning process for **Arundel** is at a similar stage to Worthing/Lancing, considering options between now and Summer 2017. The BCR presented for an offline option is 1.7:1, which represents medium value for money as an initial assessment, but reliability and induced traffic impacts, together with accident and environmental effects may make a significant difference to this initial finding. Local economic impacts will depend in part on whether a junction is provided with Ford Road, due south. This would help to open up development opportunities at Ford Airfield with at least 1,500 houses^[1], although this has not yet been identified as 'dependent

^[1] <http://ford.arun.gov.uk/main.cfm?type=EVIDENCEBASE>

development' for the Arundel scheme. It would represent an economic benefit in its own right, although by definition it would load additional traffic on to the Strategic Road Network and therefore exacerbate congestion compared with a 'no development' scenario. Whilst the town of Arundel itself would be expected to provide congestion relief in the town, and therefore improve its appeal as a tourism destination, any bypass scheme will inevitably have an adverse impact on the wider surroundings of the park. The extent of this will be dependent on the scheme alignment chosen, and the degree of environmental mitigation proposed.

Whilst a **Chichester** scheme is expected to deliver significant journey time improvements, the geography of the scheme and the park means that wider connectivity and labour market effects within the park are likely to be spread across a wider area. The location of the scheme to the south of Chichester is expected to result in the greatest local impacts being felt within the town itself, rather than the park. The case for investment is considered by HE with dependent development at the strategic development location of Tangmere, North East Chichester and West Chichester. Together, these are expected to deliver 2,500 residential units and 1,000 jobs by 2041⁴. While this development will add additional longer term pressure on to the strategic road network, and the A27 in particular, it could be argued that allowing development to take place at these strategic locations may reduce pressure for housing development at more sensitive locations within the SDNP.

It should be noted that the Chichester investment process was halted by the Secretary of State for Transport in early March 2017.

⁴ A27 Chichester Bypass Improvement Scheme, Forecasting Report, Table 5.1. Highways England. 27 July 2016.

1 Introduction

Scope of Work

Background

- 1.1 In 2014, the Department for Transport announced the Road Investment Strategy Stage 1 (RIS 1) for the period 2015-2020. There are specific targets for the south-east region that RIS 1 is being designed to meet, including:
- 24 major improvements to start by 2020 (output target)
 - Deliver 120 miles of extra lanes (output target)
 - Help reduce by 40% the number of people killed or seriously injured on the network (outcome target)
- 1.2 Together with more general aims to:
- Tackle noise and mitigate and/or improve the environment
 - Set and manage expectations of residents and road users and improve their customer experience
 - Support regional growth
- 1.3 RIS1 contains a number of candidate road investment options for the A27 trunk road across Sussex, from Chichester close to the Hampshire border across to Polegate, east of Lewes. These are being developed and will be delivered by Highways England (HE), the delivery agency for the Strategic Road Network. The options incorporate the following A27 investment projects:
1. Chichester bypass junction schemes
 2. Arundel bypass options
 3. Worthing-Lancing investment
 4. East of Lewes measures
- 1.4 This work is also set within the context of the South Downs National Park's (SDNP's) statutory purposes:
- **Purpose 1** is to conserve and enhance the natural beauty, wildlife and cultural heritage of the NP
 - **Purpose 2** is to promote opportunities for the understanding and enjoyment of its special qualities

- 1.5 Correspondingly, the South Downs National Park Authority (SDNPA) has a duty⁵ to “seek to foster the social and economic wellbeing of the local communities within the National Park in pursuit of the two Purposes”. Highways England, whenever it carries out any work within a National Park, also has a duty to have due regard to the purposes of the National Park in question.

Scope of Work

- 1.6 This report is designed to specifically address the following question:

What are the impacts on the SDNP economy from the proposals to increase capacity, improve journey time reliability and road-safety across the A27 at Chichester, Arundel, Worthing and east of Lewes?

- 1.7 This is not a forecasting exercise but an overall assessment of the potential economic impacts, both positive and negative upon the Park, its residents and businesses. The overall approach is as follows:
- Assess the state of the investment options across the four A27 projects, understand what this would mean for connectivity, and how the options relate to one another;
 - Understand the current economic context of the South Downs National Park and assess where connectivity is a constraint on economic objectives;
 - Within the context of evidence from elsewhere on the economic impact of road investment, consider the potential economic impacts of the investment options including:
 - the conventional transport economic case and its limitations;
 - the transport benefits that would accrue to business users (freight/business travel and comment on the impacts on non-business users);
 - the scope for additional labour market and agglomeration effects, and the negative impacts of displacement of labour and businesses from elsewhere to achieve this;
 - the theoretical evidence of planned dependent development reliant on the A27 investment; and the opportunities for non-A27 dependent businesses;
 - the likelihood of specific local impacts;
 - comments on the traffic modelling used to predict demand and impacts, and evidence this provides for increasing / reducing traffic volumes in some of the study areas (from HE), and to comments on identified journey time impacts both on the A27 and other affected routes;
 - impacts on housing markets with commuters potentially being able to access more jobs, but also to travel further in the same time;
 - implications for low paid workers to support SDNP industries, for whom increasing housing demand and costs, and public transport accessibility are key issues.

⁵ Section 62 (1) of the Environment Act (1995).

Report Structure

1.8 The remainder of the report is structured as follows:

- **Chapter 2** contains a summary of evidence on the **potential economic impact of road investment**, including the opportunity cost of not investing in other modes.
- A summary of the **objectives and options for each A27 project** is contained in **Chapter 3**.
- The **economic narrative for the SDNP area** is presented in **Chapter 4**, including commuting implications for the A27.
- An assessment of the **specific economic case and economic impacts of each A27 project** is contained in **Chapter 5**.
- **Chapter 6** presents a summary of **key conclusions**.

2 Potential Economic Impacts of Road Investment

Introduction

- 2.1 Transport accessibility is widely regarded as vital to the functioning of modern economies. Transport provides the means for people to access jobs, services and local businesses, together with the mechanisms linking goods to markets, and therefore plays a key role in the complex decisions of individuals to work, shop or travel, and where people and firms choose to live or locate. Consequently, transport improvements can alter patterns of economic activity, exerting both positive – and negative – effects on local communities and economies.
- 2.2 However, the precise mechanisms through which transport improvements impact the real economy are often poorly understood. Savings in journey times and vehicle operating costs – known as *user benefits* – typically form the majority of the benefits associated with a transport project within the scheme appraisal. Whilst many of these benefits are subsequently passed onto others in the real economy, such as transport savings for firms passed onto customers, the mechanisms through which these transfers take place are often poorly understood.
- 2.3 Benefits are rarely expressed in GDP terms, or in terms of additional employment, and it can be difficult for policymakers to understand how user benefits and journey time savings will impact on local economies. This section will outline how highway investment can impact the real economy, review the evidence as to the extent of impacts upon the wider economy, and draw out key implications for the SDNP.
- 2.4 Government policy recognises these shortcomings, and there is currently a major DfT initiative to better understand, and value, the impacts of transport investment.

User Benefits and Conventional Appraisal

- 2.5 Traditionally, the standard approach of valuing the benefits of transport investment has been to focus on the savings in journey times and vehicle operating costs, or *user benefits*, associated with the project. Transport schemes will typically lead to a journey time saving for existing users, which are monetised in line with DfT Values of Time, which produces a quantifiable benefit when projects are appraised. Whilst this appears a simplistic approach, these benefits capture the value of a wide variety of subsequent impacts felt on the real economy.

How do user benefits impact on the real economy?

- 2.6 Users can benefit *directly* from journey time savings, especially for business travel, where time can be more easily quantified. Haulage firms, for example, will benefit from reducing vehicle operating costs, and the ability to serve more deliveries in a given timeframe – thereby saving on staff costs and enabling the business to operate more efficiently. Whilst at the national level this represents a benefit – as economic efficiency is improved – it should be noted that at a local level the effects can be more varied, and are extremely difficult to predict.

- 2.7 Savings may accrue to firms which are best placed geographically to take advantage of journey time savings, who benefit from higher profits and employ more staff, whilst firms elsewhere who have not benefited from a transport scheme may find it harder to compete, and consequently make redundancies. The local economy within the town where the first firm is located would therefore benefit, but this would partly be a result of displacement of jobs from elsewhere.
- 2.8 Non-business users – such as those making commuter or leisure trips – could benefit from more leisure time, or alternatively choose to ‘trade’ their journey time improvements, such as for improved housing elsewhere. This individual might choose to commute for the same length of time to somewhere further afield – whilst their journey time may be identical to prior to the scheme, they are able to benefit from a larger house with a garden, for example. This new area, now accessible to workers elsewhere, may then become a more attractive place to live, increasing land values through an increase in rent and house prices. This benefit may transfer to the original house owner when housing is purchased or a property is rented; the user benefit is thence transferred into the real economy through the property market. Impacts on house prices can be positive for existing owners (occupiers or landlords), but negative for those who cannot afford to buy and for those renting. These impacts can have both social and economic consequences, for example if local people cannot afford to live in the area, and therefore also exit the local labour market.
- 2.9 Since this new area is becoming a more attractive place to live and work, it is likely to stimulate further development, although in part this development would be expected to be displaced from elsewhere. Other areas are likely to become less desirable as a place to live in relative terms, suffering from stagnating property prices and less development, and therefore experience a disbenefit – even if nationally, the project delivers a significant benefit to the real economy. User benefits could also accrue disproportionately to certain groups: a highway scheme could benefit through-traffic at the expense of local traffic if local accesses are closed off.
- 2.10 These mechanisms through which user benefits are transmitted into the real economy are rarely outlined in scheme appraisals, which focus on the net impact on the economy as a whole. Business cases typically report the total savings in welfare terms, which can be difficult to relate to local impacts on employment or GDP.

Induced Traffic

- 2.11 Road investment can also encourage induced traffic, consisting of journeys that without the transport scheme would not either have been undertaken, or alternately would have been undertaken using a different mode. Whilst this represents a benefit in itself – those making new trips may be accessing a job or conducting business that otherwise they would not have been able to undertake, or changing mode to benefit from a faster journey, this can erode the congestion relief to existing traffic.
- 2.12 Existing traffic flows can therefore suffer from extended journey times, reducing their user benefits. Journeys which do not travel along the highway scheme – such as in nearby town centres – can suffer disbenefits as a result of new trips elsewhere. Traffic modelling used in scheme appraisals should aim to capture these effects, considering the impact of generated traffic on the wider road network and not simply consider the impacts on the highway subject to the scheme, in order to ensure that any disbenefits from induced traffic are fully considered.

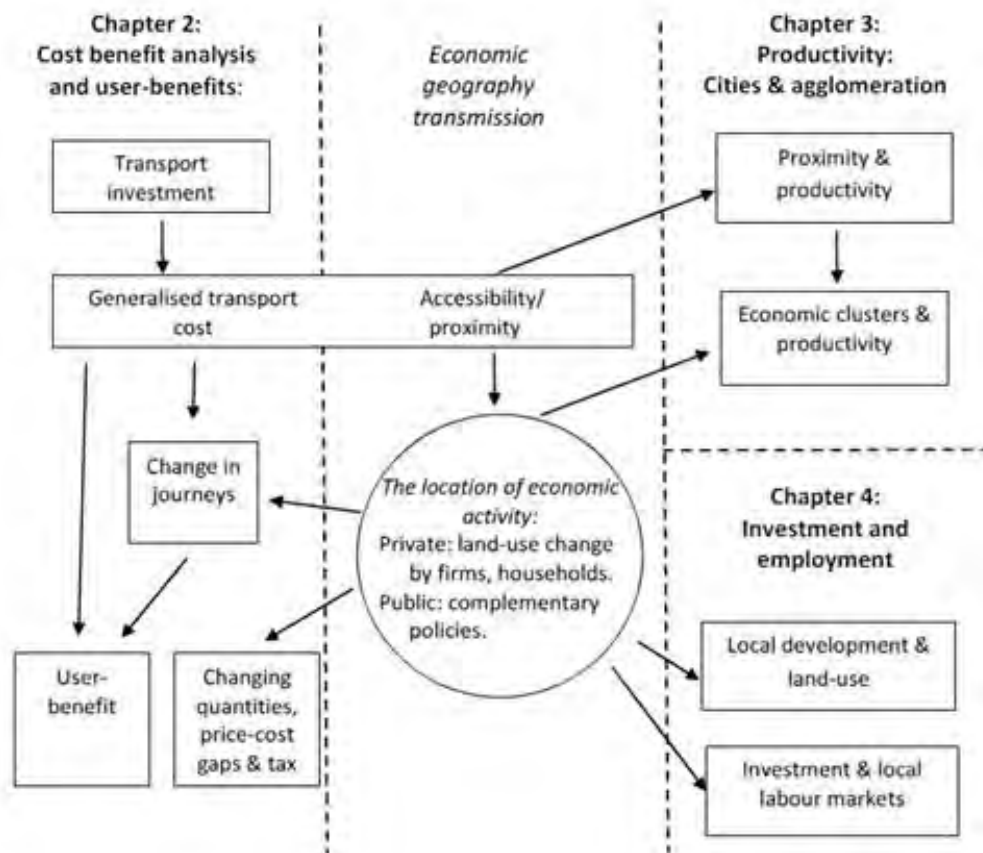
Wider Impacts

- 2.13 Certain economic impacts of transport investment are not fully captured through user benefits, or as a result of time savings. Transport improvements can induce far-reaching changes in accessibility, which combined with ‘distortions’ or market failures in the wider economy, result in additional impacts as the impacts of transport schemes are transmitted into the wider economy. Wider impacts are typically positive as a result of new transport investment at the aggregate level (i.e. deliver net benefits at the national level), but the nature of wider impacts is that they can alter the economic geography of areas and therefore have distributional impacts that create both local ‘winners’ and ‘losers’. The types of wider impacts are summarised below.
- 2.14 Productivity impacts can arise from improved accessibility bringing firms closer together, known as *static clustering*. Productivity of many firms is affected by their proximity to others, since denser concentrations of firms deliver larger labour and product markets, greater opportunities for collaboration and knowledge-sharing, together with other agglomeration benefits. Hence, if firms become effectively closer together, their productivity will increase, referred to as increasing economic *agglomeration*. Labour market effects can also arise since savings in transport costs can increase the incentives of people to work, leading to more people entering the labour market and a reduction in unemployment.
- 2.15 Far-reaching changes in economic activity can also trigger land-use change, and encourage the relocation of economic activity. Transport interventions can help ‘unlock’ development sites, by providing additional transport capacity and improving the attractiveness of development sites as places to live and work by improving their accessibility, increasing local population and/or employment. Additional jobs unlocked by new development can deliver additional productivity benefits, by increasing the overall density of firms within an area, known as *dynamic clustering*. Clustering benefits are primarily concentrated in larger urban areas and their immediate hinterlands, and hence the Department for Transport defines a series of *Functional Urban Regions (FURs)* as areas where wider benefits will be concentrated.
- 2.16 However, a proportion of new development would be expected to be displaced from elsewhere; whilst the benefit would be expected to be positive for the country as a whole, locations not served by new transport infrastructure could suffer a loss in jobs and a loss of development which would otherwise have taken place. Benefits can accrue to the exchequer if jobs move from areas of low productivity to those of higher productivity, delivering a positive impact of tax revenues but a disbenefit to the area where jobs have been displaced from.
- 2.17 These impacts can be summarised in Figure 2.1, sourced from a report commissioned by the Department for Transport⁶, which emphasises the transmission mechanisms by which transport investment impacts the real economy. Transport investment triggers a change in generalised travel costs, which delivers *user benefits* to both existing users, and by stimulating a change in the attractiveness of travel, to new users. Additionally, the change in generalised travel costs can influence local accessibility, stimulating development and land-use change; increases in proximity between businesses can generate clustering and consequent productivity benefits. Although at

⁶ Venables, A., Laird, J. and Overman, H. 2014. Transport Investment and Economic Performance: implications for project appraisal, Department for Transport, 2014

the national level these will represent a net benefit, displacement effects can result in some areas benefiting disproportionately from specific transport investments, potentially at the expense of elsewhere.

Figure 2.1 Transmission Mechanisms (from TIEP)



Evidence

- 2.18 Despite renewed emphasis on the wider impacts of transport schemes, including road projects, there is comparatively little academic evidence of the actual impacts of these schemes on local economies following scheme completion. Post-opening – or ex-post – studies, such as Highways England Post Opening Project Evaluation (POPE) studies, tend to focus on direct impacts such as traffic volumes, journey times and accidents, rather than wider economic impacts.
- 2.19 The Standing Advisory Committee on Trunk Road Assessment (SACTRA) addressed the extent to which transport improvements lead to increased or more efficient economic activity, and still form one of the detailed analysis of the economic impacts of highway investment to date. They concluded that whilst the theoretical evidence linking transport investment and economic activity to be strong, direct empirical evidence of the economic effects of changes in transport costs was limited.

- 2.20 Although road investment can boost economic growth and national productivity, within a mature economy such as the United Kingdom with a well-developed transport system, the report concluded such a contribution is likely to be **modest**. Although positive effects on the real economy can exist, none are guaranteed; the extent to which road investment can benefit local economies is highly dependent on specific local contexts and circumstances⁷. Improved accessibility between two countries, regions or cities can deliver productivity gains, but may sometimes benefit one at the disbenefit of others by exposing indigenous firms to competition from stronger rivals elsewhere, referred to as the ‘two-way road’ effect⁸.

Business Productivity

- 2.21 Recent academic work has confirmed that highway investment can contribute towards economic growth and increased productivity, although it remains unclear the extent to which this results from displacement⁹.
- 2.22 Gibbons et al (2012) considered the impacts of major highway improvements constructed in Great Britain between 1998 and 2007 on employment and firm productivity. Through examining the change in employment accessibility within given travel times before and after the construction of highways schemes, they established that a **10% improvement in accessibility leads to a 3% increase in employment and the number of businesses**, up to 30 km from the location of the highway scheme. These effects are substantial when converted into an expected increase in GDP: collectively, the average effect of all major road schemes during the period was to increase mean accessibility by 0.34%, implying a total increase in employment from one year’s highway investment of 0.012%. Whilst this appears small, scaled to a working population of 30 million, this would imply an additional annual increase in employment generated by large transport schemes of 3,600 jobs¹⁰.
- 2.23 Employment increases appear to accrue from the emergence of new firms rather than the growth of existing businesses, and the magnitude of the increase varies according to the business sector and specification. Within firms, there is also evidence that increasing transport accessibility can increase labour productivity, economic output and local wages, in part due to agglomeration effects and business time savings delivered by the highways schemes, although the evidence for these latter effects is viewed as “less robust”.

⁷ Standing Committee on Trunk Road Assessment. 1999. Transport and the Economy: Full Report, Department for Transport.

⁸ Standing Committee on Trunk Road Assessment. 1999. Transport and the Economy: Full Report, Department for Transport.

⁹ The theoretical basis of transport economic appraisal is that the forecast business time savings are equivalent to, and a direct proxy for, the net benefits to the wider economy. How, and where, these benefits accrue in the wider economy is not directly measured. This means displacement effects are implicitly ‘valued’ within the overall time saving, but not explicitly captured.

¹⁰ Gibbons, S., Lyytikäinen, T., Overman, H. and Sanchis-Guarner, R. 2012. New Road Infrastructure: the Effects on Firms, Spatial Economics Research Centre.

- 2.24 Further research conducted by the Economic and Social Research Council, cited by Transport for London, concluded that service sectors (professional and financial services, insurance and real estate) receive the greatest additional employment growth from road transport improvements. This was argued to be a result of improved accessibility creating larger labour markets, allowing employers and employees to better match their skill and business requirements¹¹. Ex-post assessment of the construction of the Second Tyne Tunnel in Gateshead reported that over half of businesses reported financial savings (although these were often modest in scale), with more than two-thirds reporting that increased journey time reliability had a positive business effect. Transport and logistics firms were most likely to report positive impacts, with 'knowledge-intensive' firms benefiting disproportionately from increased market share and improved workforce morale and effectiveness (from reduced travel-to-work times)¹².
- 2.25 Better accessibility can also help increase competition between firms: poor transport can protect uncompetitive indigenous firms from competition, allowing them to charge higher prices; removing these barriers can benefit the wider regional economy by reducing prices to end users and consumers¹³. Research by the Welsh Economy Research Unit, cited by David Simmonds Consultancy (2000) into the construction of the A55 North Wales Expressway established that increased competition to local firms from elsewhere was of long-term benefit to consumers, and that their competitiveness was improved through better access to import and export markets. Better accessibility exposed these same firms to increased external competition, forcing them to become more competitive to stay in business, and therefore driving economic efficiency. Within a DfT WebTAG appraisal, this is referred to as the benefit accruing from 'output change in imperfectly competitive markets', and is equivalent to 10% of the business transport user benefits of any transport scheme¹⁴.
- 2.26 Transport investment therefore appears to have a beneficial impact on business productivity at a local level, both through delivering transport cost savings to businesses and increase competition between firms. However, it should be noted that the extent to which *employment and business growth* associated with transport investment arises from the displacement of jobs and economic activity from elsewhere, rather than being additional within a national context, is unclear. An Evidence Review by the What Works Centre for Local Economic Growth¹⁵ concluded that while road projects *can* positively impact on local employment, the effects are variable, with the majority of evaluations indicating no (or mixed) impacts on local employment. The Centre were

¹¹ Silvertown Tunnel Regeneration and Development Impact Assessment, Transport for London, 2016; Road networks and local employment, evidence briefing, ESRC, 2013.

¹² Bradley, D., Coombes, M., Strickland, T. 2012. The New Tyne Crossing: An Economic Impact Assessment, prepared for Tyne and Wear Integrated Transport Authority.

¹³ Standing Committee on Trunk Road Assessment. 1999. Transport and the Economy: Full Report, Department for Transport.

¹⁴ WebTAG Unit A2.1: Wider Impacts, Department for Transport, January 2014

¹⁵ Evidence Review 7: Transport. July 2015. The What Works Centre is a body which analyses the effectiveness of government policies in supporting and increasing local economic growth.

unable to identify the extent to which these were genuinely additional jobs or those displaced from elsewhere.

Regeneration and Development

- 2.27 Good transport accessibility continues to be cited as a key prerequisite amongst local businesses, local authorities and developers for attracting investment and new development, and contributing towards local regeneration efforts. Whilst it is exceptionally challenging to prove that individual development is truly ‘dependent’ on a transport intervention – or that without a scheme it would not have been delivered – evidence suggests that it continues to be an important influence. Ex-post evaluation of the £65 million upgrade to the M4 Junction 11 reported qualitative evidence from stakeholders that the improvements were pivotal in realising future development opportunities by removing transport constraints, such as limited capacity and congestion providing sufficient transport capacity to relieve congestion¹⁶. Construction of the Hemsworth – A1 Link Road, in a deprived area of South Yorkshire, was reported to by the scheme promotor to have contributed towards the delivery of 1,200 homes and more than 29,000 m² of industrial and distribution floorspace¹⁷. The Black Country Development Corporation (1997) cite the direct highway access provided by the Black Country Spine Road as essential in delivering more than three million sq ft of industrial and commercial floorspace on previously derelict land.
- 2.28 Transport improvements therefore do appear to play a role in facilitating local development, either by improving the perceptions of an area as a place to invest or alleviating transport congestion or poor accessibility to enable development to proceed. Numerous housing developments across the country, constructed on the edge of towns and cities, would appear to have been facilitated by additional radial and orbital highway infrastructure. Retail and office parks would have been highly unlikely to have been developed on sites neighbouring motorway junctions, for example, if the motorway had not been developed in the first place. Indeed, the ability for transport improvements to unlock development sites is explicitly identified in DfT appraisal guidance¹⁸.
- 2.29 Again, the role of road infrastructure in facilitating development can have significant distribution impacts. For example, the development of orbital highway capacity and ring-roads around towns from the mid-1980s has supported (together with associated changes in planning policy) the decentralisation and displacement of retail and office activity away from town centres. These changes can have wider economic, social and environmental consequences that are not captured with transport economic appraisal.
- 2.30 It is therefore less clear the extent to which transport investment delivers ‘new’ development, as opposed to simply displacing development that would have otherwise occurred elsewhere. The nature and scale of impacts will be context specific. Where land supply is severely constrained and transport pressures acute, it is more likely that development will be truly additional and not

¹⁶ Atkins report

¹⁷ Ibid

¹⁸ WebTAG Unit A2.3: Transport appraisal in the context of dependent development, Department for Transport, July 2016

simply displaced, as highlighted in DfT guidance which stresses that development can only be considered *dependent* if improving transport will address ‘market failures’ in land and property markets.

Opportunity Cost

- 2.31 The concept of ‘opportunity cost’ relates to the fact that expenditure, in this case on highway investment, could instead have been spent on an alternative use – for example public transport improvements. This can serve to exacerbate the attractiveness that typically car has over public transport and, as a consequence, erode the commercial viability of some routes thus affecting the opportunities to access work and other facilities for those who are reliant on public transport. The relative balance of expenditure on road investment compared to other modes of transport can therefore indirectly affect the quality of provision for public transport users.

The ‘two-way’ road effect

- 2.32 The SACTRA report also highlighted the ability for transport improvements to harm a local or regional economy by exposing indigenous firms to competition from stronger rivals outside of the area, known as the ‘two-way road’ argument. Some examples of the research cited by SACTRA are provided below, which illustrate that distributional effects are complex, location specific, and that the economic effects of investment in road infrastructure can be positive or negative.
- 2.33 Ernst and Young (1996) estimated that amongst firms benefiting from improved transport, 20% had accrued wider business benefits from more efficient distribution systems, access to new markets, and larger labour market catchments; in other words, road improvements allow businesses to restructure their logistics systems in a more efficient manner, which would be expected to deliver national productivity gains.
- 2.34 However, the structure of local and regional economies will influence which places are ‘winners’ and ‘losers’ as a result of this process: some areas are likely to see significant new employment in larger distribution centres, while other more geographically marginal locations lose out. Friends of the Earth (1998) cite anecdotal evidence of the centralisation of Royal Mail, Northern Foods and British Gas operations in distribution centres in Cheshire, instead of a range of smaller depots in North Wales, partly as a result of the improved connectivity offered by road building.
- 2.35 Research of transport and development changes surrounding Inverness, conducted by the Transport Research Laboratory, highlighted how the expansion of tourism would not have been possible without the major accessibility improvements delivered by highway investment (Halden and Sharman, 1994). Conversely, the study acknowledged that these improvements may have had more negative effects in more peripheral parts of the study area, by increasing the pressure to close local health centres or offices in peripheral areas, and instead service the population from more centrally-located facilities elsewhere.
- 2.36 Impacts on the tourism sector as a result of the construction of the A55 North Wales Expressway also highlight the complex, mixed impacts of transport investment on local economies. Evidence from the Welsh Economy Research Unit (1996) suggested that while the road improved the accessibility of the Snowdonia National Park, allowing visitor numbers to increase, the ease at which visitors could now access the park encouraged them to make day trips rather than stay

overnight, contributing proportionately less to the local economy and causing traffic problems elsewhere¹⁹.

- 2.37 Conversely, the seaside town of Llandudno was seen to have benefited disproportionately, since it had better access to both Snowdonia and tourists arriving from the east (who were now able to now bypass alternative coastal resorts), whilst its distance from the A55 itself meant it did not suffer disbenefits from traffic noise and pollution²⁰. Notably, the scale of the improvements to the A55 – reducing journey times from Chester to Bangor from 2½ - 5 hours to a consistent 1½ hours were transformative; it is unlikely that such impacts on the real economy would be repeated without such a transformative effect on journey times.

Implications for SDNP

- 2.38 Highways investment along the A27 corridor would therefore be expected to deliver a range of impacts on both the national and local economy, including the South Downs National Park. This section summarises these potential impacts, drawing on the academic research included in the chapter. A more detailed assessment of the potential local economic impacts of the individual A27 scheme options on the South Downs National Park is included in Chapter 5.
- 2.39 Any schemes along the A27 would be expected to deliver benefits to users, which would accrue both to those currently travelling along the A27 and parallel routes through reductions in congestion delivering journey time savings. Some of these benefits will accrue to residents and businesses within the South Downs National Park, depending on the exact location of each scheme. The scale of journey time savings would be moderated by any generated traffic, and there will also be routing impacts whereby some roads will become more attractive. Where traffic increases on some roads (on or affected by the A27 schemes) there could be counterbalancing economic impacts such as the positive effects on local businesses of increased passing trade, and the negative effects of increased congestion and environmental impacts (and vice versa for roads that experience reduction in traffic).
- 2.40 The precise mechanisms through which user benefits ‘trickle down’ into the wider economy will vary, dependent on the location and type of trips in question; whilst a (high) proportion of journey time savings will be passed directly to users, who will benefit from a faster journey, a significant proportion would be expected to be ‘traded’ for the ability to commute further, from a more desirable area, especially to highly-skilled, well-paid jobs where evidence suggests individuals are happy to commute extended distances to. This will likely have further impacts on both land and property markets within the National Park, and consequent impacts on congestion. However, due to the limited scope of the highways schemes, these impacts are likely to be extremely limited, and in any case nearly impossible to quantify.
- 2.41 Whilst some businesses within the park may benefit from improved productivity (such as a small business in Lewes being able to make additional deliveries in one shift due to reduced congestion),

¹⁹ Welsh Economy Research Unit. Delivering the goods? The economic impact of the A55 Expressway improvements. Report for the British Road Federation. Cited in David Simmonds Consultancy (1999) Case Study: A55 North Wales Expressway.

²⁰ Ibid

due to the small nature of the expected journey time savings the magnitude of this benefit is likely to be small. Similarly, any associated impact on local employment or ‘two-way road’ effects within the park (either positive or negative) are likely to be limited. Investment would hence be expected to deliver some productivity benefits to *specific* businesses, dependent on the *nature* of the business and its location, but is unlikely to have a ‘transformational’ impact on the park as a place to locate, or lead to large-scale changes in the distribution of economic activity. The exception to this is where new development could be considered ‘dependent’ on A27 improvements – we describe these in Chapter 5 for each of the scheme options.

Suppressed and Induced Traffic

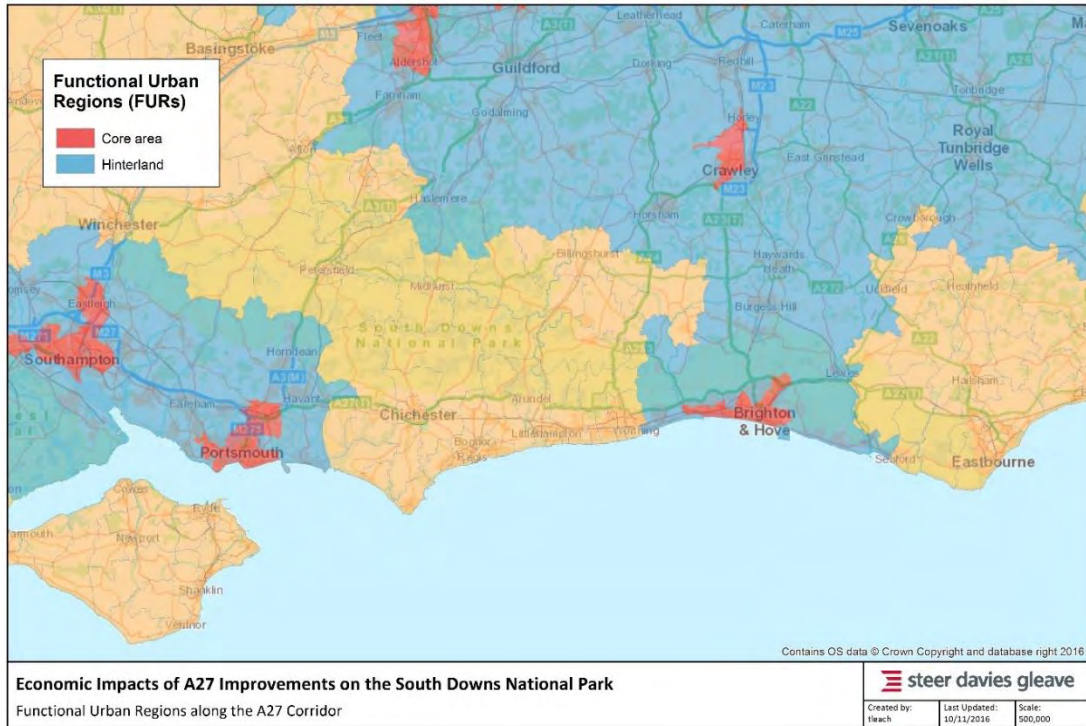
- 2.42 Additional traffic generated by these interventions could also erode travel time benefits, and this is most likely to occur where investment delivers a significant initial saving in journey time, or a large increase in new road capacity, which stimulates a large number of additional trips. These trips could have previously been suppressed (such as where congestion dissuades people from travelling at congested times, such as the peak) or can be induced (where improved accessibility encourages them to make trips they did not previously make, such as a visit to a shopping centre now within an acceptable travel time of an individual’s home).
- 2.43 Induced traffic is most likely where a time saving represents a large proportion of the overall journey time (such as three-minute saving on a short ten-minute journey within Chichester). Hence, the A27 scheme expected to generate the most significant induced travel effects would be Lancing / Worthing and Chichester; a significant time saving would be expected to generate a significant volume of additional local trips. Since longer flows to / from / within the park would be expected to receive a smaller proportional journey time saving (such as four minutes on a forty-minute trip between Lewes and Eastbourne, for example), induced traffic effects would be expected to be more limited, and hence have commensurately limited impact on overall traffic flows within the park.
- 2.44 While traffic flows may increase along the routes included within the A27 upgrades, a proportion of this this would be accounted for by the displacement of traffic from other, less suitable routes (such as the A259). Rerouting of traffic on the A27 from the wider network is likely to lead to congestion relief along such routes, which pass through numerous towns and villages and are hence suited to through-traffic (between Lewes and Eastbourne, the A26 / A259 passes through Denton, Seaford and Alfriston), delivering benefits for park residents and businesses.

Agglomeration and Labour Market Effects

- 2.45 Agglomeration benefits associated with the A27 schemes within the SDNP are likely to be very small. Whilst journey time savings along the corridor will result in bringing economic activity – people, firms and businesses along the corridor – closer together, Department for Transport guidance indicates that agglomeration impacts are only likely to be significant within dense urban areas (and their hinterlands) with high concentrations of economic activity. These are referred to as ‘Functional Urban Regions’ or FURs, as shown in Figure 2.1.
- 2.46 Whilst parts of the South Downs National Park fall within the ‘hinterland’ of the Brighton, Portsmouth and Southampton FURs, the proposed A27 interventions broadly fall outside of this hinterland, and do not improve the connectivity **within** any of the FURs illustrated. Agglomeration

benefits erode rapidly with increasing travel time, and hence time savings are only likely to be deliver significant agglomeration benefits if they occur within a FUR, such as a journey from Falmer to Brighton. Due to the obvious absence of dense concentrations of economic activity within the South Downs National Park, any agglomeration impacts on park businesses are expected to be insignificant.

Figure 2.1: Functional Urban Regions along the A27 corridor



- 2.47 Whilst the A27 interventions would be expected to deliver some labour market impacts within the park, the scope of the schemes is not expected to lead to dramatic changes in the geography of commuting patterns, or the location of economic activity. Local impacts would be expected to occur as a result of an increase in commuting catchments (such as increased scope for workers to Lewes to commute from Eastbourne, for example), although this benefit would be included within the ‘trickle down’ of commuter user benefits within the conventional transport business case for the scheme. Wider labour market impacts, associated with the relocation of workers or economic activity, are not expected to be significant.

Summary

- 2.48 Overall, the likely economic impacts of the proposed investment on the A27 are therefore likely to be locally specific, and are not likely to impact on the wider economic geography of the park. These impacts are hence expected to include:

- Local congestion relief and journey time savings along both the A27 and parallel routes (as some people re-route onto the A27), which generates:
 - Small productivity impacts on specific businesses within the park, although highly locally and business-specific;

- ‘Trickle-down’ effects of transport user benefits, as individuals commute further in the same journey time to live or work elsewhere;
- Improved labour market accessibility, both by car and bus.
- Changes in traffic flows, including minor induced traffic effects, which:
 - Impact on the quality of the local environment in which businesses operate (noise; air quality; landscape), with consequent effects of those businesses (especially within the tourism sector)
 - Rerouting effects, limited induced traffic, and subsequent impacts on passing trade;

These impacts are discussed further in Chapter 5.

3 A27 Upgrade Options

Introduction

- 3.1 At the project inception meeting, a set of options was discussed as the basis for assessment. A broad option definition was agreed for each of the four investment locations. These are reported in this chapter, together with the Highways England objectives which underpin the planning work to date.

East of Lewes

Objectives

- 3.2 Consultation took place across late October/November/early December on a range of options to change the A27 east of Lewes to Polegate. The objectives which have guided the option development process are set out below²¹:
- **Objective 1** - Smooth the flow of traffic by improving journey time reliability and reduce the average delay (time lost per vehicle per mile) on the A27 East of Lewes through small-scale interventions.
 - **Objective 2** - Support modes of travel and behaviours which minimise traffic and congestion. Support sustainable travel routes promoted by South Downs National Park Authority and East Sussex County Council.
 - **Objective 3** - Reduce annual collision frequency and severity ratio. Improve the safety and personal security of travellers along the A27 East of Lewes for all users and provide safer roads which are resilient to delay.
 - **Objective 4** - Reduce severance for local communities, including vulnerable road users, to provide better access to local services and facilities, and improve access for local business along the corridor. Provide opportunities for improved accessibility for all users into the South Downs National Park (SDNP).
 - **Objective 5** - Deliver a high standard of design for any improvement that reflects the character of the route and its setting alongside the SDNP which is a nationally designated landscape of the highest quality, minimise impact on natural environment of new construction and optimise environmental opportunities and mitigation. Recognise that some improvements will have a significant impact on the SDNP, have regard to the purposes and special qualities of the National Park in designing and evaluating improvement options.
- 3.3 It should be noted that the RIS1 process for relatively short-term and minor improvements does not contain explicit objectives to increase capacity, relieve congestion nor to support economic growth, beyond reducing severance impacts for local businesses. Discussions with East Sussex

²¹ *Draft Early Release Road Investment Strategy. PCF Stage 1 A27 East of Lewes. Economic Assessment Report. Atkins. October 2016.*

County Council revealed that they would have liked to have seen more explicit objectives around supporting economic development.

Option for Assessment Purposes

3.4 It was agreed to test an option package that reflects the maximum potential economic impact, which contained the following elements would form the basis of the assessment:

- Provision of single carriageway bypass at Selmeston (Option 1: 3.9km bypass).
- Enlarged Drusillas roundabout.
- Wilmington junction improvement (Option 1).
- Extension of the existing online shared space cycleway across the length of the route (including the bypassed section at Selmeston).
- Polegate to Cophall roundabout: signalised junction and bridge and link widening (Option 12 plus).

Lancing/Worthing

3.5 Highway's England Progress Report, as reported on the HE website in February 2017, states:

"We are currently conducting a range of surveys and assessment work to give us information about traffic volumes and the local environment. This information will help us explore different design options that would meet the aims we have for this scheme. We are beginning discussions with local authorities and technical stakeholders so we can take into account their views. Once we've worked up viable options, we'll tell you about them and ask for your opinion. We hope to do this in summer 2017. You can sign up for our email alerts to stay informed".

Table 3.1: Lancing to Worthing Indicative Timetable (from HE)

Date	Event
2015	A27 Corridor Feasibility Study
March 2015	Roads Investment Strategy (RIS)
2021	Start of works
2023	End of works

Objectives

3.6 The objectives for the scheme are to:

- reduce travel time and improving journey time reliability in hotspot areas.
- reconnect communities.
- reduce pollution impacts.
- enable local planning authorities to manage the impact of planned growth and in doing so support the wider economy.
- provide safer roads which are resilient to delay and which are able to adequately cater for the impacts of adverse weather.
- minimise impacts on the natural environment and optimising environmental opportunities and mitigation.
- provide opportunities for improved accessibility for all users.

Option for Assessment Purposes (Option 'F')²²

3.7 Option F, based on previous on-line dualling proposals. Estimated cost range: £90m- £100m.

3.8 The online improvements proposed in Option F include the following:

- Widening the A27 to 4 lane carriageway through Worthing, connecting dual carriageway sections to each side of Worthing and incorporating improvements to intermediate junctions.
- At-grade junction improvements in Worthing, with widening / signal control at the following locations:
 - Salvington Hill intersection;
 - Offington Corner roundabout;
 - Grove Lodge roundabout; and
 - Sompting Road / Lyons Way intersection.
- Introduction of local restrictions / banned turning manoeuvres / stopping up side road approaches etc. with complementary measures required on the adjoining highway network.
- Online dualling of existing 4 lane carriageway through Lancing, between Upper Boundstone Lane and Manor Road.
- At-grade junction improvements in Lancing, with widening / signal control at the following locations:
 - Busticle Road junction.
 - Manor Road roundabout.
 - Improvements to North-South connectivity in Worthing and Lancing to make crossing of the A27 easier for pedestrians and cyclists.

Arundel

3.9 Highway's England Progress Report, as reported on the HE website in February 2017, states:

"The Arundel section of the A27 lacks road and junction capacity. As a result it suffers from congestion, particularly junctions at Crossbush, The Causeway and Ford Road. Planned growth along the wider A27 corridor is likely to worsen the problem and at present there's no proposal for public transport provision that would have a positive impact on traffic levels. This scheme aims to reduce congestion through Arundel by means of a new dual carriageway bypass. The bypass would link together the two existing dual carriageway sections of the A27 either side of Arundel. We are also assessing alternative options including online junction improvements. These proposals are subject to consultation with the National Parks Authority, Local Government and the public. "

Objectives

3.10 The objectives for the scheme are to:

- reduce travel time and improving journey time reliability in hotspot areas.
- reconnect communities currently separated by the A27.
- reduce pollution impacts.

²² Option definition taken from A27 Feasibility Study. Stage 3 - Value for Money Assessment Report Report 3 of 3: Investment Cases. Pp28. PB (for HE). February 2015.

- enable local planning authorities to manage the impact of planned growth and in doing so support the wider economy.
- provide safer roads which are resilient to delay and which are able to adequately cater for the impacts of adverse weather.
- minimise impacts on the natural environment and optimising environmental opportunities and mitigation.
- provide opportunities for improved accessibility for all users.

Option for Assessment Purposes

3.11 As suggested above, the options being considered are not yet fully developed. The generic option we will use as a basis for assessment will have the following characteristics:

- offline dual carriageway bypass.
- avoiding ancient woodland.
- avoiding SDNP.
- Junction with Ford Road.

Chichester Bypass - draft for discussion

3.12 Highway's England rationale for the scheme, as reported on the HE website in February 2017, states:

Why we need this scheme

"The A27 Chichester Bypass has a poor safety record, being among the worst 10% of UK roads for casualties. (Source: the South Coast Central Route Strategy Evidence Report April 2014)

The bypass and many local roads are often severely congested, especially during the seasonal peaks. The result is high traffic volumes on the city ring road and significant congestion at the four gates to the city centre during peak traffic periods.

Emergency services are affected. Residential roads become 'rat runs' as traffic tries to avoid congestion hotspots. There are significant traffic delays at the railway level crossing and considerable congestion caused by the school run.

It is anticipated that by 2025 this congestion will be intolerable and much of Chichester and the local road network will be gridlocked, unless traffic is managed more efficiently.

To add to this there are only a limited number of safe opportunities for pedestrians and cyclists to cross the bypass. Several north/south bus routes cross the bypass, and suffer from the same congestion and delays as other traffic. This stops them from being an attractive alternative for car commuters.

In the Road Investment Strategy, Highways England has committed to upgrading up to four of the junctions, the junctions being; Fishbourne Road (A259), Stockbridge Road (A286), Whyke (B2145) and Bognor Road (A259), Oving (B214) and Portfield (A258).

The proposals aim to remove conflict and congestion at the bypass junctions and improve access to Chichester, the Manhood Peninsula and the wider Bognor Regis area, enabling other local transport improvements to be implemented."

Aims

3.13 This scheme aims to:

- reduce congestion on the A27 Chichester Bypass.
- improve road safety.
- reduce adverse environmental impacts.
- improve journey time reliability.
- improve capacity and support the growth of regional economies.
- facilitate timely delivery of the scheme to enable provision of housing demand, in line with the Chichester Local Plan.
- improve regional connectivity.
- improve accessibility to areas with tourist activity.

Option for Assessment Purposes (Option 2)

3.14 Based on option 2 - reduced connectivity with radial routes on existing online route. Additional of Stockbridge link road to compensate:

- Grade separation of junctions at Fishbourne and Bognor roundabouts.
- Elevated A27 with no connection to radial routes at Stockbridge and Whyke roundabouts.
- No traffic lights at Oving with closure of Oving Lane East.

3.15 It should be noted that the investment process at Chichester was halted by the Secretary of State for Transport in March 2017.

4 Economic Narrative

- 4.1 This section sets out the wider economic context along the A27 corridor, and within the South Downs National Park. It considers the key economic sectors which make up the economy within the park, together with patterns of commuting to Brighton, Chichester and Eastbourne, as well as the capital.

Overview of the South Downs National Park

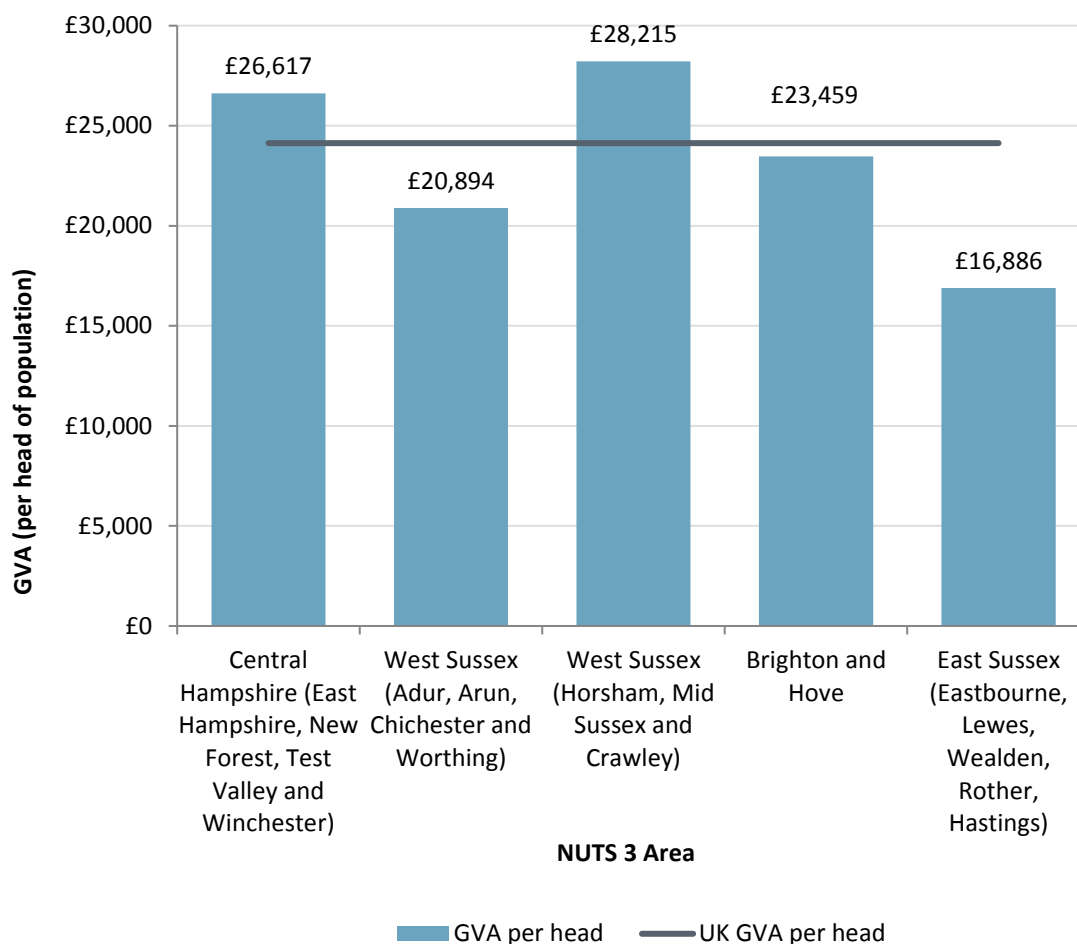
- 4.2 The South Downs National Park falls within twelve local authorities (Brighton and Hove, Worthing, Eastbourne, Adur, Arun, Chichester, Horsham, Mid Sussex, Winchester, East Hampshire, Wealden and Lewes), and is home to 115,000 residents²³. Whilst this is more than double the population of any other National Park in the UK, the park is still sparsely populated, with 70 people per square kilometre. The park's population is dispersed: while 17,000 live within the town of Lewes and a further 15,000 in Petersfield²⁴, the remainder of the park's residents live within small settlements of fewer than 6,000 people.
- 4.3 Several large towns and cities are located between the park's southern boundary and the English Channel, including Portsmouth, Chichester, Worthing and Brighton, which account for the majority of employment and population within the local authorities that surround the park. These settlements exert a strong influence on the park's economy and, together with London, accessible by rail, offer a source of highly-skilled, well-paid employment. Combined with the high quality-of-life the park provides, good access to employment underpins the appeal of the park as a highly desirable place to live.

Economic Performance of the A27 Corridor

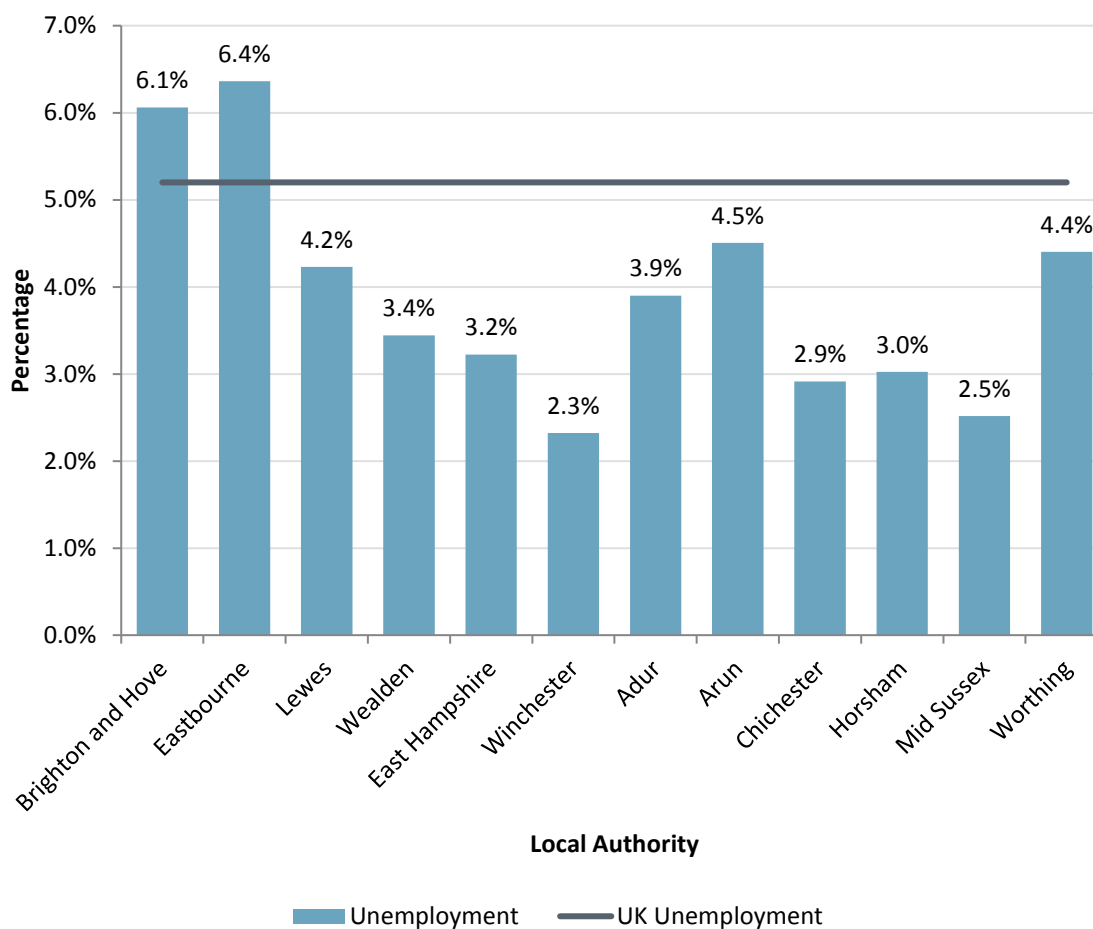
- 4.4 Whilst the National Park economy is generally highly productive, the local economies along the A27 corridor perform more variably. Figure 4.1 outlines the Gross Value Added, per head of population, within each of the five NUTS 3 regions that surround the park, since GVA data is not available by Local Authority.
- 4.5 Central Hampshire and West Sussex (North-East) – containing predominately rural local authorities – perform most strongly, with each person in West Sussex generating more than 16% economic output than an average person within the UK. Conversely, West Sussex (South-West) and East Sussex contain more deprived coastal towns outside the park, including Worthing, Eastbourne and Hastings. These districts have correspondingly weaker local economies, often due to a traditional reliance on coastal tourism or manufacturing, sectors which have declined in importance over the past two decades.

²³ Office for National Statistics, 2015 National Park Mid-Year Population Estimates

²⁴ By parish

Figure 4.1: Gross Value Added per head of population by NUTS 3 sub-region, 2013

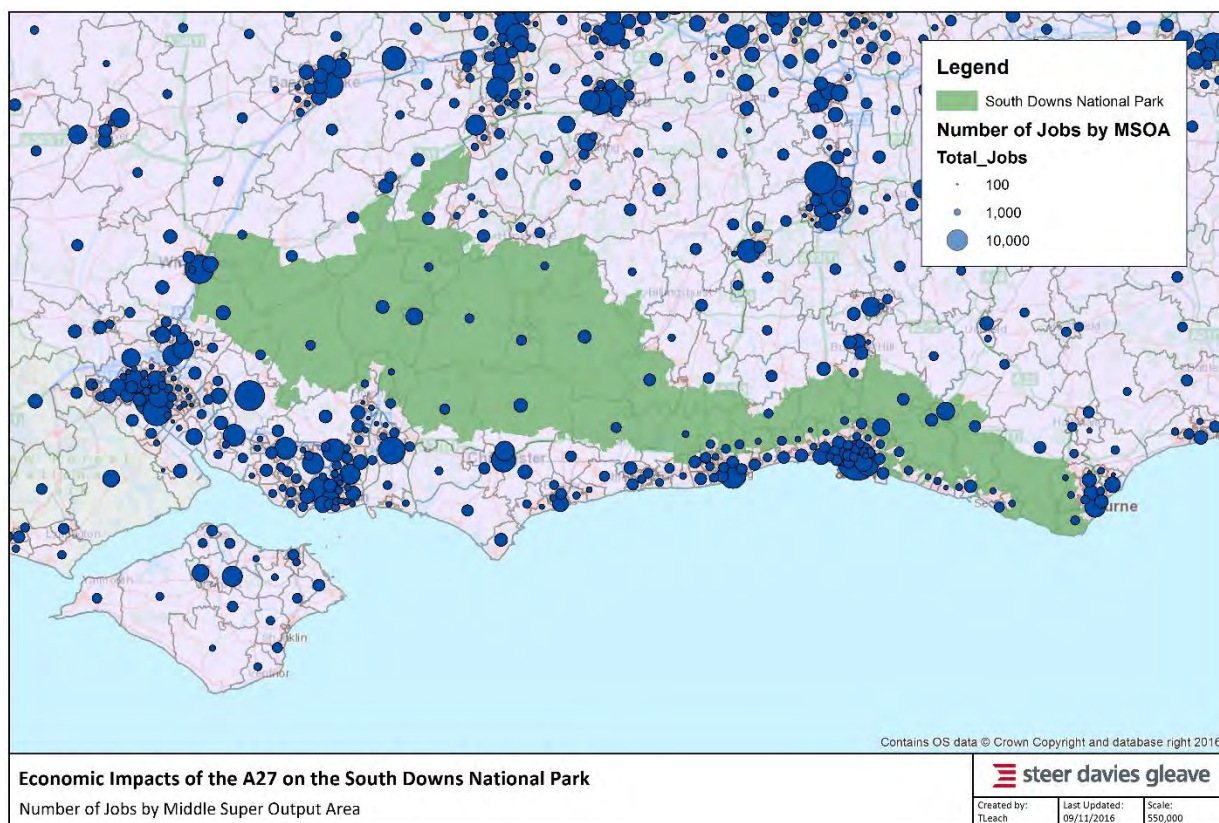
- 4.6 Consequently, the labour market within the local authorities along the A27 corridor reflects these economic trajectories. Unemployment is lower than the national average within all local authorities, except Brighton and Eastbourne, as shown in Figure 4.2, with unemployment especially low within the most rural local authorities that account for the majority of the National Park's population. The 'claimant count' – the proportion of the working-age population claiming jobseekers allowance, is also well below the national average; within Wealden, Mid Sussex, East Hampshire and Horsham and Winchester, the 'claimant count' is less than 0.7% compared to a national average of 1.9%. High levels of economic activity and low levels of unemployment within these rural local authorities – together with the national park – can however present challenges to filling job vacancies.
- 4.7 Unemployment is generally higher within the more urban local authorities along the coast, such as Eastbourne and Worthing, reflecting higher economic inactivity rates and a period of economic decline.

Figure 4.2: Unemployment by Local Authority, 2014

4.8 Despite weaker local economies, these coastal towns account for the majority of employment along the A27 corridor, and are an important source of employment for park residents. Figure 4.3 overleaf, based on Business Register and Employment Survey data at an MSOA²⁵ level, highlights the geography of employment along the A27 corridor.

4.9 More than 628,000 jobs are located within twelve local authorities that the park lies within, of which 128,000 fall within Brighton and Hove, with an additional 112,000 jobs in Southampton and 101,000 in Portsmouth. Conversely, only 55,000 jobs are located within the South Downs National Park itself.

²⁵ MSOAs are geographic areas defined for Census statistics, and have a population of between 5,000 and 15,000 people

Figure 4.3: Total employment along the A27 corridor

Economy of the South Downs National Park

- 4.10 Business Register and Employment Survey (BRES) data was also analysed at an MSOA level in order to understand the types of employment prevalent within the National Park. Since the boundaries of MSOAs are not contiguous with those of the park, with some MSOAs containing areas both within and outside the park, 26 MSOAs which were felt to represent the best possible match to park boundaries were used for the analysis.
- 4.11 Much of the park's economy appears to be broadly similar to the national average, with employment driven by service industries, including retail / wholesale, accommodation and the public sector. Sectors associated with the tourism and property industry perform strongly, with the proportion of jobs in the accommodation, food, arts and entertainment and real estate sectors greater than the national average. More than 10% of overall employment is within the 'accommodation and food service activities' sector, for example, compared to the national average of 7%.
- 4.12 Conversely, significantly fewer people are employed in the health sector than the national average – 10.7% compared to 13.1% – due to the lack of any large hospitals within the park. Only 2.4% of the parks employment is within the 'transportation and storage' sector, compared to a national average of 4.5%, likely as a result of comparatively poor transport links, above-average distances to product markets and the unsuitability of such premises to a National Park location.

- 4.13 Table 4.1 overleaf lists the top 10 sectors by overall employment within the park study area, which collectively account for more than half of all jobs within the National Park. Approximately 1,500 park residents are employed within the agricultural sector; the proportion of jobs within the agricultural sector within the park is difficult to estimate due to limitations in the BRES data.

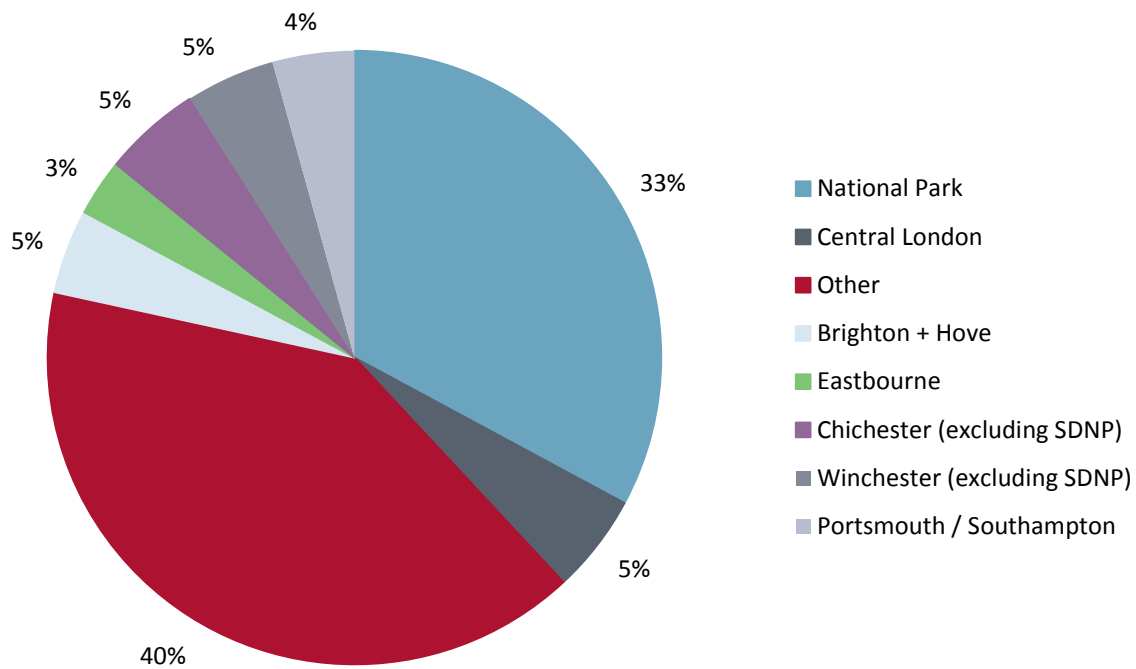
Table 4.1: Largest employment sectors within the South Downs National Park

BRES Sector	% of National Park employment	% of UK employment	Difference
Education	11.1%	9.4%	1.8%
Food and beverage service activities	8.5%	5.6%	3.0%
Retail (except motor vehicles)	8.1%	10.0%	-1.8%
Human Health	5.6%	7.3%	-1.7%
Public Administration and Defence	4.7%	4.5%	0.3%
Wholesale trade (except motor vehicles)	4.2%	4.1%	0.0%
Residential care activities	3.3%	2.6%	0.7%
Specialist construction activities	2.9%	2.3%	0.5%
Real estate	2.8%	1.7%	1.2%
Employment activities	2.8%	3.4%	-0.6%

Commuting within the National Park

- 4.14 Section 4.8 and Figure 4.3 highlighted that the majority of employment along the A27 is outside of the National Park, and hence the majority of park residents commute elsewhere for work, as shown in Figure 4.4. Only 33% of park residents reside locally, with a broadly equal proportion travelling to central London, Brighton, Chichester and Winchester.
- 4.15 National Park residents hence typically commute longer distances than average to work, and are consequently highly dependent on good transport accessibility elsewhere, by both road and rail. More than 87% of households within the park own one or more cars, well above the national average of 74%, indicating a reliance on road transport; good access to jobs and services, combined with a high quality-of-life, forms an important part of the park's continued appeal as a place to live. This attractiveness also explains the high house prices within the SNDP, which has the effect that many lower paid jobs rely on workers from outside the park boundary.

Figure 4.4: Location of work of National Park residents



5 Impacts on South Downs National Park

Introduction

- 5.1 The chapter brings together specific industry standard evidence of potential economic impacts that could result from the A27 proposals. Each scheme is considered in turn, together with the collective impacts of improved accessibility in a section at the end of the chapter.
- 5.2 It should be noted, however, that the economic impacts along the entirety of the A27 corridor could be quite different. This is because there is little evidence that, to date, Highways England has assessed the cumulative impact on longer distance travel. Other than the Arundel and Worthing/Lancing scheme modelling, which take account of one another, the traffic modelling does not consider the impacts of traffic generation elsewhere. Thus, should additional traffic be generated (either by volume or by time-shifting), this may lead to additional pressure on those parts of the A27 which are not being upgraded as part of this programme. This could, in particular, affect the road between Portslade and Southerham which is very congested, including the junctions and feeder road approaches, such as at Falmer and on Dyke Road out of Brighton & Hove.
- 5.3 The South Downs National Park plays a broad role in the economic and quality of life of the communities which live in and around it. These 'ecosystem services' contribute a wide range of benefits, which will be influenced by changes in the volume and pattern of traffic through and around the park. For example, whilst reducing rat-running traffic through the park can improve these services, the setting of the Park may be adversely affected by road proposals which impinge directly upon it. There are businesses within the Park that rely on tranquillity and high landscape value as an intrinsic part of their offer. It is important to consider this broader definition of economic impact alongside the industry standard evidence.
- 5.4 In this context, this chapter addresses, for each investment proposal:
- Evidence available for the conventional transport economic case;
 - The wider economic case; including isochrone mapping of the potential changes in connectivity;
 - Any specific local impacts.
- 5.5 The level of detail provided for each scheme is proportional to the degree of scheme development and supporting evidence available, together with the expected impact of the scheme on the local economy of the park.

East of Lewes

Introduction

- 5.6 A set of options for interventions for the A27 between Lewes and Polegate were consulted upon by Highways England over the period from 27th October - 8th December 2016. These options are

planned for the period up to 2020 as part of the first phase of the national Road Investment Strategy (RIS1). The options reflect the objectives set for the project (as set out in Chapter 3), and primarily focus on easing traffic flow, improving reliability and reducing community severance. Each option is discussed in turn below, in relation to key headings within the overall framework of the potential economic impact for the SDNP and adjacent area²⁶.

Transport Economic Case

5.7 As discussed in Chapter 2, the starting point for the assessment of economic impacts in areas outside of Functional Urban Regions (FURs) is that the conventional economic case represents the best overall measure of economic impact of an intervention, and that wider economic impacts would be marginal. The conventional 'value-for-money' case captures the time savings and other monetisable benefits such as the value of reduced accidents and improved health and wellbeing from more active travel.

5.8 The Transport Economic Case for each scheme option is considered in Table 5.1 below:

Table 5.1: Economic Case for East of Lewes Options

Option	Cost Estimate ²⁷	Construction Duration	Journey Time saving	Benefit Cost ratio
Walking and Cycling Path	£12 million	12 months	n/a	0.9:1
Selmeston Option 1 (3km bypass)	£55 million	14 months	30-60 seconds	0.8:1
Selmeston Option 4 (1.7km bypass)	£45 million	12 months	15-30 seconds	0.5:1
Selmeston Option 6 (online improvements)	£47 million	18 months	More than 15 seconds	0.0:1
Drusillas roundabout	£10 million	12 months	60-90 seconds	9:1
Wilmington Junction Option 1 (pedestrian island)	£10 million	10 months	30-60 seconds	0.9:1
Wilmington Junction Option 2 (underpass)	£12 million	14 months	30-60 seconds	0.9:1
Polegate Option 10 (Junction upgrade)	£12 million	14 months	30-60 seconds	11.5:1
Polegate Option 13 (Junction upgrade and road widening)	£28 million	12 months	60-90 seconds	8.6:1

5.9 Scheme options normally need to address objectives effectively and demonstrate good value for money. Given that the total budget for this tranche of investment is set at £75m, it is unlikely that

²⁶ For information, it should be noted that East Sussex County Council is undertaking work on more major offline options, to the north of the existing A27 and outside the SDNP, for consideration beyond 2020 (RIS2). This is not explicitly considered in this work.

²⁷ Note that cost estimates assume no mark-up for risk nor optimism bias (Atkins op.cit section 3.3 p15)

an option will come forward for each of the potential improvements. Those schemes which demonstrate poor value for money of less than £1 of benefit for each £1 spent (i.e. have a BCR less than 1 : 1) are most vulnerable.

- 5.10 The scale of expected journey time benefits for any scheme is relatively modest and unlikely to result in significant changes to economic behaviour.
- 5.11 It should be noted that the modelling of each location has been undertaken independently on the presumption that benefits of options at different locations are cumulative. In addition, no induced traffic has been allowed for in traffic forecasts or benefit calculations.

Business Time Savings

- 5.12 Not all monetisable benefits have a direct economic effect, however, and so we consider those benefits that accrue to those who are travelling in the course of work (including freight) as a subset of benefits. Table 5.2 below summarises the scale of business time savings by assessment option.

Table 5.2: East of Lewes Options - Business Time Savings

Option	PV of Business Benefits	Proportion of total benefits
Selmeston Option 1 (3km bypass)	£17.8 million	56%
Selmeston Option 4 (1.7km bypass)	£7.9 million	55%
Drusillas roundabout	£34.3 million	54%
Wilmington Junction Option 1 (pedestrian island)	£2.4 million	49%
Wilmington Junction Option 2 (underpass)	£2.4 million	49%
Polegate Option 10 (Junction upgrade)	£44.5 million	47%
Polegate Option 13 (Junction upgrade and road widening)	£55.6 million	48%

- 5.13 The results show that around half of total benefits are forecast to accrue as direct economic benefits to travellers in the course of work. Total business user benefits for the 'maximum' option (Selmeston Option 4, Drusillas and Polegate Option 13) would amount to £110.1m Present Value across the 60-year appraisal period.

Reliability/Resilience Effects

- 5.14 Congestion on the A27 between Lewes and Polegate could result in traffic diverting on to less suitable routes through the SDNP. This could be via the A26/A259 or via Alfriston and narrow roads to the A259, affecting the attractiveness of the locations that these routes pass through. This could be particularly an issue when accidents or incidents result in the closure of part of the A27. However, there is little in the schemes being proposed that would make a material difference

to resilience of the A27, so we would not expect the options to deliver significant reliability benefits.

Wider Economic Case

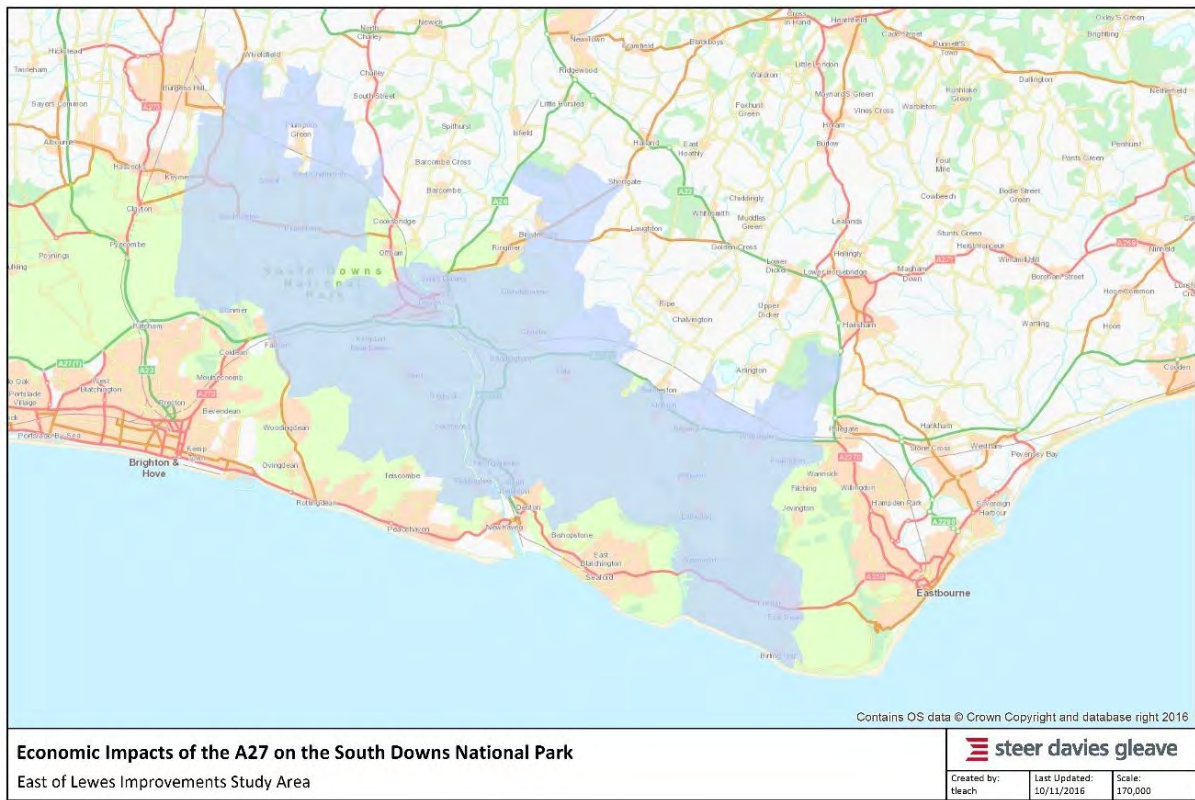
- 5.15 This section considers the wider impacts associated with improvements to the A27 East of Lewes, and how investment could affect the wider economy of the South Downs National Park.

Economic Context

- 5.16 Analysis was undertaken for a ‘scheme’ study area, including the 21 LSOAs²⁸ within the South Downs National Park within which the impacts of improvements to the A27 would be felt, as shown in Figure 5.1. This includes the town of Lewes, the largest settlement within the park, as well as smaller villages within the park east of Brighton, including Plumpton, Kingston and Alfriston.
- 5.17 17,000 jobs are located within the study area, which improvements to the A27 could potentially impact upon, of which 11,200 are within the town of Lewes. More than 2,500 of these jobs are within ‘Public Administration, Defence and Social Security’, accounting for 15% of the workforce compared to the national average of 4%. This reflects the presence of key administrative functions within Lewes, such as the headquarters of East Sussex Council and of Sussex Police. A further 2,300 people are employed in retail, 2,300 in health, 1,500 in professional, scientific and technical activities, and 1,800 in education.
- 5.18 Several of these sectors would be expected to benefit from improvements to the A27, which forms the main road linking Lewes to the east of the county. The town’s retail trade would expect to benefit from better access from customers elsewhere, and local education institutions – such as the Lewes Campus of the Sussex Downs College – better access for students and staff. However, a large number of students use rail for the College, so the impact for them may be minimal. National Park residents would potentially have better and more reliable access to the Lewes Victoria Hospital, and local businesses would also benefit from a wider area from which to recruit staff. Transport user benefits associated with the scheme would be expected to accrue to these groups, with business user benefits accruing from savings in freight deliveries to retailers, and from time savings from other business travel.

²⁸ LSOAs are geographic areas defined for Census statistics, and have a population of between 1,000 and 3,000 people

Figure 5.1: East of Lewes A27 Improvements Study Area



5.19 It should be noted, however, the journey time and reliability improvements forecast for the east of Lewes schemes are relatively modest, and are unlikely to make a material difference to economic behaviour, such as choice of location for work or shopping. While any effect of increasing retail activity in Lewes may result in a corresponding loss in spent elsewhere, we expect the scale of increase in Lewes to be modest, and the impacts on other locations to be limited, such that we do not consider that impacts elsewhere would be material.

Connectivity and Labour Market Effects

5.20 Significant changes in connectivity can influence labour market decisions, as changes in transport costs (both time and money) will impact on the decisions of people of whether to seek work, and whether to relocate elsewhere for work. Figures 5.2 and 5.3 outline the areas that are accessible within different journey time thresholds (15 minute increments) with and without the scheme option, assuming the scheme delivers a four-minute journey time saving between Lewes and Polegate.

Figure 5.2: Journey time catchments to Lewes Town Centre *without* the proposed interventions along the A27

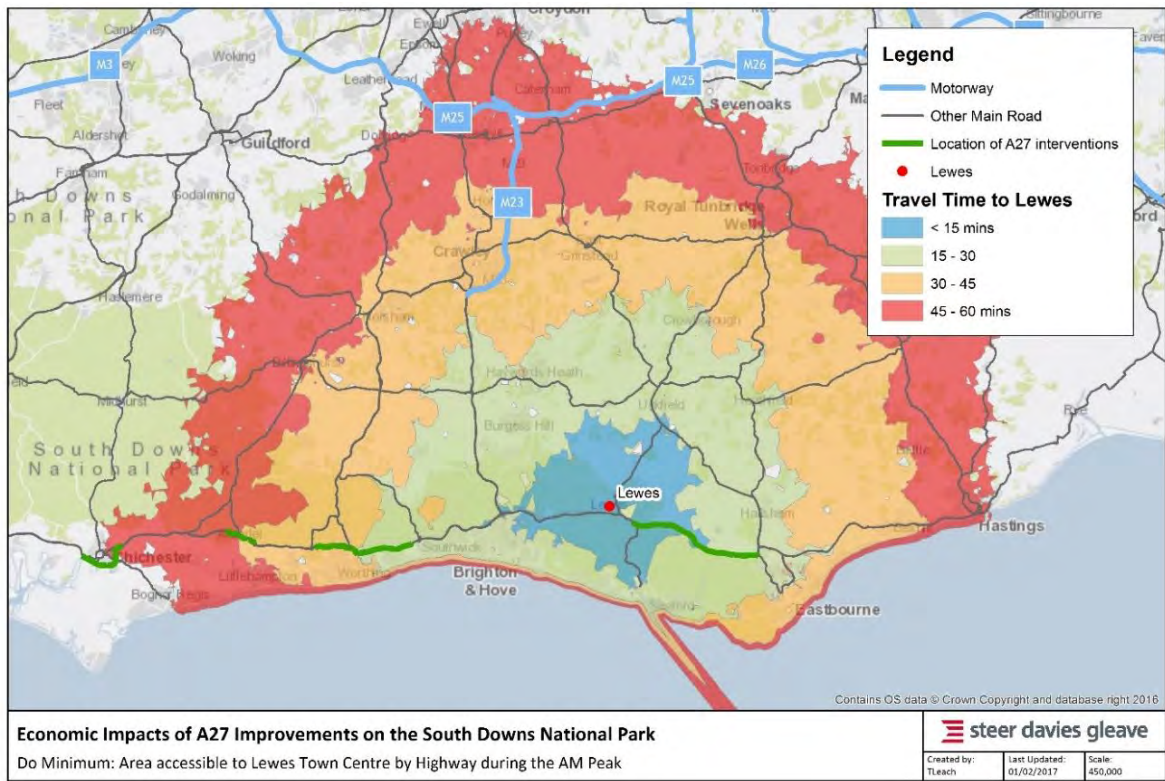
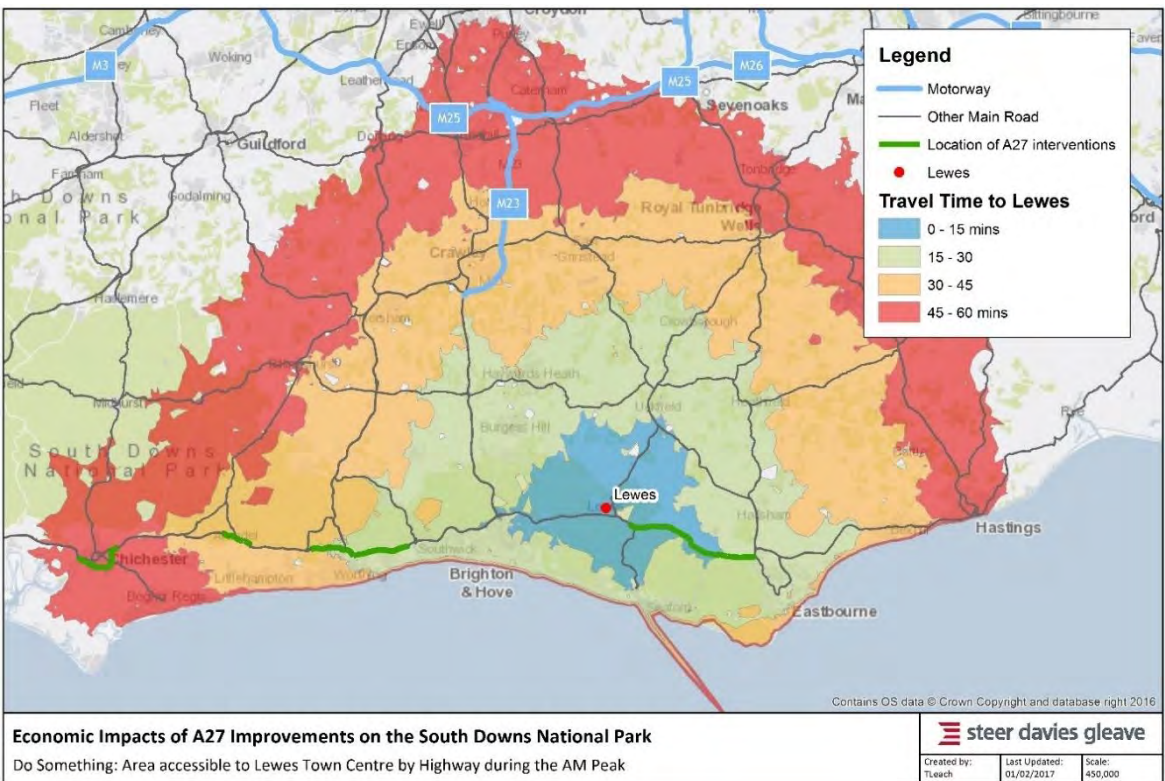


Figure 5.3: Journey time catchments to Lewes Town Centre *with* the proposed interventions along the A27



- 5.21 The figures highlight the change in accessibility to and from Lewes as a result of the scheme. Whilst the improvement in accessibility to Lewes as a result of the scheme from the remainder of the National Park is relatively limited, access is notably improved from key centres outside the park, including Eastbourne and Hastings. Eastbourne (population 100,000) now largely falls within a half-hour journey time of Lewes, increasing the size of Lewes' immediate labour market catchment in an area where stakeholder evidence has suggested that local firms have difficulty recruiting labour. Together with improvements at Lancing / Worthing, an additional 87,000 people are expected to be within a half-hour journey time catchment of Lewes.
- 5.22 Improved accessibility would also be expected to enhance the areas tourism offer, by reducing journey times to key tourist attractions and offering a more pleasant, less congested journey. Chichester (due to other improvements along the A27) and Hastings now comfortably fall within an hours' driving time of Lewes, increasing the tourism catchment of the town. Overall, the population within an hours' driving time to Lewes increases by 110,000, an increase of 6%.

Agglomeration Effects

- 5.23 Due to the location of the scheme outside of the Brighton FUR, the wider agglomeration impacts of the scheme (over and above that included in the transport user benefits) are not expected to be significant, as discussed in Chapter 2. Due to the low business density within the National Park, any increase in the effective density of firms is not likely to be significant enough to deliver a positive externality to firms otherwise unaffected by the scheme.
- 5.24 However, local businesses may benefit marginally from an improved ability to recruit staff from further along the A27 corridor, especially for businesses within highly-skilled, well-paid sectors such as 'professional, scientific and technical activities' where skill requirements can often be precise, with few available candidates spread across a wider geographical area. Improved ability to better match employees to employers would be expected to drive small productivity benefits for local businesses.

Output Change in Imperfectly Competitive Markets

- 5.25 Within imperfect market conditions, a transport improvement can induce price reductions, stimulate additional competition, and lead to more efficient market outcomes. Output change in imperfectly competitive markets is quantified for all transport schemes, and is valued at 10% of the business user benefits.
- 5.26 Consequently, this wider economic impact is valued at PV £1.8 million for the Selmeston schemes (Option 1), PV £240k for the upgrade at Wilmington, and PV £5.6 million for the Polegate – Cophall scheme.

Specific Local Impacts

- 5.27 This section considers potential economic effects to specific businesses within the Park. It is informed by discussions with stakeholders including East Sussex County Council and the Firle Estate, which is landlord to many businesses on land between Firle and Drusillas.
- 5.28 The **Selmeston** options would affect a number of local businesses within the Park. The longer bypass (Option 1) would result in less productive arable and pasture land within the Park. There

would also be potential severance impacts for access to land north of the planned new alignment, the effect of which would depend on detailed design provision.

- 5.29 Of the bypassed businesses within Selveston village (and within the Park boundary), there is a general consensus that the Salvidge petrol filling station would be unlikely to survive in the absence of passing trade. The plan would be for the existing road to be stopped up as a through route, although the details of this have yet to be determined. The Barley Mow pub has successfully rebranded its offer in the last 18 months, marketing itself as a destination pub for events. The trade-off for them would be whether the loss of passing trade would be compensated by a more pleasant environment. Given the extensive 'family' garden and plans to offer camping, it is likely that this would be the case. Many of the pubs in the surrounding area are successful in part because they offer a tranquil location relatively traffic free (The Cricketers at Berwick; Rose Cottage at Alciston; Sussex Ox at Milton Street, for example). The Rosetta B+B would also benefit from a more tranquil environment.
- 5.30 Tilton House lies about 500m south of the existing A27 road with access via the Charleston junction. The proposed bypass (Option 1) would bring the A27 around 150m closer. Tilton House is marketed as a B+B and peaceful Retreat with yoga classes and other treatments. Whilst it may benefit from the proposed improvements to the Charleston junction, for access and egress, there is a risk that the new road could increase traffic noise and undermine the business offer. This again would be dependent on the road design, noise mitigation etc.
- 5.31 For Charleston, the Centenary Project is part of SELEP's Local Growth Fund. It has £2.2m LGF allocation as part of a total £9.3m capital investment for a programme of works to restore, develop and create new spaces within the visitor attraction, including a new access road, structural works, increased office space and a larger restaurant. This is expected to result in 14 new or safeguarded jobs, an additional 15,000 visitors and an additional £4.3m spend per annum. The current access arrangements are on a narrow farm lane that only permits one-way traffic, which causes operational problems and limits venue capacity for events. A new access road will potentially increase traffic using the A27 junction which has bad sight lines and can be a source of congestion. Selveston Option 1 plans an improved junction at this location.
- 5.32 For the **Drusillas roundabout** scheme, capacity enhancements are projected to ease traffic flow through the junction, particularly for vehicles approaching on the north and south arms, as it is these movements which are difficult at times of heavy traffic flow. Whilst this will be of general benefit to traffic flow, it may make route choice alternatives to the A27 more attractive, e.g. through Alfriston, with associated impacts on the attractiveness of parts of the Park. It is unclear whether the HE modelling reflects the impact of the Pegasus crossing. Given the likely relatively rare usage of the facility in peak hours, this is not likely to be a significant matter. Note that the HE's traffic modelling work²⁹ assumes there would be no decongestion benefits outside of peak hours at Drusillas or Wilmington junctions.
- 5.33 The improvements for cyclists and horse riders at Drusillas are to be welcomed in that they improve the usability of this Gateway to the Park. However, the impacts of this are likely to be limited as, for example, Alfriston Road is still narrow and difficult for cyclists to negotiate with fast

²⁹ Atkins op. cit section 2.3 p12.

traffic, though there are extensive bridleways and alternative publicly accessible routes accessed from Drusillas roundabout through Berwick which cyclists and horse riders can and do enjoy.

- 5.34 Whilst lying outside the Park, it is understood that a major housing development (600 units) is under consideration close to Berwick station, significantly greater than the allocation of 20 units identified in the Wealden Core Strategy. This would place further pressure on the Alfriston roundabout and make the proposed improvement more important. It is unclear whether this development forms part of the traffic modelling underpinning this scheme.
- 5.35 The two options proposed at **Wilmington** would each ease traffic flow by reducing delays associated with turning traffic. By improving crossing facilities for pedestrians, there is a better opportunity for customer synergy between the tourism businesses adjacent to the junction – Crossways hotel; The Wishing Well tearoom; and, The Giant’s Rest pub, although only the latter two lie within the Park boundary.
- 5.36 The junction and link road investment at **Polegate** should relieve a key bottleneck on the A27. It could lead to more traffic travelling via the A22 rather than the A27 for longer distance movements. It could also help unlock potential for major housing development in the Polegate area, although this alone is unlikely to satisfy the necessary infrastructure requirements.

Lancing / Worthing

Introduction

- 5.37 As set out in Chapter 3, progress of plans for the A27 at Lancing/Worthing is still at the design options stage within an overall funding envelope of £50-£100m and an expected construction timeframe of 2021-23.
- 5.38 For the purposes of this assessment, an online dualling scheme (option F) has been considered as set out in the 2015 A27 feasibility study by Parsons Brinkerhoff³⁰. The A27 abuts the SDNP between Sompting and Lancing but this is already a duelled stretch, so it is presumed that no widening works would take place here.

Transport Economic Case

- 5.39 Only a summary Transport Economic Efficiency table is presented within the PB work, but it shows a very strong case for Option F. Table 5.3 below summarises the results.

Table 5.3: Economic Case for Lancing / Worthing Option F

Impact	Option F
Costs (PVC)	£83 million
Total Travel Time Benefits / Value of Time Savings	£541 million
Net Present Value	£458 million
Benefit: Cost Ratio	6.5

³⁰ Parsons Brinkerhoff. Op cit.

- 5.40 Background detail on the modelling behind the economic assessment has not been available. Nevertheless, the strong case presented here suggests it is highly likely there will be net positive economic benefits for a duelled online option.
- 5.41 Detailed estimates of journey time savings are not available, but if the scheme is assumed to save the same proportion of identified delay as that of Chichester, this would result in a time saving from the A27 / A280 flyover west of Durrington to the River Adur of approximately 6.5 minutes during the peak.
- 5.42 Whilst this could lead to additional induced traffic, one would expect this effect to be focused on shorter trips within the Worthing / Lancing conurbation, since it is these trips which would be expected to receive the greatest proportional journey time saving. A 6.5 minute saving on longer distance trips, including those to and from the park, would result in a smaller journey time saving in proportional terms, and hence only a limited volume of induced traffic on roads within the South Downs National Park.

Wider Economic Case

- 5.43 Since both the scheme options and the neighbouring major settlements of Lancing and Worthing are located outside of the park, there are few **local** businesses which would be expected to benefit from the Lancing / Worthing scheme. Findon, a small village with a population of approximately 2,000 people with little major employment, is the only settlement within the park within a ten-mile radius of the Lancing / Worthing scheme, and where local economic effects would be expected to be felt. Other residents and businesses within the National Park, would, however, be expected to benefit from the wider improvements in connectivity along the A27 corridor facilitated by the scheme.

Connectivity and Labour Market Effects

- 5.44 Economic impacts upon park residents and businesses would therefore be expected to be felt by those undertaking longer journeys, either to / from the park and Worthing, Lancing and Goring-on-Sea or to / from the park along the length of the A27 between the A27 / A280 flyover and the River Adur. Comparing Figures 5.4 and 5.5 below highlights the accessibility impacts of all the proposed interventions along the A27, including Worthing / Lancing, on the village of Findon.

Figure 5.4: Journey time catchment from Findon *without* the proposed interventions along the A27

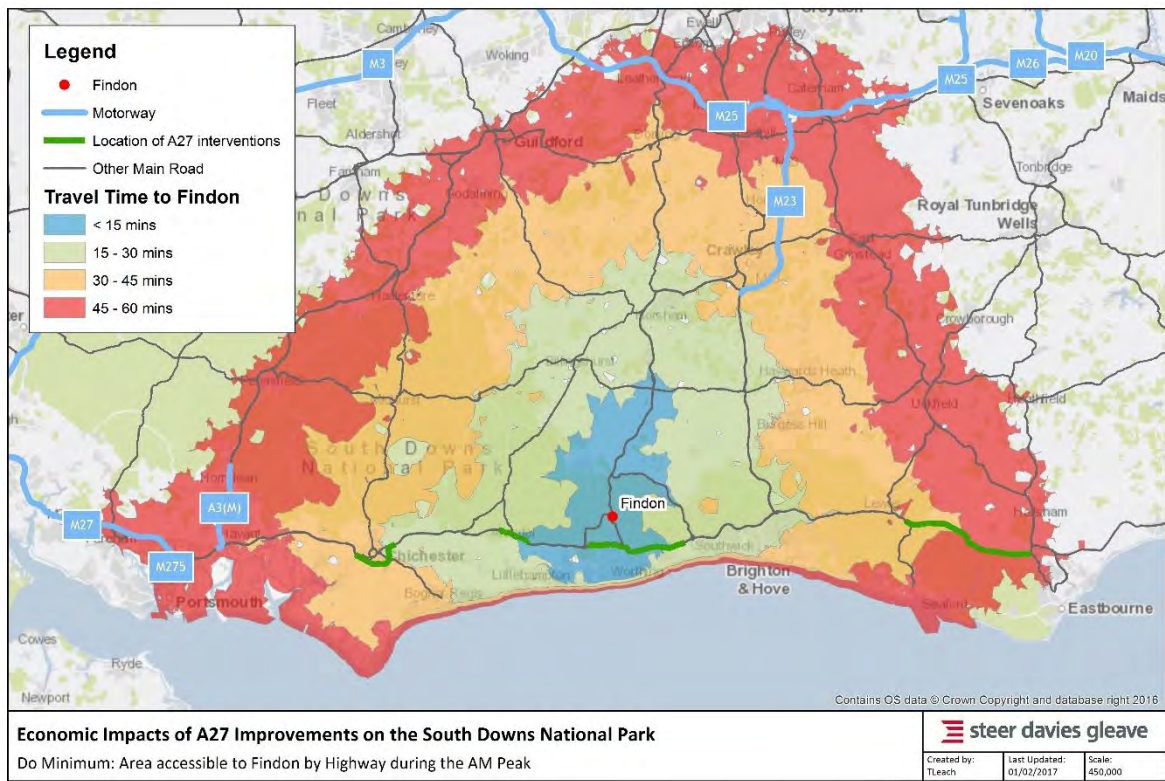
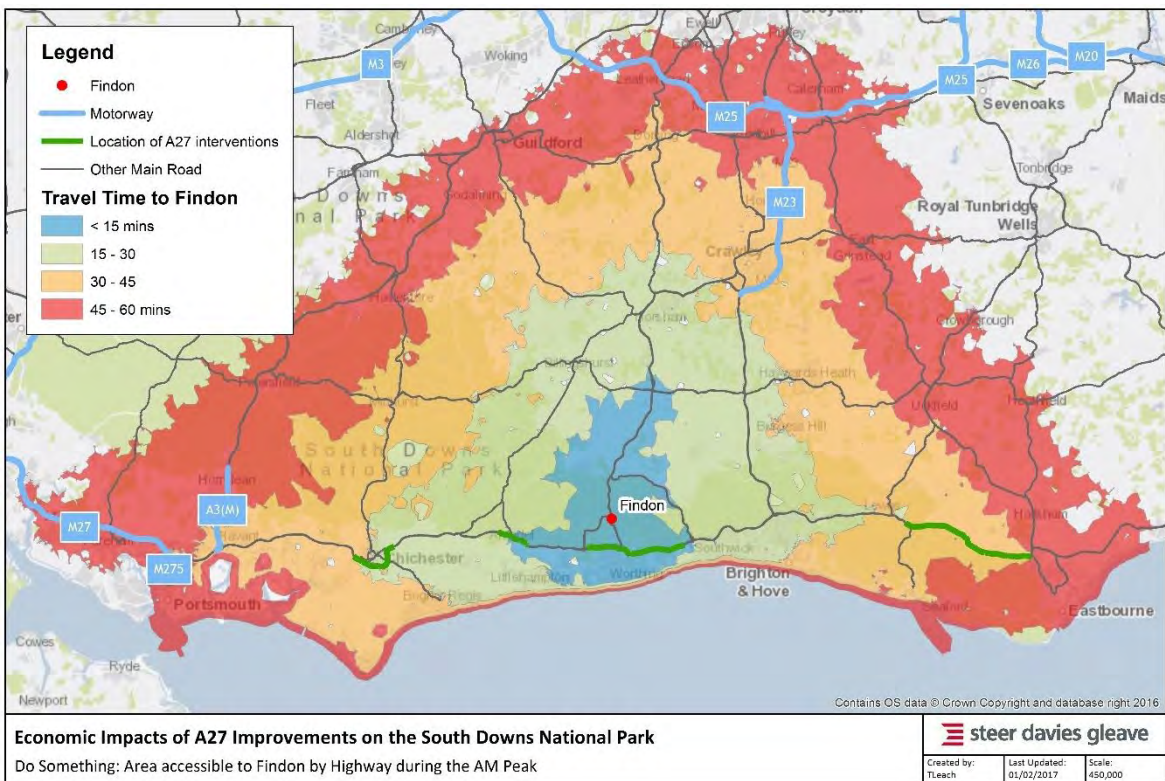


Figure 5.5: Journey time catchment from Findon *with* the proposed interventions along the A27



- 5.45 Locally, the effect of the Worthing / Lancing intervention is to expand the size of the 15-minute drive time catchment: to the east, the entirety of Worthing is now included, including the future development site neighbouring Shoreham Airport, discussed below, and travel times to Brighton also experience a significant reduction. Towards the west, the 15-minute catchment now includes the town of Arundel on the park boundary, and due to the interventions at Arundel and on the Chichester Bypass, a small improvement in accessibility to employment and services located within Chichester. This would be expected to deliver a minor improvement in the potential employment catchment available to park residents within Findon (and Washington to the north), together with accessibility to local services such as Worthing Hospital.

Specific Local Impacts

- 5.46 Whilst the details of the online dualling option are not yet in the public domain, part of the rationale of the scheme is to limit the number of accesses onto the A27, as this is a significant source of congestion. This is likely to have implications for local connectivity, particularly if the junction strategy is a signal-controlled rather than roundabout-based one.
- 5.47 Specific local access issues from north of the A27 may occur in relation to Worthing Golf Club, and in relation to farm accesses from within the National Park. The extent of these issues would be dependent on the detail of option design. This would also be the case in relation to severance impacts and access to the Park, which could be net positive or harmful dependent on the design adopted.
- 5.48 Adjacent to Shoreham airport, the New Monks Farm development of 600 homes and an IKEA big-box retail development received formal approval in early 2017. This is expected to include:
- A total investment of £170 million, creating more than 1,000 jobs;
 - A new 35,000 sq metre IKEA store, creating 875 jobs;
 - 600 new dwellings;
 - £40 million of road improvements, including a new roundabout to replace the Sussex Pad traffic lights;
 - A 28-hectare park, new primary school and community centre;
- 5.49 Whilst this is not dependent on the delivery of the Lancing / Worthing A27 scheme, the proposals are expected to increase pressure on the surrounding highway network, and improve the case for the Worthing / Lancing and Arundel schemes. IKEA in particular would be expected to generate a significant volume of additional long-distance trips, although these will in part be displaced from existing trips to IKEA Southampton and Croydon.

Arundel

Introduction

- 5.50 The planning process for Arundel is at a similar stage to Worthing/Lancing, in considering options between now and Summer 2017. No definitive option can be considered therefore, but, as set out in Chapter 3, consideration is given here to a generic option with a junction at Ford Road.
- 5.51 It should be noted that there will be network impacts between options at Worthing and Arundel, and this has been recognised by HE, with modelling work taking this into account.

Transport Economic Case

- 5.52 Presented here is the Transport Economic Efficiency analysis undertaken as part of Parsons Brinckerhoff's feasibility study. This should be seen as illustrative, since option development has moved on in the two years since this was published. Table 5.4 below represents Option B in the feasibility work – described as an offline bypass avoiding the SDNP.

Table 5.4: Economic Case for Arundel Option B

Impact	Option B
Costs (PVC)	£193 million
Total Travel Time Benefits / Value of Time Savings (core)	£321 million
Net Present Value	£128 million
Benefit: Cost Ratio	1.7

- 5.53 A BCR of 1.7:1 represents medium value for money as an initial assessment. It is unclear what this includes, but reliability and induced traffic impacts, together with accident and environmental effects, may make a significant difference to this initial finding.

Wider Economic Case

- 5.54 Arundel, with a population of approximately 3,500 people, would be expected to receive the greatest local impacts associated with the bypass scheme. Whilst the town itself is outside of the National Park, the town forms a key gateway to the park, and is of significant historic and cultural significance, including a cathedral and a number of listed buildings. Arundel Castle, located within the park, forms a key tourist attraction.
- 5.55 Few large settlements within the park, other than Arundel itself, fall within the immediate area of influence of the Arundel scheme, with only small villages such as Slindon and Bury falling both within the park and a ten-mile radius of the scheme. Hence, outside of Arundel, the local impacts of the scheme are expected to be minor, although other residents and businesses within the National Park, would, however, be expected to benefit from the wider improvements in connectivity along the A27 corridor facilitated by the scheme.
- 5.56 Impacts on Arundel's tourism industry, including Arundel Castle, are expected to be mixed. Whilst the town will benefit from improved accessibility delivered by both the bypass and other A27 interventions, and therefore improve the wider tourist catchment, depending on the scheme option chosen any bypass scheme could negatively impact upon the overall setting of the town and castle, and on long-distance sightlines. The constrained nature of the towns' streets would also limit the ability for the town to sustain any additional local traffic.

Specific Local impacts

- 5.57 Any local economic impacts will depend in part on whether a junction is provided with Ford Road, due south. This would help to open up development opportunities at Ford Airfield with at least 1,500 houses³¹. This has not yet been identified as dependent development for the Arundel

³¹ <http://ford.arun.gov.uk/main.cfm?type=EVIDENCEBASE>

scheme. It would represent an economic benefit in its own right, although by definition it would load additional traffic on to the Strategic Road Network and therefore exacerbate congestion compared with a 'no development' scenario.

- 5.58 The removal of through traffic from adjacent to Arundel station would make it easier to improve pedestrian and cycle connectivity between the station and the town centre. It would therefore enhance Arundel station as a gateway to the Park.

Chichester

Introduction

- 5.59 A set of options have been subject to detailed appraisal³² in line with the objectives set out in Chapter 3 above. Hybrid Option 2, which is used as our basis for assessment, prioritises through traffic by reducing local connectivity between radial routes and the A27. Direct access to the A27 will only be possible through the Fishbourne and Bognor roundabouts, with some other connections catered for by a Stockbridge link road from the Fishbourne roundabout to the B2145. No connection will be provided at the Stockbridge and Whyke roundabouts between the radial routes and the A27, with A27 traffic elevated over new structures.

Transport Economic Case

- 5.60 The conventional economic case that Highways England makes for Option 2 is set out in the Economic Assessment Report³³. In terms of the impacts on local economic performance, the key economic impacts measured are:
- road user journey time impacts – due to changes in travel time and vehicle operating costs;
 - reliability impacts – due to changes in journey time variability;
 - construction and maintenance impacts – impacts on road user travel time and vehicle operating costs during construction and future maintenance.

Table 5.5: Economic Case for Chichester Bypass Option 2

Impact	Option 2
Costs (PVC)	£207 million
Total Travel Time Savings / Present Value Benefits	£574 million
of which car (Business)	£79 million
freight Vehicles	£156 million
car (commuting)	£96 million
car/LGV (private/other)	£243 million
Construction/maintenance delay costs	- £32 million
Air Quality Benefits	£2 million

³² A27 Chichester Bypass Improvement Scheme. Economic Assessment Report. Highways England. July 2016

³³ Ibid.

Noise disbenefits	- £4 million
Accident Benefits	£8 million
Indirect Tax Revenues	£2 million
Net Present Value	£344 million³⁴
Benefit:Cost Ratio	2.66

5.61 We have identified the following potential caveats to the TEE case set out by Highways England:

- The annualisation of peak benefits is based on traffic volume data, whilst modelling the busiest hour. This may overestimate decongestion benefits;
- Carbon impacts have not been calculated nor valued;
- The monetary valuation of predicted changes in air quality have not been incorporated.

5.62 It should be noted that the traffic modelling work uses a variable demand model and therefore should take full account of induced traffic in constraining net time savings.

5.63 For this option, more benefits are projected to accrue in the interpeak period (PV £251 mill) than for either the AM peak (PV £115 mill) or the PM peak (PV £209 mill)³⁵. Given that the majority of congestion currently occurs in peak hours, this suggests that congestion is expected to spread further into the interpeak in the Do Minimum and/or that benefits accrue to free flow times as through traffic no longer has to negotiate the existing roundabouts.

Business Time Savings

5.64 HE predicts that business time savings are worth £235m PV across the life of the scheme. This represents 41% of total time/VoT savings.

Reliability/Resilience Effects

5.65 Reliability impacts are calculated separately from the benefit figures given in Table 5.5 above. This is because they are not included as core benefits within the Benefit:Cost ratio. Reliability benefits are estimated by HE as PV £250 mill across the life of the project, which represents a very significant add-on to core benefits (+44%).

Wider Economic Case

Connectivity and Labour Market Effects

5.66 Whilst the Chichester scheme is expected to deliver significant journey time improvements, the geography of the scheme and the park means that wider connectivity and labour market effects within the park are likely to be spread across a wider area. The location of the scheme to the south of Chichester is expected to result in the greatest local impacts being felt within the town itself, rather than the park; the nearest park settlements are the small villages of Lavant and East Lavant, together with the attractions at Goodwood.

³⁴ Totals may not add up due to rounding

³⁵ Highways England op. cit. Figure 5.1.

- 5.67 These local communities and businesses are expected to benefit from the wider improvements delivered by the A27 schemes as a whole, as opposed to simply Chichester, and are discussed in detail in the Combined Scheme Impacts section.

Dependent Development

- 5.68 The economic case for Option 2 is considered by HE with dependent development at the strategic development location of Tangmere, North East Chichester and West Chichester. Together, these are expected to deliver 2,500 residential units and 1,000 jobs by 2041.³⁶ An incremental analysis was applied by Highways England using a WebTAG compliant approach, where the 'level of service' would not be reasonable on the A27 without the scheme but with the development. The level of incremental benefit is forecast to be relatively modest at +£14.3m³⁷ (+2.5%). This measures the 'planning gain' of the benefit of allowing additional housing to come forward, net of the transport external costs that would be imposed.
- 5.69 This development will add additional longer term pressure on to the strategic road network, and the A27 in particular. However, this is incorporated within the HE economic analysis as determined by the WebTAG dependent development approach.
- 5.70 It can be argued that allowing development to take place at these strategic locations may reduce pressure for housing development at more sensitive locations within the SDNP. Additional growth may also be unlocked to the south of Chichester, although this has not been claimed as dependent development within HE's economic case.

Specific Local impacts

Sectoral Analysis

- 5.71 The sectoral analysis of benefits contained within the HE's Economic Assessment Report does not permit an exact analysis of the share of the impacts that would accrue to trips to or from the SDNP. However, sector 6³⁸ has been drawn to capture those trips to/from north and east of Chichester and within the Park, in the area bounded roughly by Rowlands Castle, Petersfield, Bury and Haslemere. Option 2 is forecast to produce net time and vehicle operating cost saving benefits of PV£128m for sector 6, which represents 22% of total forecast benefits of the scheme.
- 5.72 The largest sector-sector impacts to/from sector 6 are projected to be:
- PV £35m for trips to/from the Bognor Regis sector 4
 - PV £22.5m for trips to/from the central Chichester sector 9
- 5.73 These are net benefits that accrue to those travelling on the A27 or through congestion relief on other roads, net of congestion impacts from induced traffic. It is important to note, however, that

³⁶ A27 Chichester Bypass Improvement Scheme, Forecasting Report, Table 5.1. Highways England. 27 July 2016.

³⁷ A27 Chichester Bypass Improvement Scheme. Economic Assessment Report. Table 5-20. Highways England. July 2016.

³⁸ Op cit. Figure 5.3.

these values are not economic gains compared with now, but compared with the projected situation of worse congestion in the future should the bypass not be improved.

Access Restrictions

- 5.74 The restrictions of access to the A27 associated with Option 2 and the associated limitations to turning movements are both expected to change the pattern of route choice for vehicles. Direct access to the A27 will only be possible via the Fishbourne and Bognor roundabouts, thus concentrating north-south traffic at these points. Mitigation of this would be via the proposed Stockbridge link road south of the bypass.
- 5.75 Restricting access will prioritise benefits to through traffic, but will therefore encourage more long distance traffic to travel via the A27, rather than, for example, the M25.
- 5.76 Currently, there is evidence that traffic uses alternative routes to avoid the congested A27. In particular, New Road acts as an unofficial northern bypass to the City, taking traffic through Lavant, which lies in the SDNP, as does East Ashling which also attracts displaced traffic.

Combined Scheme Impacts

Introduction

- 5.77 This section considers the wider accessibility and labour market impacts of the A27 interventions collectively on the economic geography of the South Downs National Park.

Wider Accessibility and Labour Market Impacts

- 5.78 Collectively, the East of Lewes, Lancing / Worthing, Arundel and Chichester schemes are likely to have an impact on the wider patterns of accessibility across the park, outside of the immediate 'areas of influence' of each scheme. Improvements in accessibility would be expected to deliver wider labour market and business impacts, by allowing employers to recruit and employees to commute across greater distances, increase the catchments of tourist attractions within the park, as well as improving the ability for park residents to access local services such as shops and leisure destinations within Brighton City Centre.
- 5.79 Figures 5.6 to 5.11 indicate the accessibility of Brighton City Centre, Havant Town Centre and Goodwood Racecourse to the South Downs National Park with and without the A27 interventions. Together with the isochrone analysis included within earlier sections, they are designed to illustrate the overall potential impact of the highway schemes on access to key destinations, both within and outside of the park, for park residents, businesses and visitors.

Figure 5.6: Journey time catchment to Brighton City Centre *without* the proposed interventions along the A27

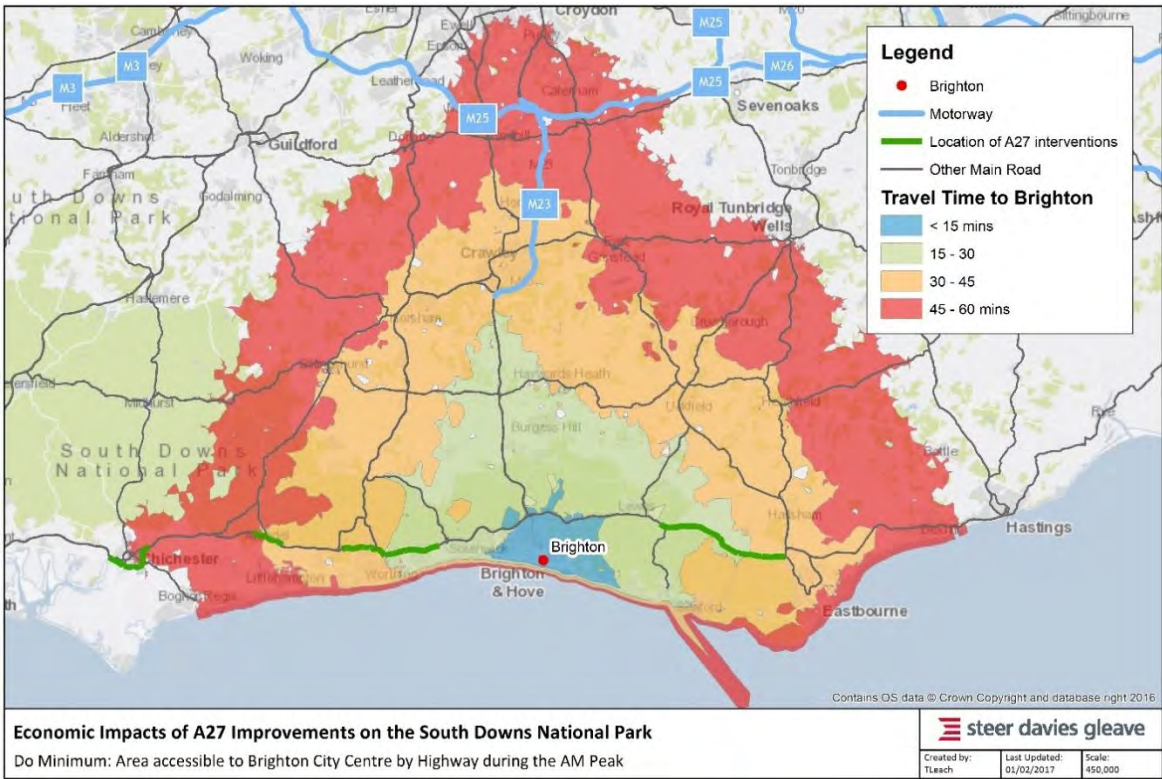
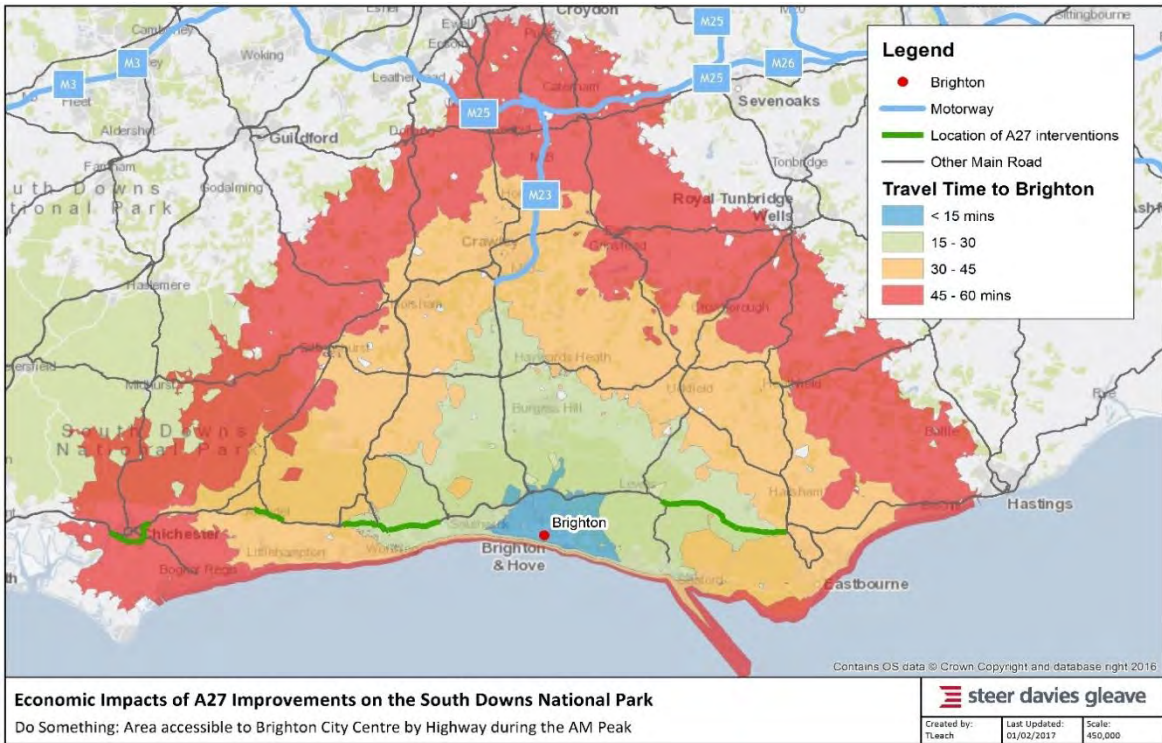


Figure 5.7: Journey time catchment to Brighton City Centre *with* the proposed interventions along the A27



- 5.80 Due to a combination of the East of Lewes, Lancing / Worthing and Arundel schemes in particular, the 30 and 45 minute drive-time catchment of Brighton City Centre is expected to expand noticeably. Within the 30-minute catchment, a number of small villages to the east of Lewes are now included (such as Alfriston); within the 45-minute catchment, the area to the north-east of Arundel (including the villages of Burpham and Wepham) are now included. Considering that residents of the park are already likely to commute significant distances outside of the park for work (as outlined in Paragraph 4.14), it would be likely that the combination of interventions would improve labour market opportunities for park residents, including the comparatively skilled, better-paid jobs located in Brighton City Centre relative to the rest of the South Coast.
- 5.81 However, the effect of this on the wider economy of the park is expected to be limited; improvements in accessibility are generally minor, and the settlements concerned small in population. Whilst some park residents may commute further for work, benefiting from the ability to reach employment elsewhere, the numbers making these extended trips are likely to be so small as to have a largely insignificant effect on overall traffic flows along the A27.
- 5.82 Figures 5.8 and 5.9 demonstrate a similar picture for the town of Havant, at the western edge of the National Park. Interventions at Chichester, Arundel and Worthing are expected to facilitate faster journeys from the large settlements and employment hubs of Portsmouth and Southampton to the significant proportion of the parks' population east of Chichester. Again, this would be expected to deliver a minor improvement to the labour market opportunities for these residents, together with business savings for firms with trading links to the wider South Coast.

Figure 5.8: Journey time catchment to Havant Town Centre *without* the proposed interventions along the A27

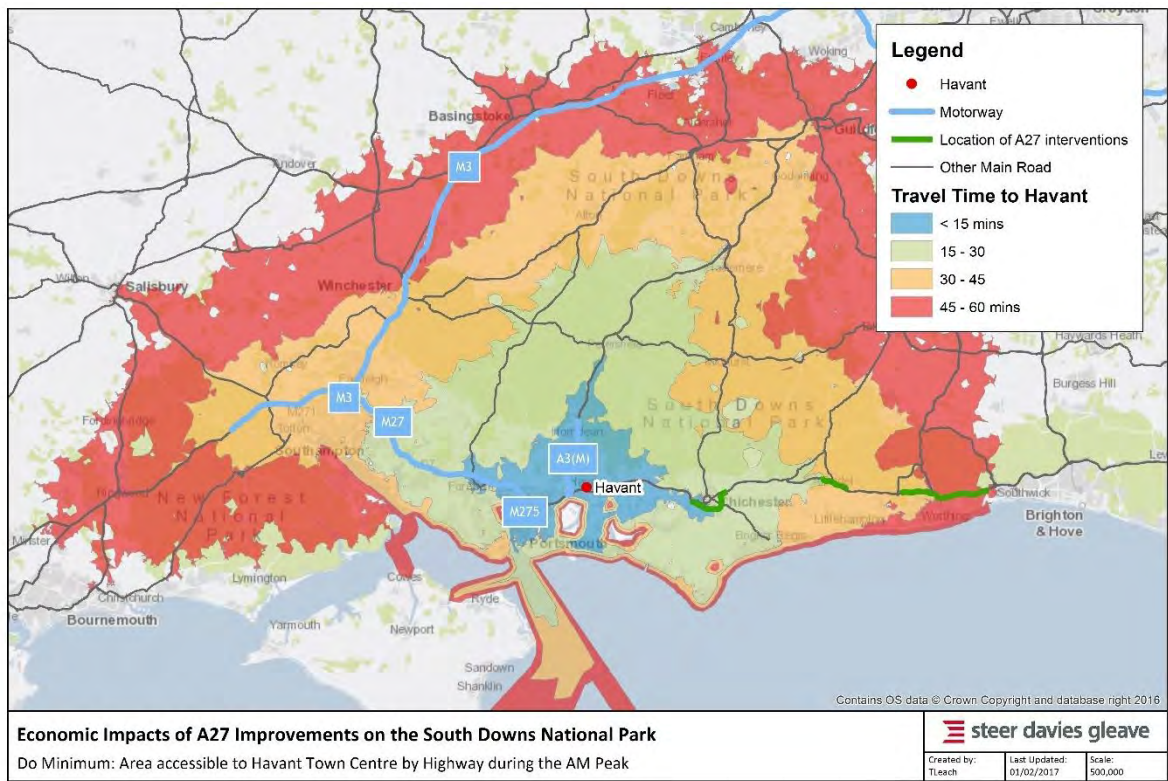


Figure 5.9: Journey time catchment to Havant Town Centre *with* the proposed interventions along the A27

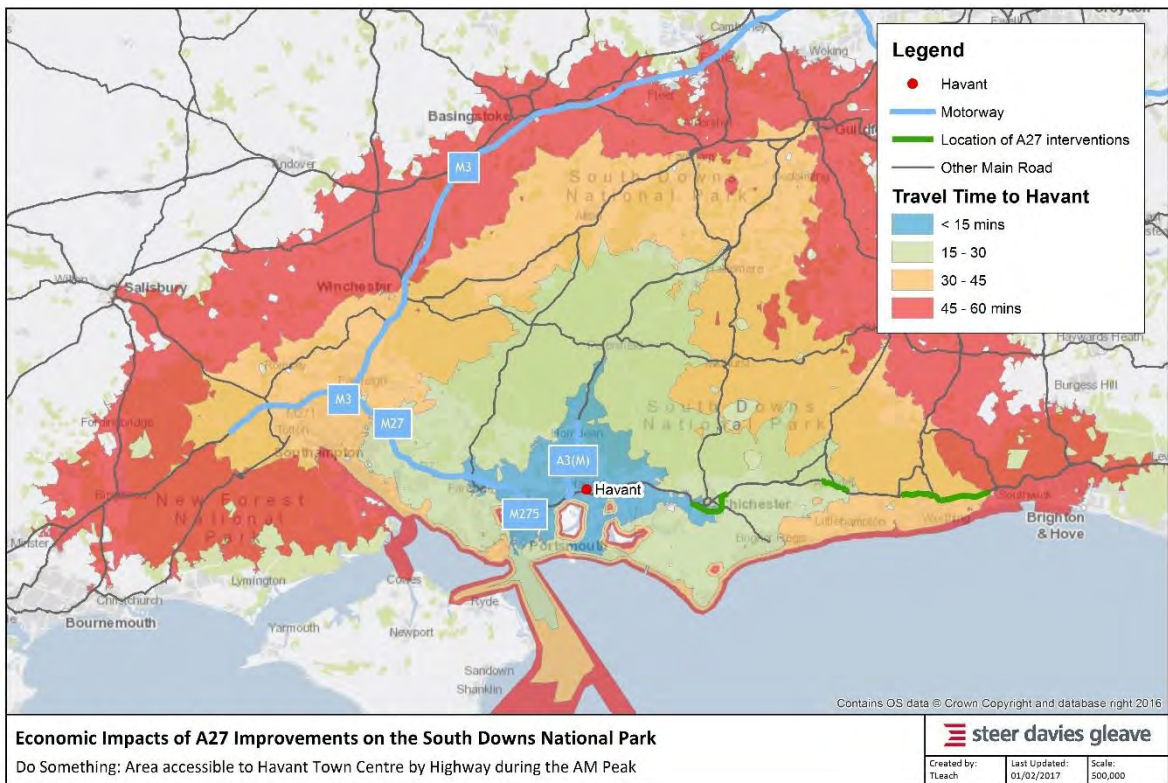


Figure 5.10: Journey time catchment to Goodwood Racecourse *without* the proposed interventions along the A27

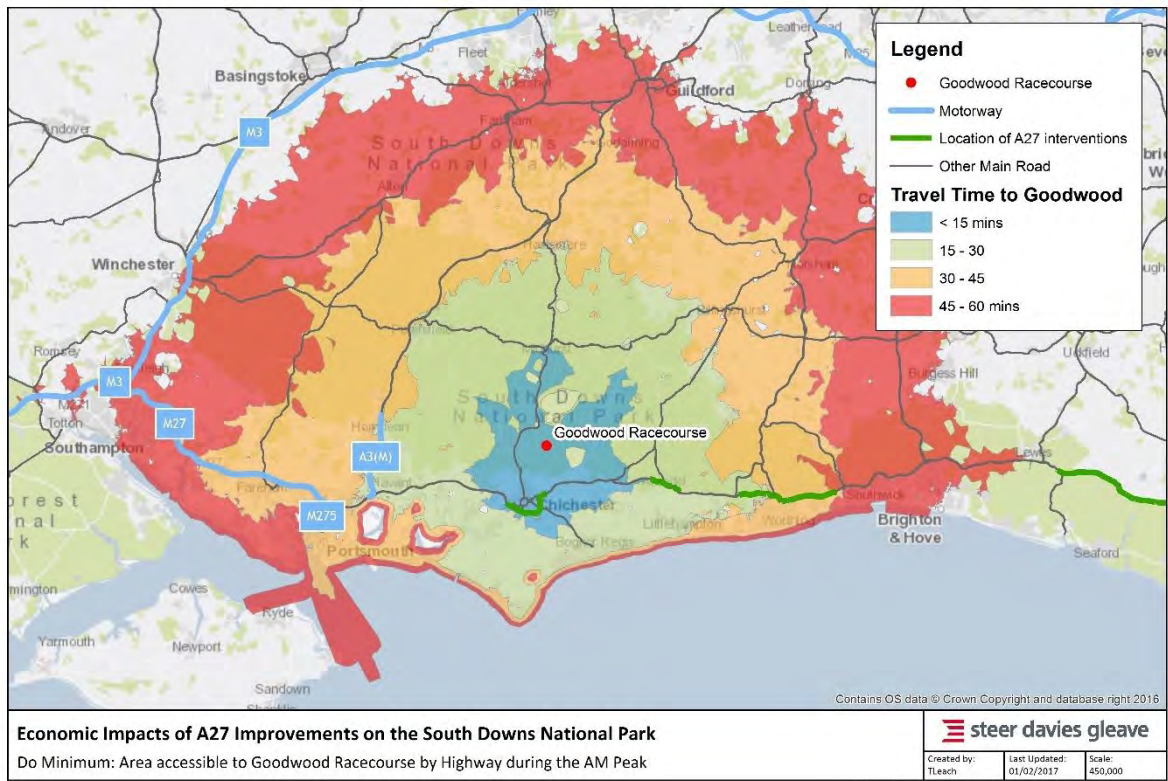
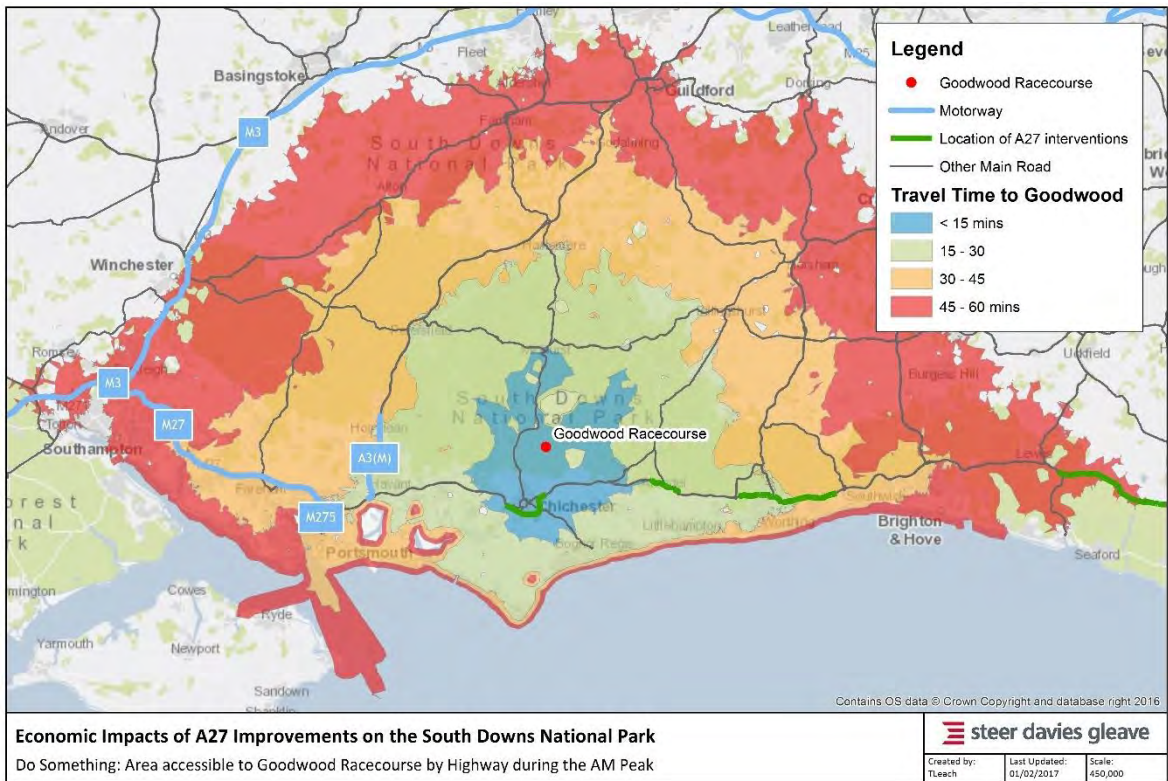


Figure 5.11: Journey time catchment to Goodwood Racecourse *with* the proposed interventions along the A27



- 5.83 Comparing Figures 5.10 and 5.11 illustrates the change in highway accessibility to Goodwood Racecourse, north of Chichester, a key attraction within the park which attracts visitors from a wider catchment. Due to the combination of A27 schemes, the 60-minute drive time catchment is expected to increase significantly, stretching to include the entirety of Lewes, Brighton and Eastleigh, together with a greater proportion of the population of Southampton. Time savings to the site would extend, via the wider strategic road network, to much of the west of England via the A27 and the Chichester Bypass. Due to the interventions, the hour-travel time catchment increases by approximately 9%, with an additional 195,000 people within sixty minutes' drive time of the site.
- 5.84 Whilst this would be expected to have a positive impact on the ability of the racecourse to attract spectators, in absolute terms this effect is likely to be minor, representing in the vast majority of cases a time saving of less than ten minutes on an overall journey which may be well in excess of an hour for the visitors to the racecourse. Such an effect is likely to be similar for other attractions within the park, especially those that attract visitors from a large catchment; whilst the accessibility impact is positive, it is highly unlikely to lead to a transformational change in business accessibility or visitor numbers.

6 Conclusions and Key Findings

- 6.1 In this report, we have sought to identify the key potential economic impacts upon the South Downs National Park from Highways England's proposed options for the A27.

Overall Findings – Economic Impacts of Improvements to the A27

- 6.2 Overall, given the location and scale of economic activity within the South Downs National Park, we consider that the 'real economy' benefits that will accrue to people and businesses within the National Park will be small as a proportion of the overall business and commuting benefits of the overall scheme options. The largest effects are expected to arise from re-routing effects on specific roads and, to a lesser extent, generated travel. In economic terms generated traffic can be positive, in that the generated traffic supports a higher level of economic activity, but can also erode time savings and increase traffic-borne noise and emissions.
- 6.3 The biggest impact on businesses within the SDNP will, in the main, reflect changes in the volume of passing trade, the ability to access businesses and the change in catchment area (such as for tourism activities). Any 'wider economic impacts', such as increased productivity arising from economic agglomeration, are likely to be negligible. There are also instances where scheme options may open up development opportunities or create additional development pressures. Where these developments come on-stream (and in particular where development is 'dependent' on the road improvement), the associated demand will inevitably lead to additional traffic and associated congestion and environmental impacts.

Specific Findings - East of Lewes

- 6.4 Options brought forward to consultation are intended to primarily address safety and local environment objectives, although schemes at Drusillas and Polegate address local bottlenecks
- 6.5 Peak-hour journey time savings of up to 4.3 minutes are predicted by Highways England. These are relatively modest connectivity improvements, and are unlikely to change economic behaviour significantly. Business time savings as traditionally calculated form a relatively high proportion of user benefits (around 50%), and these translate to economic benefits of around £120m across the 60-year appraisal period, including the measurement of wider benefits under imperfect competition.
- 6.6 There will be important local impacts for specific businesses, both positive and negative, depending on the location and nature of their business. Businesses, including retail, in Lewes would benefit from the investment, but this effect is likely to be relatively modest.

Specific Findings - Lancing / Worthing

- 6.7 Progress of plans for the A27 at Lancing/Worthing is still at the design options stage, with an overall funding envelope of £50-£100m and an expected construction timeframe of 2021-23.
- 6.8 For the purposes of this assessment, an online dualling scheme (Option F) has been considered as set out in the 2015 A27 feasibility study by PB. The A27 abuts the SDNP between Sompting and Lancing but since this is already a duelled stretch, it is presumed that no widening works would

take place here. The BCR presented is 6.5 : 1 suggesting that there will be net positive economic benefits for a duelled online option.

- 6.9 The scheme would serve an area of major housing and commercial development. Adjacent to Shoreham airport, there are pre-application plans for 600 homes, employment and IKEA big box retail. While this has not been demonstrated to be 'dependent' on the dualling scheme under review, it involves an upgrade of the Sussex Pad traffic lights to a new roundabout interchange.
- 6.10 The detail of an online dualling option is not yet in the public domain, but part of the rationale is to limit the number of accesses on to the A27, as this is a significant source of congestion. This potentially has implications for local connectivity, particularly if the junction strategy is a signal-controlled rather than roundabout-based one.
- 6.11 Specific local access issues from north of the A27 may occur in relation to Worthing Golf Club, and in relation to farm accesses from the SDNP. The extent of these issues would depend on the detail of option design. This would also be the case in relation to severance impacts and access to the Park, which could be net positive or harmful dependent on design.

Specific Findings - Arundel

- 6.12 The planning process for Arundel is at a similar stage to Worthing/Lancing, in considering options between now and Summer 2017. No definitive option can be considered, and therefore consideration is given here to a generic option with a junction at Ford Road.
- 6.13 It should be noted that there will be network impacts between options at Worthing and Arundel, and this has been recognised by HE, with modelling work taking this into account. The BCR presented is 1.7:1, which represents medium value for money as an initial assessment. It is unclear what this includes, but reliability and induced traffic impacts, together with accident and environmental effects may make a significant difference to this initial finding.
- 6.14 Local economic impacts will depend in part on whether a junction is provided with Ford Road, due south. This would help to open up development opportunities at Ford Airfield with at least 1,500 houses^[1], but has not (yet) been identified as 'dependent development' for the Arundel scheme. It would represent an economic benefit in its own right, although by definition it would load additional traffic on to the Strategic Road Network and therefore exacerbate congestion compared with a 'no development' scenario.
- 6.15 Whilst the town of Arundel itself would be expected to benefit from congestion relief, and therefore improve its appeal as a tourism destination, any bypass scheme will inevitably have an adverse impact on the wider surroundings of the park. The extent of this will be dependent on the scheme alignment chosen, and the degree of environmental mitigation proposed.

Specific Findings - Chichester

- 6.16 Hybrid Option 2, which is used as our basis for assessment, prioritises through traffic by reducing local connectivity between radial routes and the A27. Under this option, direct access to the A27 will only be possible through the Fishbourne and Bognor roundabouts, with some other

^[1] <http://ford.arun.gov.uk/main.cfm?type=EVIDENCEBASE>

connections catered for by a Stockbridge link road from the Fishbourne roundabout to the B2145. No connection will be provided at the Stockbridge and Whyke roundabouts between the radial routes and the A27, with A27 traffic elevated over new structures.

- 6.17 The conventional economic case that Highways England presents for Option 2 shows a BCR of above 2.5 : 1, though we have noted several caveats within the appraisal that may impact upon this.
- 6.18 Whilst the Chichester scheme is expected to deliver significant journey time improvements, the geography of the scheme and the park means that wider connectivity and labour market effects within the park are likely to be spread across a wider area. The location of the scheme to the south of Chichester is expected to result in the greatest local impacts being felt within the town itself, rather than the park.
- 6.19 The economic case for Option 2 is considered by HE with dependent development at the strategic development location of Tangmere, North East Chichester and West Chichester. Together, these are expected to deliver 2,500 residential units and 1,000 jobs by 2041.³⁹ An incremental analysis was applied by Highways England using a WebTAG compliant approach, where the 'level of service' would not be reasonable on the A27 without the scheme but with the development. This development will add additional long-term pressure onto the strategic road network, and the A27 in particular.
- 6.20 It can be argued that allowing development to take place at these strategic locations may reduce pressure for housing development at more sensitive locations within the SDNP. Additional growth may also be unlocked to the south of Chichester, although this has not been claimed as dependent development within HE's economic case.

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³⁹ A27 Chichester Bypass Improvement Scheme, Forecasting Report, Table 5.1. Highways England. 27 July 2016.

CONTROL INFORMATION

Prepared by	Prepared for
Steer Davies Gleave 28-32 Upper Ground London SE1 9PD +44 20 7910 5000 www.steerdaviesgleave.com	South Downs National Park Authority [Company Address]
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23027201	
Author/originator	Reviewer/approver
Tom Leach;Leo Eyles	Tom Higbee
Other contributors	Distribution
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