

# A24 Network Resilience

## Submission to Coast to Capital LEP

Surrey County Council  
December 2014

CUSTOMER  
SERVICE  
EXCELLENCE



SURREY



# A24 Network Resilience

Oyster Petroleum

Biwater Holdings

Friends Life

To Gatwick Airport

Dorking Railway Station

Dorking Deepdene Railway Station

Kuoni Travel Ltd

**Legend**

- A24 Scheme
- Key Businesses
- Key Developments
- Surrey Business Parks
- SCC Schools
- Independent Schools
- Surrey AQMAs (June '14)



## Coast to Capital Local Transport Body Sustainability and Resilience Schemes Application Form

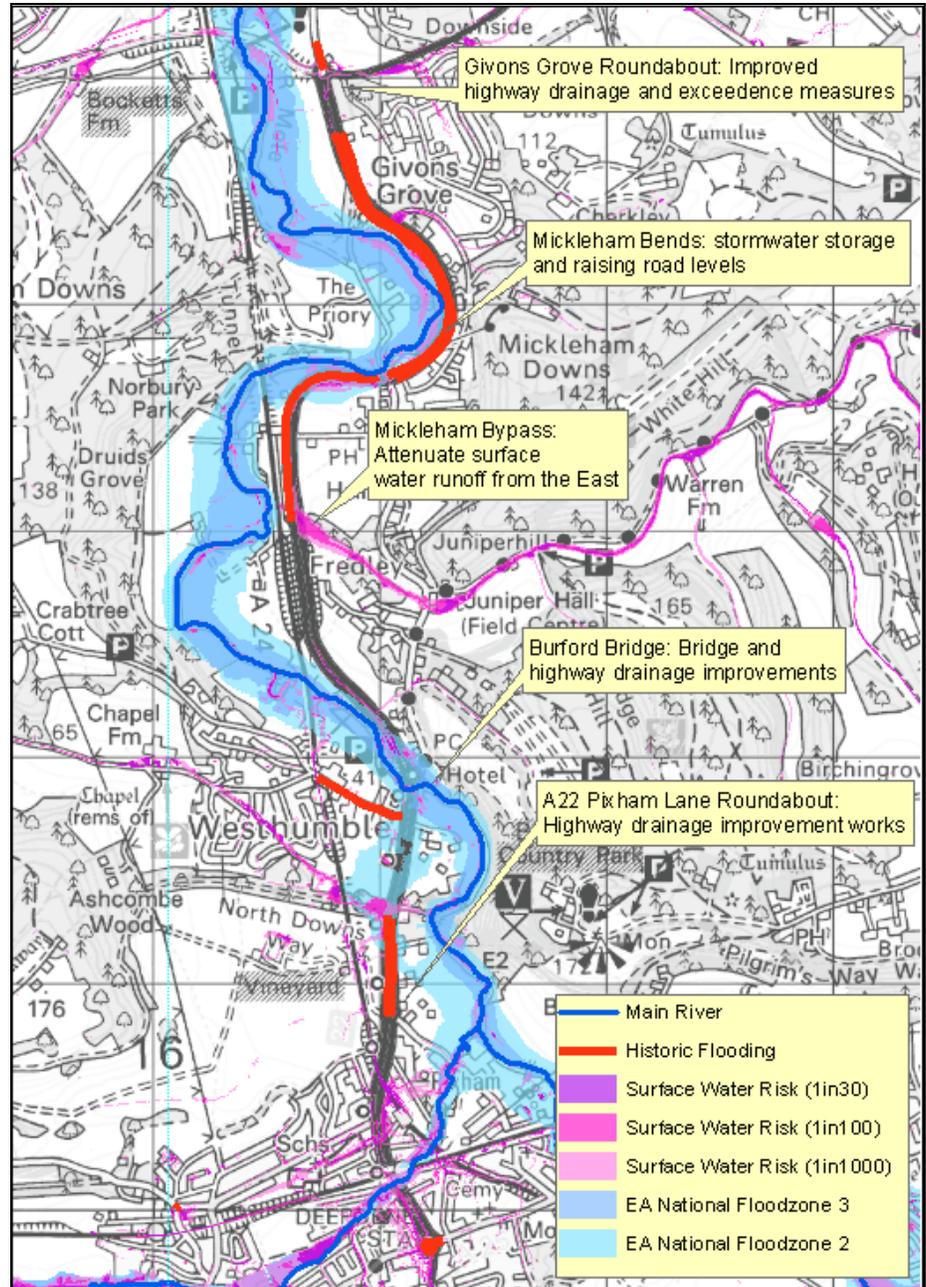
WHO - Scheme Promoter and Partners			
<b>LTA/ Proposer:</b>	Surrey County Council	<b>Scheme name &amp; [District/ Borough]:</b>	A24 Network Resilience Mole Valley
<b>Contact details:</b>	Lyndon Mendes Lyndon.mendes@surreycc.gov.uk	<b>Partners [in joint submissions]:</b>	N/A
WHAT & WHERE – Outline description, scope & maps			
<b>Type of scheme: (Sustainability package, resilience scheme, hybrid)</b>		Resilience Scheme	
<b>Scheme description</b>	<p><b>Overview</b></p> <p>This project aims to improve the reliability and resilience of the transport network in the Coast to Capital area, especially the local road network. A package of resilience improvements to improve the ability of sections of the A24 to cope with extreme and unpredictable events is proposed.</p> <p>In line with the aims of the LEP’s strategic economic plan for flood defence and resilience schemes<sup>1</sup>, the scheme is expected to:</p> <ul style="list-style-type: none"> <li>• Reduce the frequency of flooding on the network and associated diversions and accidents</li> <li>• Reduce disruption to businesses and local services due to delays, additional costs and reduced access to location</li> <li>• Reduce negative impacts on road users across all modes of transport.</li> </ul> <p>The scheme is located in the heart of the Gatwick Diamond and is a key element on the network in the identified East Surrey M25 corridor identified by Coast to Capital as a spatial priority<sup>2</sup>.</p> <p><b>Scheme details</b></p>		

<sup>1</sup> Reference: Coast to Capital Strategic Economic Plan March 2014 Appendices and Transport Annex, page 20.

<sup>2</sup> [Coast to Capital Strategic Economic Plan March 2014](#) p.46

## Drainage works along the length of the scheme

**Annex A** shows the extent of flooding along the length of the scheme. The main areas that are susceptible which this scheme seeks to address are shown on the map below.



Drainage investigations will be undertaken on these areas to determine the causes of flooding and to inform design options which could include improved drainage, exceedance measures and road reprofiling and attenuation.

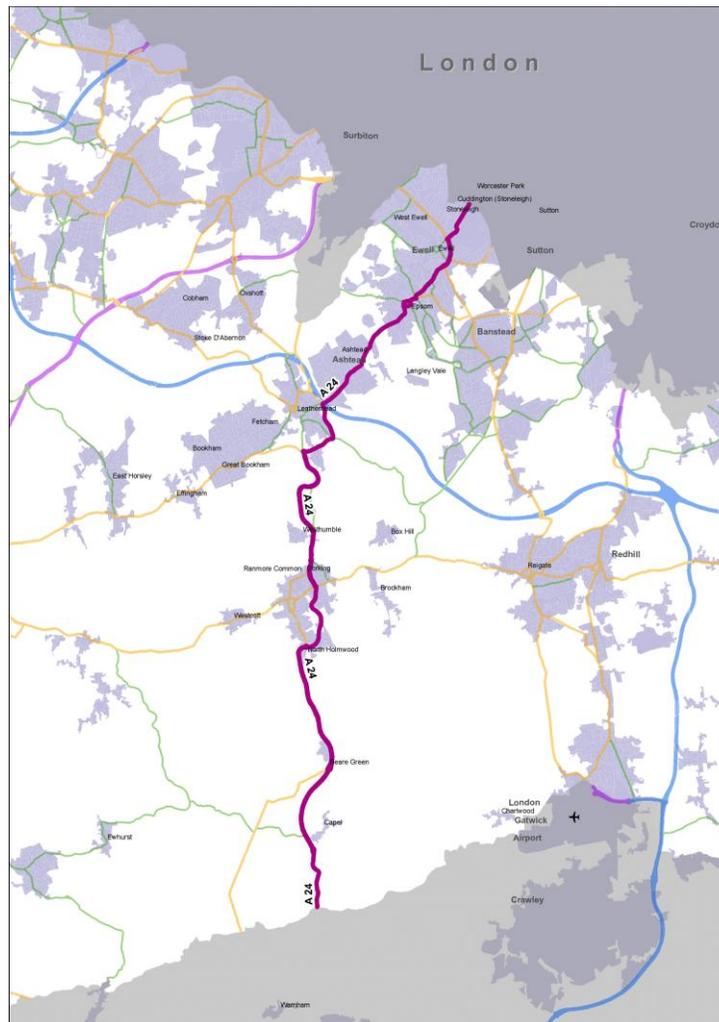
Reconstruction and resurfacing of targeted lengths of the A24 would

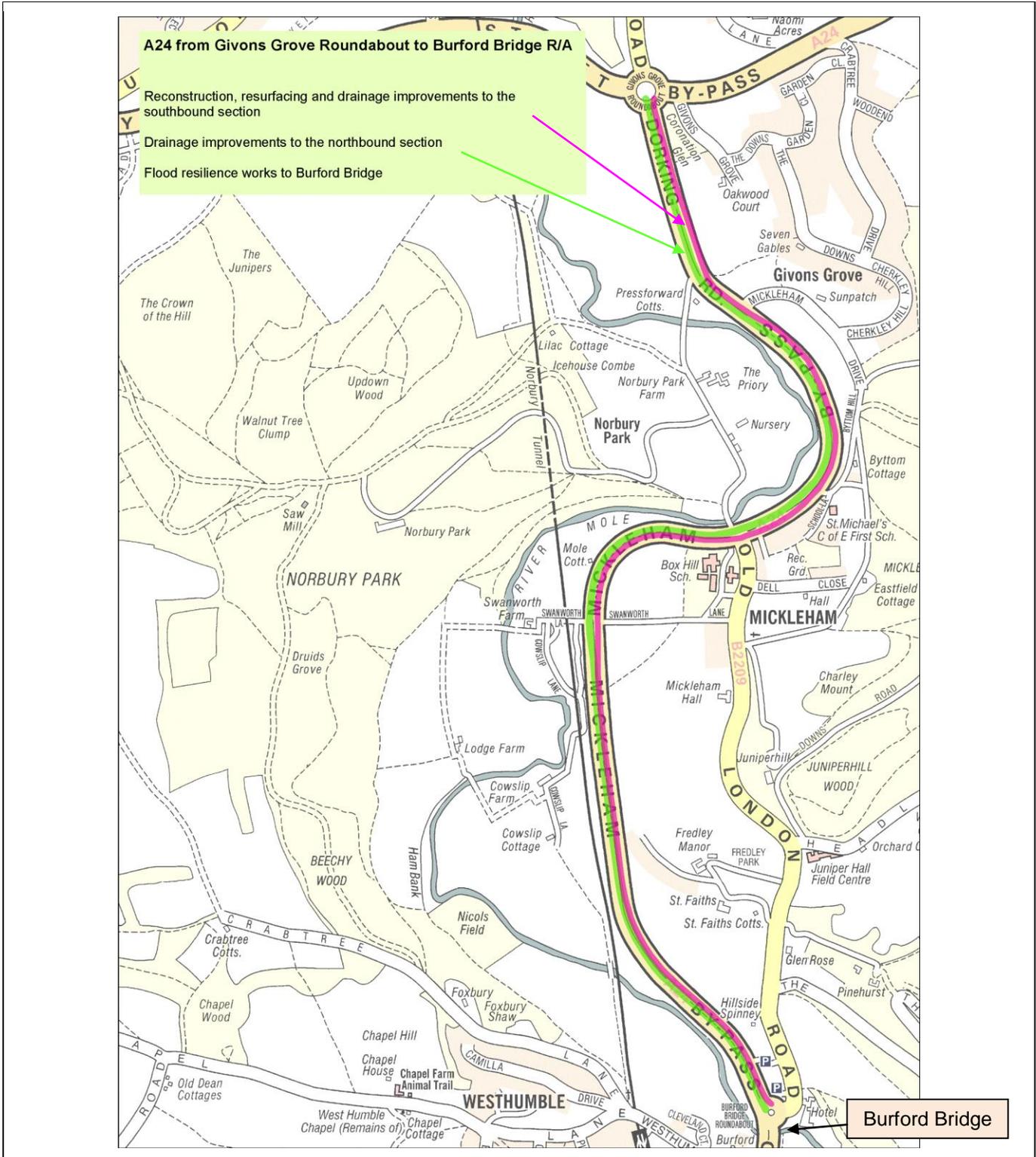
provide long term resilience to extreme weather events.

### **Surfacing works from Givons Grove to Burford Bridge SB and from Burford Bridge to Pixham Lane NB and SB**

It is proposed to reconstruct and resurface the existing carriageways following the damage incurred during the extreme winter weather events of 2013/14. This will make the length of the scheme fit for purpose and improve resilience to future flood events.

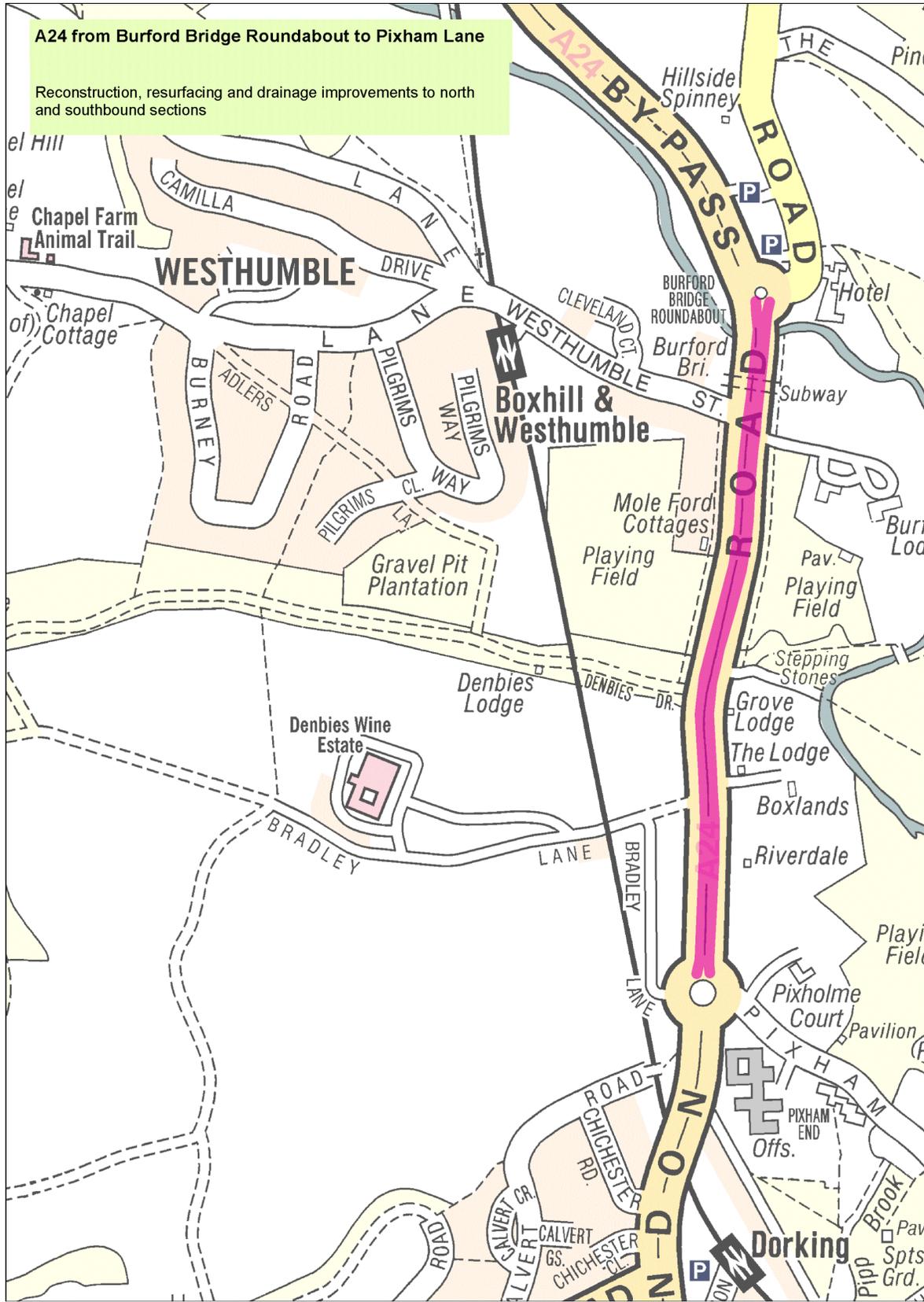
## **Maps**





**A24 from Burford Bridge Roundabout to Pixham Lane**

Reconstruction, resurfacing and drainage improvements to north and southbound sections



### HOW MUCH & WHEN – Estimated construction costs and construction timetable

<b>Est. Costs:</b>	£4.6m				<b>Start and end of construction:</b>				July 2016 to December 2017																																																																																							
<b>Spend Profile</b>	<b>2015-16:</b> (£ million) £0	<b>2016-17:</b> (£ million) £2.3	<b>2017-18</b> (£ million) £2.3	<b>2018-19:</b> (£ million) £0	<b>2019-20:</b> (£ million) £0	<b>2020-21:</b> (£ million) £0																																																																																										
<b>Funding expectations</b> (List sources of funds)	2015 – 16 £1.96 LEP £0.345 SCC Match funding  2016 – 17 £1.96 LEP £0.345 SCC Match funding																																																																																															
<b>Construction Timetable</b>	<table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th colspan="16">A24 Resilience Scheme</th> </tr> <tr> <th colspan="4">2014/15</th> <th colspan="4">2015/16</th> <th colspan="4">2016/17</th> <th colspan="4">2017/18</th> </tr> <tr> <th>Q1</th><th>Q2</th><th>Q3</th><th>Q4</th> <th>Q1</th><th>Q2</th><th>Q3</th><th>Q4</th> <th>Q1</th><th>Q2</th><th>Q3</th><th>Q4</th> <th>Q1</th><th>Q2</th><th>Q3</th><th>Q4</th> </tr> </thead> <tbody> <tr> <td style="background-color: yellow;">O</td><td style="background-color: purple;">P</td><td style="background-color: red;">R</td><td style="background-color: red;">R</td> <td style="background-color: red;">R</td><td style="background-color: red;">R</td><td style="background-color: blue;">B</td><td style="background-color: blue;">B</td> <td style="background-color: blue;">B</td><td style="background-color: green;">G</td><td style="background-color: green;">G</td><td></td> <td></td><td style="background-color: green;">G</td><td style="background-color: green;">G</td><td></td> </tr> <tr> <td colspan="16"> <b>Key</b>  <span style="display: inline-block; width: 10px; height: 10px; background-color: yellow; border: 1px solid black; margin-right: 5px;"></span> O Pre-feasibility  <span style="display: inline-block; width: 10px; height: 10px; background-color: purple; border: 1px solid black; margin-right: 5px;"></span> P Business Case preparation &amp; all associated activities  <span style="display: inline-block; width: 10px; height: 10px; background-color: red; border: 1px solid black; margin-right: 5px;"></span> R Assessment and LEP consultation  <span style="display: inline-block; width: 10px; height: 10px; background-color: blue; border: 1px solid black; margin-right: 5px;"></span> B Detailed design &amp; procurement [following LEP approval]  <span style="display: inline-block; width: 10px; height: 10px; background-color: green; border: 1px solid black; margin-right: 5px;"></span> G Scheme construction  <span style="display: inline-block; width: 10px; height: 10px; background-color: white; border: 1px solid black; margin-right: 5px;"></span> No work being undertaken on scheme                 </td> </tr> </tbody> </table> <p>The scheme consists of both drainage and surfacing work. Costs for the surfacing can be calculated with a fair degree of certainty, but drainage works are still being investigated therefore an optimism bias of 40% has been used. There is also a risk of additional uplift for nightworks having to be factored in when surfacing is carried out - currently an assumed rate of uplift has been factored into the costings.</p>																A24 Resilience Scheme																2014/15				2015/16				2016/17				2017/18				Q1	Q2	Q3	Q4	O	P	R	R	R	R	B	B	B	G	G			G	G		<b>Key</b> <span style="display: inline-block; width: 10px; height: 10px; background-color: yellow; border: 1px solid black; margin-right: 5px;"></span> O Pre-feasibility <span style="display: inline-block; width: 10px; height: 10px; background-color: purple; border: 1px solid black; margin-right: 5px;"></span> P Business Case preparation & all associated activities <span style="display: inline-block; width: 10px; height: 10px; background-color: red; border: 1px solid black; margin-right: 5px;"></span> R Assessment and LEP consultation <span style="display: inline-block; width: 10px; height: 10px; background-color: blue; border: 1px solid black; margin-right: 5px;"></span> B Detailed design & procurement [following LEP approval] <span style="display: inline-block; width: 10px; height: 10px; background-color: green; border: 1px solid black; margin-right: 5px;"></span> G Scheme construction <span style="display: inline-block; width: 10px; height: 10px; background-color: white; border: 1px solid black; margin-right: 5px;"></span> No work being undertaken on scheme																											
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<b>WHY IT SHOULD BE FUNDED</b>	
<b>Summary of the Key Scheme Benefits</b>	
<b>Structure of section</b>	
<b>1. Introduction and need for scheme</b> <b>2. Objectives</b> <b>3. Background and supporting evidence</b> <b>4. Linkage to other funding bids to the Coast to Capital LEP</b>	
<b>1. Introduction and need for scheme</b> <p>The A24 is one of the main arterial routes between London and the A27 on the south coast providing access for both commuter and freight movement north and south. This route provides a major transport link to Wandsworth in London where it joins the A3 into central London. The Surrey section runs from Epsom through Leatherhead and Dorking to the Boundary with West Sussex. The A24 provides the primary access route from Leatherhead and the surrounding areas to the major A&amp;E hospital in Epsom.</p> <p>Due to the importance of this route, resurfacing works have already been identified in our medium term programme of works. In addition, resilience will be provided through extensive drainage and bridge works on the Leatherhead to Dorking section of the A24. This scheme will enhance the scope and extents of the project to ensure long term resilience in future extreme weather events.</p> <p>This route is an important route for cyclists as it was used during the Olympic Road Race of 2012 and therefore improved resilience for cyclists provides sustainable transport options.</p> <p>During the extreme flooding events of winter 2013/14 the Burford Bridge section of the A24 was flooded which resulted in closure of the Burford Bridge Hotel. This flooding also resulted in damage to Burford Bridge itself. Immediate repairs were carried out in 2014 to enable the bridge to be reopened to traffic, using government funding for flood damage, however more substantial repairs are required to both the bridge and subway condition data (laid out in Section 3 below) provides an illustration of the need for the carriageway elements of the scheme showing the poor condition of the carriageway. This work will complement work that the Environment Agency are planning to carry out to improve the resilience of the infrastructure and commercial properties in this area through the "Middle Mole Scheme".</p> <p>The A24 is a significant transport route in the C2C area. Evidence shows that the A24 Mickleham Bypass eastbound and westbound experiences Annual Average Daily Traffic flows of 14,139 and 14,374 vehicles respectively.</p>	



## 2. Objectives

The objectives of the scheme are aligned with the Transport objectives of the Coast to Capital strategic economic plan, specifically those addressing resilience, quality, connectivity and capacity.

The purpose of the scheme is to provide improvements to and resilience of the highway network on this strategic economic route and to provide water management to mitigate the effects of major flooding events in the future.

The scheme will also provide resilience to the Burford Bridge and Subway where monitoring of depression in the footway behind the abutments is ongoing. The stone balustrade leading from the parapet south is cracked and deformed and the objective of this scheme in terms of the Bridge is to repair these elements to ensure resilience of the bridge.

## 3. Background and Supporting Evidence

Despite being a small river, flooding along the River Mole has the capacity to cause significant damage and disruption on a local and even national scale due to location of key infrastructure and communications located within the catchment, most notably, Gatwick Airport, East Surrey Hospital, the M25 and M23 and the London-Brighton railway. Specific impacts of the winter 2013-14 storms and floods on the River Mole included:

- Gatwick Airport: [power failure](#) from flooding causing delays with luggage handling, 100 flights delayed or cancelled; [thousands of travellers were left stranded](#) or abandoned as rail connections were disrupted as well.
- Burford Bridge hotel, Dorking and Ye Olde Six Bells in Horley: amongst other commercial

properties were submerged by flooding and closed for extended periods.

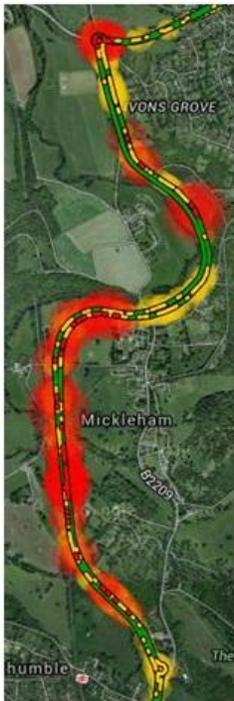
- Numerous roads and rail links including two closures of the A24 at Mickleham, A217, A23 around Horley and Salfords and downstream in Leatherhead.
- Flooding of residential properties: 40 homes in Fetcham were under water throughout Christmas.
- A landslide caused embankment to collapse Dorking to Horsham railway line: limited service and month to repair.



### Road condition data

Condition data from SCANNER provides evidence as to why the scheme is needed. Data has been obtained for both the A24 Givons Grove to Burford Bridge section and the A24 Burford Bridge to Pixham Lane section.

### A24 Givons grove to Burford Bridge



**Image B**

Condition data from the machine based SCANNER survey carried out on the A24 in 2013/14 identifies that there are a number of lengths of the road that would benefit from resurfacing to improve resilience (see **Image A**). Sections shown in red have a road condition indicator (RCI) of >100 indicating that maintenance is required soon, yellow sections have an RCI of >40 indicating that the condition is deteriorating and the section should be investigated for maintenance and an RCI of <40 indicates that no maintenance is currently required.

Maintenance requirements are particularly prevalent on the southbound carriageway as a number of the northbound sections were resurfaced prior to the Olympics in 2012 as can be seen by the increased levels of green on the northbound sections.

Analysis of the data has identified that there are various causes of failure in the southbound sections including rutting, cracking and texture issues. Rutting or other transverse unevenness can affect steering or cause water to pond, both of which affect road safety. Rutting can also be a good indicator of defects in the surface course or in the structural layers of the road. Cracking can indicate deterioration of the surface course or of deeper seated effects to the structural layers of the road. Cracking may allow water to



**Image A**

penetrate through the road layers weakening the foundations. Texture helps to provide high speed skidding resistance on fast roads which may affect road safety. Variations in texture depth along or across the road can indicate surface wear and the presence of defects in the surface course.

Using GIS analysis tools we are able to calculate scheme lengths based on expected deterioration in the two years since the SCANNER survey. This analysis provides us with an indication of the lengths that we will need to treat (see **Image B** to the right). The model suggests a need for major strengthening in the areas shown in orange. In practice the deterioration is likely to be more significant than the expected deterioration due to the extreme and prolonged rainfall during the winter of 2013/14.

### A24 Burford Bridge to Pixham lane



**Image D**

Condition data from the machine based SCANNER survey carried out on the A24 in 2013/14 identifies that there are a number of lengths of the road that would benefit from resurfacing to improve resilience (see **Image C**). Sections shown in red have a road condition indicator (RCI) of >100 indicating that maintenance is required soon, yellow sections have an RCI of >40 indicating that the condition is deteriorating and the section should be investigated for maintenance and an RCI of <40 indicates that no maintenance is currently required.

Analysis of the data has identified that the primary causes of failure in these sections are cracking and rutting. Cracking can indicate deterioration of the surface course or of deeper seated effects to the structural layers of the road. Cracking may allow water to penetrate through the road layers weakening the foundations. Rutting or other transverse unevenness can affect steering or cause water to pond, both of which affect road safety. Rutting can also be a good indicator of defects in the surface course or in the structural layers of the road.



**Image C**

Using GIS analysis tools we are able to calculate scheme lengths based on expected deterioration in the two years since the SCANNER survey. This analysis provides us with an indication of the lengths that we will need to treat (see **Image D** to the right). The model suggests a need for resurfacing in the areas shown in yellow. In practice the deterioration is likely to be more significant than the expected deterioration due to the extreme and prolonged rainfall during the winter of 2013/14.

### Burford Bridge

The area of the Burford Bridge Hotel and the Burford Bridge and nearby Burford Pedestrian Subway, were flooded from 23rd December 2013. The bridge and underpass had a safety inspection, once the flood water had subsided, so that they could be opened again. Both are currently open to use.

However, as part of the risk based prioritised post flood reparation, both structures are going to have a detailed inspection and preparation for repairs to any flood damage. The detailed inspection will take place once the river level drops to a safe level. The bridge is on the A24, close to the Burford Bridge Hotel, that was also flooded. A diversion route would be determined once the extent of any works has been developed. Until then, the road remains open to traffic use.



#### Media excerpts

The severe flooding in early 2014 was devastating to the communities it affected. In January the Surrey Mirror reported that “Heavy rainfall this afternoon has flooded the A24 at Mickleham”<sup>3</sup>.

In February 2014 the Dorking and Leatherhead Advertiser reported that the “A24 in Mickleham was

<sup>3</sup> <http://www.surreymirror.co.uk/A24-Mickleham-A25-Godstone-flooded/story-20400564-detail/story.html#ixzz3Lb5KBkRQ>

closed at the Burford Bridge hotel due to more flooding at the location, after 35 rescues from the hotel had to be made on Christmas Eve.”<sup>4</sup>

The events in early 2014 were an extreme weather episode; however disruption on the A24 caused by flooding has happened on more than just this occasion. In November 2014 the West Sussex County Times reported A24 delays after a Horsham flood.<sup>5</sup>



### Effects of climate change

The effects of climate change mean we can expect more extreme weather events and high rainfall will continue to affect our winters.

There is an imminent duty and statutory obligation for local authorities to address climate change – including CO<sub>2</sub> emissions and resilience to climate change risks. Expected impacts of climate change include: more extreme temperatures, short duration high intensity rainfall, adding a risk of likely increase in more intense rain events leading to short-term localised flooding; an increase in the severity and number of storms, representing a risk in possible increase in severe storm events where drainage

<sup>4</sup> <http://www.dorkingandleatherheadadvertiser.co.uk/Flood-warning-issued-Leatherhead-Fetcham/story-20391544-detail/story.html#ixzz3LadV19ri>

<sup>5</sup> <http://www.wscountytimes.co.uk/news/local/a24-delays-after-horsham-flood-1-4429859>

systems over wide areas are overloaded and severe disruption and damage to infrastructure is possible; prolonged dry periods; and increases in wind speed. This will cause disruption due to flooding on this key route through the C2C area. Flooding issues will act as a barrier to growth in key areas unless these vital alleviation measures are taken forward.

**4. Linkage to other funding bids to the Coast to Capital LEP**

- **A217 network resilience**

The scheme is a package of resilience improvements to improve the ability of the A217 in Surrey to cope with extreme and unpredictable events on this key route providing access between London and Gatwick.

- **Dorking phase 1 package**

The project is a package of sustainable transport centred on Dorking Deepdene station. It will improve access to the station, inter-connectivity between this station and Dorking main station, improve road safety and support modal shift away from the private car.

- **Epsom Plan E**

A package of measures for Epsom Town Centre in the north-west of the Gatwick Diamond. To deliver benefits to the local economy by reducing congestion to improve accessibility to local businesses; and for local residents and visitors through improved journey time reliability

- **Leatherhead Plan L**

A large investment scheme led by Mole Valley District Council. Plan L would create around 400 new homes in Leatherhead town centre.

***Outline business case of key criteria  
[maximum score = 5 per criteria]***

**Expected economic benefits [*transport and scheme related*]:**

- Value for money, including BCR (if known) or similar measure.
- Expected impact on journey times, reliability and resilience
- Encouraging sustainable travel
- Expected impact on road safety casualties
- Valuing public realm

**[Scheme Score = 4 ]**

The **value for money** (VfM) from delivering this scheme is expected to derive from providing long term benefits, prolonging the life of the carriageway; the scheme proposes major structural carriageway works, reconstruction, resurfacing and drainage repairs to key sections of the A24, the need for which has been aggravated by the extreme weather events earlier in 2014. This involves major carriageway reconstruction and resurfacing to give long term benefits. Increasing water resistance will provide longevity and prolong the life of the carriageway and increase resistance to flood water damage.

It is expected that implementing these measures will save money in the long term by providing infrastructure which is able to withstand the increasing likelihood and effects of flooding. This will

• Other transport benefits



help give businesses confidence in the transport network, encouraging economic activity in the area and boosting economic performance.

**Journey times and reliability** will be maintained by keeping the route resilient to the effects of flooding.

Evidence shows that the A24 Mickleham Bypass eastbound and westbound experience Annual Average Daily Traffic flows of 14,139 and 14,374 vehicles respectively.

The A24 corridor is home to tourist attractions which is a key sector in the Surrey economy. The National Trust Park at Box Hill, Denbies Winery and Epsom Racecourse are all located along the A24 as well as the town of Dorking which is a popular destination for holiday makers and day trippers as it had the densest concentration of antiques shops in the country.

Box Hill, located on the A24 south of Leatherhead is a significant walking and cycling hub area, extremely popular with people from a very wide area for outdoor leisure activities.

The Thames Down Link is a popular footpath linking the Thames Path at Kingston-upon-Thames to the North Downs Way at Westhumble. The footpath joins the A24 at Burford Bridge where it follows the A24 south to Westhumble railway station.

The railway station at Box Hill and Westhumble is located to the east of Burford Bridge on the Mole Valley line. The line runs north/south between Dorking and Leatherhead, roughly following the route of the A24, which it crosses just before Dorking railway station. The railway line also crosses the Mole River twice, near Mickleham. This route provides rail access between the two towns of Dorking and Leatherhead.

**Expected economic benefits [economic growth]:**

- Retention of existing jobs or creation of new jobs
- Unlocking or improving access to new dwellings
- Encouragement of new businesses, or protection of existing businesses.
- Other economic benefits

**[Scheme Score = 4 ]**

The scheme addresses a primary route central to north south movement through Surrey, linking growth towns and opportunity areas with London. Serving the Gatwick Diamond area as well as the wider Coast to Capital LEP, the scheme is expected to contribute the following economic benefits to the area, boosting its role as a strong strategic location for business:

- Retain existing businesses and jobs already located in the area, by addressing the perception of poor transport/accessibility arrangements which can contribute to businesses relocating away from an area. Implementing the

The Gatwick Diamond Initiative is one of the strongest regional economies in the UK with 45,000 businesses and £20.7 billion GDP (Local Futures 2012). The Gatwick Diamond is home for the UK headquarters of many global brands including ExxonMobil, Unilever, Nestle, Elekta and Doosan.

The Gatwick Diamond offers a skilled workforce including graduates from the Universities at Brighton, Sussex and Epsom and Further Education Colleges at Redhill, Crawley and Epsom.

scheme will result in a more reliable transport network, helping to retain businesses and encourage growth. This scheme will encourage a better range and quality of business premises within the A24 Corridor.

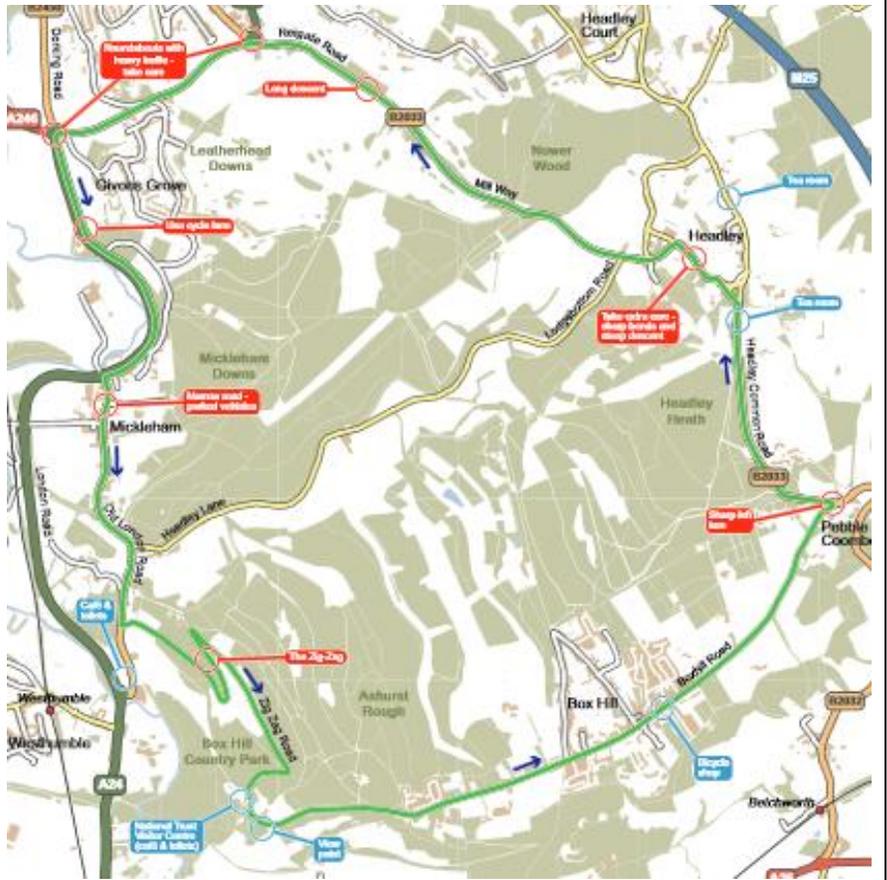
- Encourage rises in the rates of net business start-ups by removing potential barriers imposed by constraints on the transport network along this corridor, thereby contributing to job creation.
- Support and facilitate housing growth outlined in the [Mole Valley District Core Strategy](#) which states that “priority will be given to locating new residential development within the defined built-up areas of Leatherhead, Dorking (including North Holmwood), Ashted, Bookham and Fetcham”<sup>6</sup>.
- The Core Strategy provides a description of the local economy in Mole Valley. In summary:
  - There are approximately 5,000 companies in Mole Valley, employing around 46,000 people.
  - There are 496,000 square metres commercial (office, factory, warehouse) floorspace (April 2007), of which 269,000 square metres is business floorspace<sup>7</sup>
  - In March 2008, approximately 7% of the office stock was vacant; and there was planning permission for a further 42,900 square metres of business floorspace.
- Contribute to the performance of the [Gatwick Diamond Initiative](#), a business-led partnership supportive of the aims of the LEP’s strategic economic plan.
- Support economic activity and facilitate growth in the area around [Gatwick Airport](#), which is a major economic contributor to the Coast to Capital area; the A24 is a route to Gatwick Airport, linking the airport to London. Gatwick provides roughly 23,500 on-airport jobs<sup>8</sup> and another 20,000 jobs indirectly.
- Support the performance and growth of large businesses in the area. Businesses include: Kuoni Travel Ltd, Biwater Holdings, Northlands Business Park, the Sussex Health Centre and Friends Life Ltd
- Mitigate the negative economic impact flooding has on the

<sup>6</sup> Policy CS2 Housing provision and location, Mole Valley District Core Strategy (2009)

<sup>7</sup> Core Strategy paragraph 2.34

<sup>8</sup> <http://www.gatwickairport.com/business-community/about-gatwick/at-a-glance/facts-stats/>

	<p>area, by preventing highway closures or part closures that arise due to maintenance works needed to counter the effects of flooding on infrastructure can disrupt the network. A diversion route to avoid the disrupted area increases costs due to longer journeys and can draw traffic away from economic zones. Road closures can sever communities and business critical links.</p>
<p><b>Social Distributional Impact:</b></p> <ul style="list-style-type: none"> <li>• Expected regeneration &amp; deprivation impact</li> <li>• Expected impact on severance, physical activity, accessibility</li> </ul>	<p><b>[Scheme Score = 4 ]</b></p> <p>The scheme will enable opportunities to improve the traffic management operational efficiencies to reduce congestion and delays; improving journey time reliability and reducing traveller stress and frustration.</p> <p>Disruption and closure on the A24 causes major severance to communities, stopping residents accessing key amenities and services. By reducing the need for disruption due to maintenance works on this strategic route the severance experienced by the community in times of extreme weather events will be vastly reduced.</p> <p>Box Hill attracts visitors from across the county and beyond, bringing tourism to the Surrey Hills and this Area of Outstanding Natural Beauty (AONB).</p> <p>This is a significant route for cyclists in the area who are also affected by the disruption caused by roadworks on the strategic road.</p> <p>The A24 forms part of Ride London and the Surrey 100 Classic, a national televised Olympic legacy event, which sees over 30,000 participants.</p> <p>A cycle route follows the route of the A24 through Mickleham, and connects with a wider circuit, this is known as the Box Hill Loop, and is a popular cycle route and is used for mainly leisure purposes. The route was part of a 2012 Olympic cycle route.</p> <p>The Box Hill Loop:</p>



**Environmental impact:**

- Expected impact on carbon emissions
- Expected impact on air quality
- Expected impact on noise/natural and urban environment

**[Scheme Score = 3 ]**

**Carbon emissions** can be affected by stop-start driving behaviour and subsequent increases in pollutants from car exhausts, a known contributor to poor air quality. Stop-start driver behaviour can be caused by congestion. Improving the reliability and resilience of the A24 to flooding will reduce the congestion caused by related road closures and diversions. The improved resilience of the A24 would therefore likely impact positively upon carbon emissions and air quality.

Whilst there is no set figure defining acceptable levels of road **noise**, materials providing the least noisy solution will be used wherever possible, taking into account other factors such as cost, volume and speed of traffic.

Where highway drainage systems discharge into a watercourse or the aquifer, options to remove silt and pollutants such as interceptors or green SuDS (like reed beds) will be considered and implemented where practical.

This will work towards improving the water quality of the area, as required by the **EU Water Framework Directive**.

**Impact on noise/natural and urban environment**

	<p>The A24 between Leatherhead and Dorking has been recognised as an <b>Area of Outstanding Natural Beauty</b>, and is essential to the local tourism industry. The area is within the greenbelt that surrounds London and is known as the North Downs. Sections of the surrounding area are considered to be ancient woodland. The A24 Burford Bridge is located on an old Roman road.</p> <p>A large section of the village of Mickleham is a designated conservation area and is an area of high archaeological potential. The reduction of congestion and stop start driving in this area, as well as a reduced presence of Highway maintenance works would have positive impacts on pollution, green house gases and noise which would be beneficial to the local ecology and habitats.</p>
<p><b>Contribution to the Strategic Economic Plan</b></p> <ul style="list-style-type: none"> <li>• How does the scheme contribute to the objectives and priorities of the SEP.</li> <li>• The five transport objectives</li> <li>• Contribution to other objectives</li> </ul>	<p><b>[Scheme Score = 5 ]</b></p> <p>The A24 corridor which will be impacted by the improved quality and reliability of the A24 includes both Dorking and Epsom which have been identified as underperforming towns in the LEP.</p> <p>The scheme is directly aligned with the aims and objectives of the LEP’s Strategic Economic Plan, and specifically focuses on the aim to <b>‘keep the network operating 24/7’</b> in its capacity as a resilience scheme<sup>9</sup>. The SEP aims to deliver resilience schemes to:</p> <ul style="list-style-type: none"> <li>• Repair and maintain critical transport structures</li> <li>• Prevent or <b>mitigate the risk of flooding</b></li> <li>• Reduce the number of traffic incidents (such as crashes and <b>roadworks</b>) and help the network recover quickly after such incidents</li> <li>• Provide <b>resilience from adverse weather conditions</b>, such as heavy snow fall.</li> </ul> <p>As such, this scheme embodies the SEP’s scope for a flood alleviation scheme which is defined as “improving highway drainage and embankments to reduce the risk of flooding”<sup>10</sup>.</p> <p>The scheme is directly aligned with the aims and objectives of the LEP’s Strategic Economic Plan. Dorking is recognised as being part of the most economically dynamic area in C2C, known as the <b>East Surrey M25 Corridor</b> and considered a lynchpin of the LEP area.</p> <p>The SEP prioritises enabling investment in growth locations and opportunity areas<sup>11</sup>; Dorking and Epsom have been identified by C2C as a <b>‘latent locations’</b><sup>12</sup>, currently under-performing against their potential due to political, economic, social, physical, technological or marketing factor barriers. The C2C LEP has aims to</p>

<sup>9</sup> C2C Strategic Economic Plan March 2014, p.83

<sup>10</sup> C2C Strategic Economic Plan March 2014, p.86

<sup>11</sup> C2C Strategic Economic Plan March 2014, p.24

<sup>12</sup> C2C Draft Strategic Economic Plan December 2013, p.34

improve, boost, promote and invest in these areas. Investing in this scheme is consistent with this aspiration.

The SEP also prioritises investing in infrastructure to help develop sustainable communities and **invest in strategic infrastructure** to unlock growth. This scheme supports this priority by investing in an important piece of the primary route network, strategically located to serve the **Gatwick Diamond** and wider LEP area.

### **The five transport objectives<sup>13</sup>**

The scheme contributes to the SEP's five transport objectives in the following ways:

- **Connectivity “Can I get where I want to go?”**

Business, freight and commuter traffic will be able to continue to make use of this north-south key route.

- **Reliability “Will I arrive when I expect?”**

Journey time reliability, particularly for those travelling by car, HGV or public transport will be improved. Avoiding the need to implement road closures will allow journey times to be maintained, avoiding lengthy route diversions.

- **Capacity “Will I get a seat, a parking space, a clear road?”**

In times when the A24 has to be closed the local road network capacity is significantly reduced. By minimising the time the A22 is forced to close, network capacity will be maintained and disruption minimised.

- **Quality “Will my journey be healthy, safe, clean, sustainable and enjoyable?”**

The improvements to the road will contribute to providing a quality transport network to serve this part of the East Surrey M25 corridor, which is safe and reliable for all road users.

- **Resilience “Will transport be there when I need it – 24/7?”**

To underpin the local and regional economy, transport networks must be resilient, able to withstand the effects of adverse weather, traffic incidents and road works. This scheme seeks to materially improve the resilience of the local road network on a key route of strategic importance, helping improve the reliability of the route to serve meet the needs of the travelling public, businesses and services.

The scheme directly supports the C2C aspiration to increase the resilience of the LEP area, providing resilience from adverse weather conditions and mitigating the risk of flooding.

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<sup>13</sup> C2C Strategic Economic Plan March 2014, p.81

	<p><b>Contribution to other objectives</b></p> <p>With major companies such as Kuoni Travel Ltd, Biwater Holdings, Northlands Business Park, the Sussex Health Centre and Friends Life Ltd. located along the A24 corridor, this scheme will help raise <b>competitive advantage</b> of the area, supporting and providing opportunities for economic growth in the region.</p> <p>The scheme supports the aims of the <a href="#">Mole Valley Local Transport Strategy and Forward Programme</a> (September 2014) which includes an A24 improvements scheme to improve resilience to flooding.</p>
<p><b>Local Indicators:</b> Local indicators and circumstances that help to explain the need for the scheme.</p>	<p><b>Not scored.</b></p>
<b>SCORE SUMMARY</b>	
<p>Total score: (out of 25)</p>	<b>20</b>
<p>Local priority: (Ranking in order of schemes submitted by the same promoter in this round).</p>	<p>Of the four resilience schemes submitted to C2C in December 2014, this scheme is the <b>fourth priority scheme</b>.</p>

## Scoring criteria

Scores	Expected Economic benefits (transport and scheme related)	Expected Economic benefits (economic growth)	Socio-distributional Impact	Environmental Impact	Strategic Economic Plan
<b>Score: 5</b> <b>[Green]</b>	Expected BCR of 2+ (if known)  Significant beneficial impact on transport indicators.	Support for delivery of new jobs, housing & employment floor space in area clearly expected.	Significant positive benefits expected, such as supporting regeneration, improving accessibility, reducing severance and/or promoting physical activity.	Likely to lead to a reduction in carbon emissions and have limited impact on the natural environment and/or air quality and noise standards.	Clear linkage to one or more SEP policies and priorities
<b>Score:3</b> <b>[Amber]</b>	Expected BCR of 1.5 to 2 (if known)  Some, but limited beneficial impact on transport indicators.	Expected to support retention of existing jobs & help deliver some housing.	Some socio-distributional and well-being impacts expected.	Limited or neutral impact on carbon emissions, natural environment and/or air quality shown.	Some linkage to SEP policies and priorities.
<b>Score 1:</b> <b>[Red]</b>	Expected BCR of under 1.5 (if known)  Very limited or negative impact on transport indicators.	Very limited linkage with delivery of employment and/or housing expected.	Very limited or negative impact on distributional and well-being impacts expected.	Likely to have a negative impact on carbon emissions, local air quality and/or the natural environment.	Weak link to the SEP.

### Local Indicators

1. Employment - residence base (2012; Annual Population Survey, Nomis)
2. Employment Rate (2012; Annual Population Survey, Nomis)
3. Number of jobs - workplace base (2011, Business Register and Employment Survey, Nomis)
4. Business survival rates (1 year) (2011, Business Demography, ONS)
5. Number of businesses per 10,000 working age population (2012, ONS)
6. Business births per 10,000 working age population (2011, Business demography; 2011; and Annual Population Survey, ONS)
7. JobSeekers Allowance claimant count - % of economically active population (April 2013, Nomis)

### **Transport Effects**

1. % of working age population (aged 16-74) in employment using walking or cycling as main mode to get to work (2011 Census)
2. % of working age population (aged 16-74) in employment using bus, train, underground, tram or metro as main mode to get to work (2011 Census)
3. Congestion – indicator being developed based on either average delay on links (Trafficmaster data) or million vehicle km on principal roads

### **Regeneration Impact**

1. Amount of planned new housing up to common future end year (LDF documentation – various)
2. Amount of planned new commercial floorspace (sq m) up to common future end year (LDF documentation – various)
3. Amount of planned new retail floorspace (sq m) up to common future end year (LDF documentation – various)
4. Index of Multiple Deprivation (IMD) - number of LSOAs in Borough or District within the top 20% most deprived nationally (2010)
5. Index of Multiple Deprivation (IMD - average score for District (2010)