

# Business Cases Capability Statement

Stantec UK Limited



## INTRODUCTION

Stantec is a leading transport and infrastructure consultancy firm with an established team who undertake business cases and evaluations of transport projects, policies and programmes across the United Kingdom.

To secure funding that will support value for money transport interventions it is crucial to develop a robust case for investment and evidence base to inform and support decision making. Stantec can advise and support on the methods, principles and techniques to deliver strong, evidence-based business cases in line with best practice guidance as advised by HM Treasury and the Department for Transport. In particular, this includes in-depth knowledge and experience of successfully applying 5-case business case model approaches to developing Strategic, Economic, Financial, Commercial and Management cases.

We work closely with our clients to understand the issues, gather data, develop the evidence, analyse and evaluate the impacts and present the results and findings to ensure value for money interventions to support local and regional economic, social and environmental goals.

We typically work with:

- National Government departments and agencies such as DfT and Transport Scotland;
- Local and regional governments;
- Passenger transport authorities; and
- Transport operators.

We have successfully supported each of the above organisation types to make the case for new investment while evaluating the impacts of interventions on communities and the economy. One particular area of expertise is establishing the case for transport investment where the traditional benefit-cost ratio might not stack up, typically re-focusing the case for change on improving connectivity and socio-economic issues.

## Key Facts

**1645**  
Total UK Staff

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**136**  
Transport Staff

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**23** Offices  
Around the UK & Europe

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**£182m**  
Turnover 2017/2018

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Selected Experience  
Business Cases

# SELECTED EXPERIENCE

## Glasgow Airport Access Project Outline Business Case Support

### The Need

Stantec was commissioned to assist the preparation of an Outline Business Case (OBC) for the Glasgow Airport Access Project (AAP).

The Glasgow AAP is a Renfrewshire City Deal project being delivered jointly by Renfrewshire Council and Glasgow City Council (another Member Authority). The project aims to provide a fixed public transport link between Glasgow Airport and Glasgow Central Station (via Paisley Gilmour Street), which will improve connectivity and encourage modal shift for Airport employees and passengers and improve traffic conditions on the strategic and local road network adjacent to the Airport.

Together with other projects that are part of the Glasgow and Clyde Valley City Deal infrastructure investment programme, AAP will enhance the economic growth potential of Renfrewshire, and through linking positively with Glasgow City Council's Clyde Waterfront project, help to create a corridor of growth west from Glasgow City Centre to Renfrew and on to Glasgow Airport.

### What we Delivered

We were appointed to provide Transport Modelling services for the OBC including the analysis and reporting of all key performance indicators for the Outline Business Case. This included two separate model applications where the demand forecasting required the consideration of airport and non-airport users separately with application of bespoke airport models and a multi-modal model respectively. Transport economic appraisal was then undertaken with blending of economics for these user groups.

Air Passengers and Airport Employees are expected to directly benefit from improved access to Glasgow Airport.

We undertook a review and refresh of the previous AAP Strategic Business Case (SBC) analytical framework. The refresh reflected changes in data and proposed approach since the initial SBC work was completed and included the following key tasks:

- The update and application of two Glasgow airport access models;
  - The Glasgow Airport Access Model (GLAAM); and
  - The Glasgow Airport Employee Model (GLEAM).
- Updates to scenario modelling assumptions;
- Development of new scenarios to be modelled;
- Outputs from the rerun and recalibration of models; and
- Quantification of user benefits based on the model outputs.

Travel demand forecast were prepared for scenarios including a Do Minimum, and Personal Rapid Transport and Tram–Train schemes. This quantified the potential demand for new services and the change in mode share for trips to and from Glasgow Airport.

Non-Airport Users may benefit from increased rail service frequency between Paisley Gilmour Street and Glasgow Central.

Transport modelling of non-Airport user impacts was undertaken to support the preparation of the AAP OBC. The scope of the non-Airport transport assessment was to model and undertake a series of option tests for defined scenarios focussing on AAP impacts on the wider rail network. For this, forecast scenarios were

undertaken using the Central Scotland Transport Model (CSTM12), a multi-modal transport model available from Transport Scotland, which our staff had previously had a lead role in developing.

A review of CSTM12 was undertaken to check the suitability of the model to be used to support the AAP OBC, building on previous appraisal work. The review identified some required changes to rail service coding to reflect recent timetable changes, which were undertaken in prior to the AAP scenario test forecasting.

CSTM was applied to estimate the Tram-Train scenarios impacts on non-Airport users in terms of forecast travel demand and travel time. This focussed on movements between Renfrewshire and Glasgow where the greatest impacts are expected.

Transport Economic Efficiency (TEE) analysis was undertaken following STAG and WebTAG guidance using the airport and non-airport demand forecasts and modelling outputs. This formed a key part of the AAP OBC Economic and Financial Cases underpinning the overall Business Case.

User Benefits were quantified for AAP scheme scenarios, relative to a defined Do Minimum, including monetisation of the following impacts:

- Travel times;
- Passenger fares/user charges;
- Operator revenues; and
- Indirect tax revenue impacts.

Future investment, maintenance and operating costs for the three main model scenarios (Private Rapid Transit, Tram-Train and Tram-Train Reduced Service) were provided by the OBC team. These were quantified over the same appraisal period as the user benefits.

## SELECTED EXPERIENCE

### Glasgow Airport Access Project Outline Business Case Support

Monetised user benefits were compared with scheme costs with presentation of the overall economic impact of the AAP in terms of:

- Present Value of Benefits (PVB);
- Present Value of Costs (PVC);
- Net Present Value (NPV); and
- Benefit Cost Ratio (BCR).

We worked closely with the OBC team to interpret the demand forecasting and economics and assist with the final documentation.

### The Outcomes

The OBC was endorsed by the Glasgow City Deal Cabinet in December 2016 with instruction to proceed to Full Business Case. Our staff were commended by the client for our role in the OBC preparation and its endorsement where our contribution was “invaluable in getting the project to this stage”.

**Client: Renfrewshire Council and Glasgow City Council**



## SELECTED EXPERIENCE

### HS2 Growth Strategy Economic Workstream

#### The Need

Following earlier work on developing the overall business case for HS2, we worked with Deloitte to develop a HS2 Growth Strategy for West Yorkshire. The aim was to ensure the potential opportunities created by the decision of high speed rail to stop in Leeds are realised and economic growth maximised and distributed across the City of Leeds and the wider region for all to share.

#### What We Delivered

We were responsible for reviewing the various studies that have been undertaken to assess and appraise the transport schemes that could be introduced to realise and maximise the economic benefits of HS2. The ultimate aim of the review was to identify a way forward in measuring the impacts of the schemes

e.g. what schemes should be included, what previous work could be used, what additional work was required and what modelling tools would be needed. An Action Plan was then developed that set out the approach and methodology required to estimate the economic benefits, using a suite of metrics including changes in productivity/GVA and employment. The approach was essentially based on the Wider Economic Impacts guidance set out in WebTAG, with a focus on measuring impacts in terms of: agglomeration; changes to labour supply; dependent developments and imperfect competition impacts. We developed a spread-sheet model to analyse the impacts of a number of transport projects against these metrics. The outputs of the analysis fed into a higher level model that included benefits from other associated investment such as the creation of a Yorkshire Hub around Leeds City Station, major economic development / regeneration impacts

around the South Bank and improvements in skills in training in the local workforce. The overall aim of the wider analysis was to test a range of scenarios and understand how changing the mix of components within the scenarios impacted on economic growth and job creation in West Yorkshire.

#### The Outcome

The outcome of the analysis identified a set of projects that would provide the most effective solution in terms of realising and maximising the benefits generated by HS2 and thus an evidence base to support a strategy that will distribute these benefits across the region.

**Client: West Yorkshire Combined Authority**



# SELECTED EXPERIENCE

## Clyde Waterfront & Renfrew Riverside Outline Business Case Support

### The Need

As part of the Glasgow & Clyde Valley City Deal, Renfrewshire Council was bidding for £78 million for the construction of a new swing bridge over the River Clyde between Renfrew & Yoker, coupled with a wider package of road investment to the north of the town of Renfrew. Whilst the strategic case for the investment had been made, the Council required support in developing the Outline Business Case (OBC) and the subsequent planning application.

Midway through the study, a Retail Impact Assessment was included within the scope, principally with a view to understanding the impact of the new cross-river connection on retail businesses in Renfrewshire and West Dunbartonshire.

### What we Delivered

The Strategic Business Case (SBC) made the case for investment on the basis of economic problems (e.g. low economic activity rates, high unemployment, derelict land etc) on both sides of the River Clyde, but particularly on the north bank. The first step in this study was therefore the development of an extensive socio-economic baseline intended to clearly demonstrate the type, scale and location of these problems.

Whilst the socio-economic problems were evident from the data, the SBC argued that at least part of the remedy was a transport solution. It was therefore essential to:

- Identify the extent to which current transport problems are constraining the local economies on both sides of the river; and
- Develop a logic model which demonstrated how solving the transport problems would contribute

towards subsequently addressing the economic problems.

The identification of the transport problems involved:

- The use of Network Analyst and TRACC accessibility software to highlight the accessibility 'gap' caused by the absence of a river crossing;
- Analysis of Census travel-to-work data, which demonstrated very little cross-river travel between West Dunbartonshire & Renfrewshire, despite their proximity; and
- The carrying out of a business and stakeholder survey to identify any issues associated with labour supply, access to markets, access to customers etc.

The findings of the baselining, accessibility analysis and business survey were used to inform the anticipated outcomes and impacts identified in the logic model. From a transport perspective, the inputs to the OBC took the form of a series of Economic Activity & Location Impacts (EALI) tables, which identified the impacts by sector, geography and any 'winners or losers' from the proposed scheme.

A key issue from the outset of the study was the potential for the displacement of retail trade from West Dunbartonshire to Renfrewshire. As Renfrewshire contains several prominent retail zones, including Braehead and Hillington Industrial Estate, there was a concern that, whilst the investment may provide a net benefit overall, the economic disbenefit to West Dunbartonshire could be significant.

A retail impact assessment was subsequently commissioned, which assessed and quantified the retail impacts on both sides of the crossing.

### The Outcomes

The final report provided a robust input to the OBC and subsequent planning application. The case for the investment was predicated on the lack of cross-river economic activity between Renfrewshire & West Dunbartonshire, despite their very close proximity to each other.

It was our view at the outset of the study that, as the Council was promoting transport infrastructure as the solution to an identified economic problem, there needed to be a greater focus on the transport problems & opportunities in terms of making the case. We therefore invested considerable time in demonstrating why the absence of a cross-river connection at present is contributing to the sub-optimal economic performance. A key element of this was the use of TRACC public transport accessibility software to demonstrate how the new bridge would enhance access to employment, health, education and other opportunities. This was a key piece of analysis in making the overall case for investment.

We also adopted an innovative logic modelling approach that attempted to show the causality between the transport & economic problems, and both the transport & economic outcomes and impacts of the investment.

The combination of the transport appraisal and retail impact assessment under a single study umbrella demonstrates the added value which can be obtained from the combination of Stantec's complimentary services.

### Client: Renfrewshire Council

# SELECTED EXPERIENCE

## New Routes to Good Growth, Medway

### The Need

New Routes to Good Growth will support over a third of Medway Council's housing need to 2035. In December 2018, Medway Council asked Peter Brett Associates (Now Stantec) to develop its Housing Infrastructure Fund Business Case.

On 1 November 2019, the Ministry of Housing, Communities and Local Government announced Medway had been successful in its bid for £170million for major infrastructure developments on the Hoo Peninsula. Strategic road, rail & environmental infrastructure will enable delivery of nearly 11,000 homes to 2035.

Originally, Stantec was commissioned to conduct the Options Appraisal and Economic Case, including the Transport and Environmental Appraisal. In January 2019, this role was extended to cover the development, review and finalisation of the Strategic Case, Commercial Case, Financial Case and Management Case.

Stantec were also tasked with managing the inputs from the wider project team and coordination of the final Green Book compliant bid for submission on 22nd March 2019.

### The Outcomes

Stantec successfully completed the Business Case in under 4 months and ahead of submission on 22nd March 2019.

Stantec drew on the expertise and experience of its specialist development & transport economics teams, supported by significant contributions from its environment, ecology and utilities teams to build a strong and compelling case to Government.

Stantec adapted the latest HM Treasury Green Book and MHCLG guidance, appropriately reflecting their emphasis on land value capture, environmental and wider benefits, alongside 'traditional' measures of value.

### Added Value

Constraints mapping identified strategic transport, environmental and utility infrastructure constraints to the delivery of housing on the Hoo Peninsula. To overcome these, Stantec drew together multi-disciplinary, senior staff from across the practice to deliver innovative and holistic solutions across 34 sites on the Peninsula.

Stantec developed a Strategic Case which set out a compelling vision with clear objectives, demonstrating how strategic investment will support housing demand and Medway's long-term economic growth.

Working with the Council and its partners, clear delivery options were developed based on a clear, shared and realistic appreciation of housing market and economic change in different scenarios.

This informed an assessment of project additionality, requiring rigorous understanding of the counterfactual case, a critical consideration for Business Case approval. The key input to understanding the projects additionality was Stantec's development of the Economic Case. Making use of the latest HM Treasury Green Book Guidance and policy tools from across various Government Departments, Stantec responded to a host of new indicators such as Land Value Uplift (LVU), natural capital assessments and a basket of traditional indicators such as Gross Value Added (GVA) and job creation.

Stantec's experience of developing Green Book compliant Business Cases, allowed the bid team to effectively demonstrate the feasibility and viability of the New Routes to Good Growth programme. It showed in a very practical sense, that it can be successfully managed, implemented and delivered.

### Communication

Throughout the process, Stantec coordinated the different project elements, including consultants from different disciplines and staff from different Council departments. Our team maintained close communication with Homes England, MHCLG and DfT officers throughout, enabling Stantec valuable insight into current views and funding requirements of the UK Government.

### Client: Medway Council



# SELECTED EXPERIENCE

## Development of The Former Exxon Oil Terminal, Bowling, West Dunbartonshire

### The Need

West Dunbartonshire Council is promoting the redevelopment of the former Exxon Oil Terminal at Bowling as its City Deal project under the Glasgow & Clyde Valley City Deal. Before confirming that the project was suitable for promotion through the City Deal, we were commissioned to explore access options to the site near Dumbarton in order to ensure its attractiveness for development and potentially provide an alternative route to the A82.

We then prepared a Strategic Business Case for the project – held as an exemplar SBC for the City Deal – to show how it could contribute the necessary additional Gross Value Added (GVA) through new employment opportunities on the site. The site was identified as offering significant potential for economic development in the medium to long term as other sites in West Dunbartonshire would be developed to capacity. Opening up the former Exxon site for development was consequently seen as being as essential in enabling the release of developable land that would help to support the local economy.

### What We Delivered

In the initial stage of the project, the work involved assessing the feasibility of improving access to the site through undertaking a high level scoping study. This involved carrying out a site visit and review of previous studies to identify options for new accesses at the eastern and western extents of the site which could be connected by a link road through the site. The options were then assessed using a bespoke high level impact appraisal matrix developed specifically for this project and sifted to provide recommendations of those worthy of more detailed consideration.

We then undertook initial design of the access options to the site. This took forward the access options identified from the previous scoping study and developed them further to the point where they could be tested using a VISSIM micro-simulation traffic model to determine the impacts on the local road network. This included assessing the impact on the A82 Trunk Road. This work enabled a set of preferred options to be identified, along with recommendations about how the project should be progressed to take it forward towards implementation.

Having demonstrated that access could be achieved (via an improved existing railway overbridge in the east and a new railway underpass in the west) we prepared a Strategic Business Case to support the application for City Deal funding for £27.89m for the implementation of the infrastructure required to bring the site into a useable state. This resulted in an immediate award of £500k for further design work. Currently, we are preparing a landscape led Masterplan for the site. Constraints mapping has been completed as have initial baseline studies to support development of an Environmental Impact Assessment (EIA) for the development's planning application which will be prepared later. The Masterplan has to take account of areas of contaminated ground, varying ground conditions (all being assessed by our geo-environmental team) and areas of flood risk being assessed by our hydrology team.

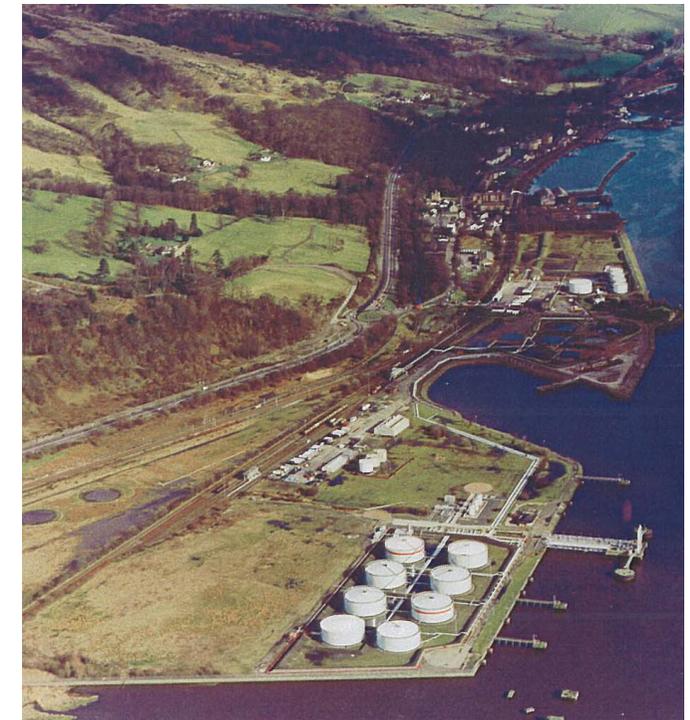
Ultimately, the Masterplan will reflect all of the constraints, the infrastructure requirements and the planning requirement for an extensive Green Network whilst setting out the development plots capable of delivering the employment sites capable of delivering the GVA required on the site. To date the project has involved extension consultation with the land owner (Exxon) and a wide range of consultees such as Network Rail, SEPA, Crown Estates, Transport Scotland,

SNH, RSPB and a wide range of Departments within West Dunbartonshire Council – Planning, Environmental Health, Flooding, Transport and Economic Regeneration.

A full public engagement strategy to support the planning process is currently being planned as is consultation with other affected land owners (some of whom may be affected by a Compulsory Purchase Order).

We also plan a school engagement programme, partly educational, partly to inform the project, partly to deliver community benefits as part of later phases of the project.

**Client: West Dunbartonshire Council**



# SELECTED EXPERIENCE

## Strathclyde Partnership for Transport City Deal Support

### The Need

As part of Glasgow City Region City Deal, Strathclyde Partnership for Transport (SPT) has ambitious proposals to develop the Strathclyde Bus Improvement Project which will provide a step change for bus services across the region through the development of new hubs and interchanges, seed funding for new routes to access employment and services, and the further roll out of Real Time Passenger Information Systems. SPT have been allocated £30 million of City Deal funding subject to submission of approved Business Cases. We were commissioned to develop the Strategic Business Case (SBC) for the project.

### What We Delivered

Taking a first principles approach, we began by assessing the socio economic profile of the wider region, broken down into a corridor basis. This baseline was used to develop a keen understanding of the problems, issues and opportunities in each area, understand development proposals both in terms of other City Deal projects or other

schemes, and consider how improvements in bus access and availability could lead to improvements in GVA and accessibility. In addition to analysing data sets, we also undertook an extensive engagement exercise with each Local Authority (LA) partner to ascertain what could be done, how SPT and each LA could work together and the type of benefits that could be achieved. Using this information, we were able to undertake an appraisal and prioritisation exercise which illustrated which schemes were most required, which would generate the largest benefits, and which should be taken forward to the next phase of business case Development. Our exercise did not stop at £30 million, but rather prioritised each identified intervention so that if more money becomes available, SPT will be able to take additional projects forward.

### The Outcome

The SBC has since been submitted to the City Region City Deal Project Management Office for approval.

**Client: Strathclyde Partnership for Transport**



# SELECTED EXPERIENCE

## North Whiteley Business Case

### The Need

We were commissioned by a consortium of developers to carry out a Transport Business Case in line with the Department for Transport's Transport Business Case and WebTAG guidance documents. The purpose of the work was to provide an evidence-based case for funding of a 3,500 housing development at North Whiteley in Hampshire off junction 9 of the M27. The developers required the business case to support its application for funding to the Solent Local Economic Partnership (SLEP).

### What we Delivered

The first task was to meet with the consortium to fully understand its requirements, both in terms of deliverables and timing. Following the initial meeting, a team was formed, with each member having responsibility for specific tasks. In particular, key staff members with relevant skills were allocated responsibility for managing each of the five cases of the overall Transport Business Case ie the Strategic, Economic, Financial, Commercial and Management cases.

The two key cases were the strategic and economic cases. The former involved a review of various local policy documents and meetings with Winchester City Council. The purpose was to ensure there was sufficient evidence to demonstrate the case for the housing development and that it was consistent with local and national policy objectives. It was also important to demonstrate a local support for the intervention. The development of the strategic case was unusual in the respect that, unlike other strategic cases using WebTAG, the focus was on a housing development scheme as opposed to a transport scheme ie the emphasis was on demonstrating that the transport investment was necessary to support and

facilitate a solution to a shortage of housing rather than deliver a solution to an identified transport problem. The strategic case therefore required a review of both housing and transport policy literature in developing the case for intervention.

The economic case was developed using the Solent Transport Sub-Regional Transport Model, which is an evidence-based land-use and transport interaction model developed to provide a strong analytical basis for the development of coherent, objective-led implementation plans to enable the changes in transport provision required to deliver prosperity to the area.

The model outputs were used to inform the appraisal and cost benefit analysis of the different scheme options. In particular, the outputs informed the creation of the necessary tables recommended in WebTAG which are used to determine the value for money of the investment ie the Appraisal Summary Table, Analysis of Monetised Costs and Benefits Table, Public Accounts Table and Transport Economic Efficiency Table.

Unusually for a transport scheme, the economic case also involved analysis as required in TAG Unit A2.3: Transport Appraisal in the Context of Dependent Development. The analysis revealed that the investment would deliver benefits in excess of £80m.

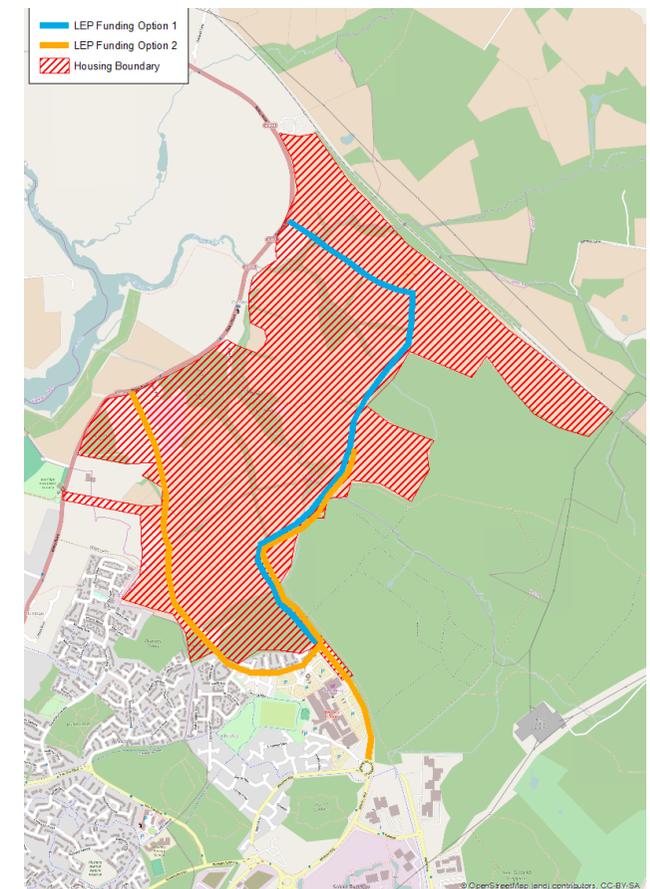
The financial, commercial and management cases were then developed to determine, respectively, the affordability, viability and deliverability of the investment. In line with the funding authority, these cases particularly focused on the delivery programme and various risks associated with this.

### The Outcomes

Following the analysis covering each of the cases,

a report was prepared which recorded the approach and findings under each case. The overall business case was subsequently submitted to the Solent LEP to request £14m for funding to support the delivery of the transport scheme that would facilitate the 3,500 housing development and supporting services such as local health, leisure, shopping and education facilities in the North Whiteley area. The SLEP reviewed and considered the business case and awarded the full sum sought by the Consortium.

### Client: North Whiteley Consortium



# SELECTED EXPERIENCE

## Holytown Link Road Business Case

### The Need

There is growing evidence that the current transport access arrangements at Eurocentral Business Park (located just off the A8 in North Lanarkshire) are constraining development and growth at the facility and in the wider area. North Lanarkshire Council commissioned us to develop a business case for a new link road between Holytown and Eurocentral as part of the Glasgow City Region City Deal. The objective of the new link road is to improve journey times and access to the facility, make the site more attractive to developers, improve connectivity for employees, and therefore increase employment and support economic activity in the local area. It is anticipated that the investment will therefore support and contribute to a number of City Deal aims and objectives.

### What We Delivered

We developed a Full Business Case in line with the Department for Transport's 5-case business case guidance. Our first task was to review existing material and gather evidence of the current situation and how this was limiting growth and development

at Eurocentral. This included a consultation and engagement exercise with stakeholders. Following identification of the problems, we appraised options to determine value for money solutions, supported by a strategic and economic case of the preferred scheme option. We undertook a number of innovative tasks that added considerable value to the business case, including: project infographics to easily summarise the benefits of the preferred option and key findings; a range of Value for Money (VfM) Indicators – additional non-standard VfM indicators provided to add further information on the project's social and economic value; realistic evidence-based planning scenarios – based on historical floorspace take up, site specific data and detailed consultations to demonstrate impact projections are realistic.

### The Outcomes

The business case has been submitted to the Council for consideration with the aim of submitting it to the City Deal board for approval and funding.

**Client: North Lanarkshire Council**



# SELECTED EXPERIENCE

## A2/A28 Off-Slip and Relief Road – Economic Business Case

### The Need

We were commissioned by Canterbury City Council (CCC) to assist with the completion of the Highway's England Scheme Appraisal Form (SAR) as part of the Business Case for a new southbound A2 off-slip at the A2/A28 junction in Wincheap near Canterbury and a new relief road through the Wincheap Industrial Estate to the north-east of the A2/A28 junction.

The A2-A28 Wincheap junction comprises three slip roads. The London bound slip is due to be upgraded and moved as part of local development proposals. The missing slip road is the coast bound off-slip, which is a Planning Requirement of a 750 house development to the south-west of the A2/A28 junction, required once build out at the site reaches 450 houses. We supported the site developer through the planning application (now permitted), which included the development of a VISSIM model to assess the impacts of the development on the surrounding road network.

We were subsequently commissioned by CCC to adapt the VISSIM model to cover the A28 Ashford Road corridor in Wincheap, and the Wincheap commercial area to the west side of Canterbury. The purpose of the adapted model was to provide a tool capable of informing CCC of the impacts of the proposed relief road through the Wincheap Industrial Estate, and the new A2-A28 off-slip. The missing A2-A28 off-slip and relief road were then the subject of a Business Case being submitted to the Growth and Housing Fund and we were commissioned to appraise the various economic impacts of the scheme, namely:

- Journey Time impacts;
- Vehicle Operating Costs impacts;

- Accident impacts; and
- Journey time reliability impacts.

### What We Delivered

The main potential impacts of the scheme that needed to be considered were:

- The strategic re-routeing of traffic away from the local A2050 route to the new off-slip (generating travel time savings); and
- Local impacts to West-East and East-West traffic on the A28 which should benefit from the relief road, but would also be impacted by new off-slip traffic.

### *Journey Time Impacts*

In order to capture the journey time impacts of the scheme, the following data was required:

- Travel times between key origins and destinations affected by the scheme; and
- Traffic volumes between key origins and destinations affected by the scheme.

The existing VISSIM traffic model was used to obtain AM and PM peak hour data for traffic demand and journey times for the local area. The existing VISSIM models had been developed for a 2016 Base year and 2026 forecast year. However, the appraisal was required for the scheme opening year of 2020. Our initial task was therefore to create new 2020 Base and 'with Scheme' models. This was done by interpolating between the 2016 and 2026 demands while taking account of the likely changes in traffic routeing due to the introduction of the scheme.

The VISSIM model coverage did not cover the wider strategic routes likely to be affected by the off-slip and hence did not capture the strategic journey time benefits of re-routeing traffic. As such, the journey times for relevant strategic trips within the VISSIM

model were adjusted to account for the re-routeing, with journey time data for the strategic routes obtained from 'Network Analyst' software.

As the VISSIM models only existed for AM and PM peak periods, in order to generate data for the required inter-peak, overnight and weekend periods, traffic count data obtained from Highways England, Kent County Council and Canterbury County Council was considered for the main routes in the area. This enabled local factors to be developed to apply to the AM and PM peak hour traffic demands to approximate the demand over the full AM and PM periods, and over the inter-peak, overnight and weekend periods. Furthermore, journey time data was used to approximate the anticipated journey times in the inter-peak, overnight and weekend periods, with reduction factors applied to account for the fact that the AM and PM periods are more congested than the other periods and hence not overstate the potential journey time benefits accrued in other periods. The journey time differences for each origin-destination pair were compared for each period between the 2020 Base and 2020 'with scheme' cases and the differences weighted by traffic flow to estimate the overall journey time benefit of the scheme.

### *Vehicle Operating Cost Impacts*

Vehicle operating costs for both the Base and 'with scheme' scenarios were estimated by considering the average speed, traffic demand and distance between each origin and destination pair. The calculation utilised the adjusted data generated for the journey time impacts analysis, with total vehicle kilometres annualised and compared between the Base and 'with scheme' cases over all time periods.

### *Accident Impacts*

The road safety impacts of the scheme were estimated by comparing the relative monetary value of accidents

# SELECTED EXPERIENCE

## A2/A28 Off-Slip and Relief Road – Economic Business Case

expected to occur under the 'with scheme' case with those expected to occur in the 2020 Base case. To do this, a Department for Transport COBALT (Cost and Benefit to Accidents – Light Touch) analysis was completed. The COBALT input network was developed to cover the local and strategic routes likely to be affected by the scheme. The required traffic flow data for the analysis was derived from the data utilised for the journey time impacts assessment, with the flows factored accordingly using locally derived factors, to full 24hr AADT flows.

### *Reliability Impacts*

Reliability benefits were considered using the methodology as set out in TAG Unit A1.3, Section 6.3 'Urban Roads', which estimates the monetary value of changes in journey times variability by considering: the estimated change in standard deviation of journey times; the number of trips to which the deviation applies; and the trip purpose split and value of time of the trips being made. The reliability impacts were estimated for each time period (again using data derived for the journey time impacts assessment), and then annualised, projected over the 60-year appraisal period considered, and discounted back to 2010 prices, in line with the SAR form.

### **The Outcomes**

The estimated benefits for each criterion considered were inputted to the SAR form and provided to CCC for inclusion as part of the business case submission to the Highways England Growth and Housing Fund. We also provided disaggregated data relating to off-slip users only to enable the benefits attributable to this part of the scheme to be understood in isolation.



**Client: Canterbury County Council**

# SELECTED EXPERIENCE

## Ayrshire Freight Strategy Business Case

### The Need

In 2014 we were commissioned to examine all aspects related to the movement and management of freight within and through Ayrshire and developed a regional freight strategy to guide freight traffic around Ayrshire in a safe and efficient manner.

Following approval of the 'Ayrshire Growth Deal Prospectus' the Ayrshire Councils required a Strategic Business Case to provide a case for funding for the delivery of the Ayrshire Freight Strategy (AFS) Action Plan, and we were commissioned to develop the Strategic Business Case (SBC).

### What we Delivered

Building on our work undertaken in developing the strategy, we developed the Business Case in accordance with the Growth Deal Strategic Business Case: Five Case Model template. The Strategic Case included a succinct overview of the current freight generators and attractors for Ayrshire. We then set out the problems and their impact on economic performance as well as the potential opportunities the strategy implementation could generate. We considered the potential business scope and key service requirements and considered the main risks associated with the implementation of the strategy and proposed counter measures for mitigation and management including the risks associated with the design, build, financing and operational arrangements.

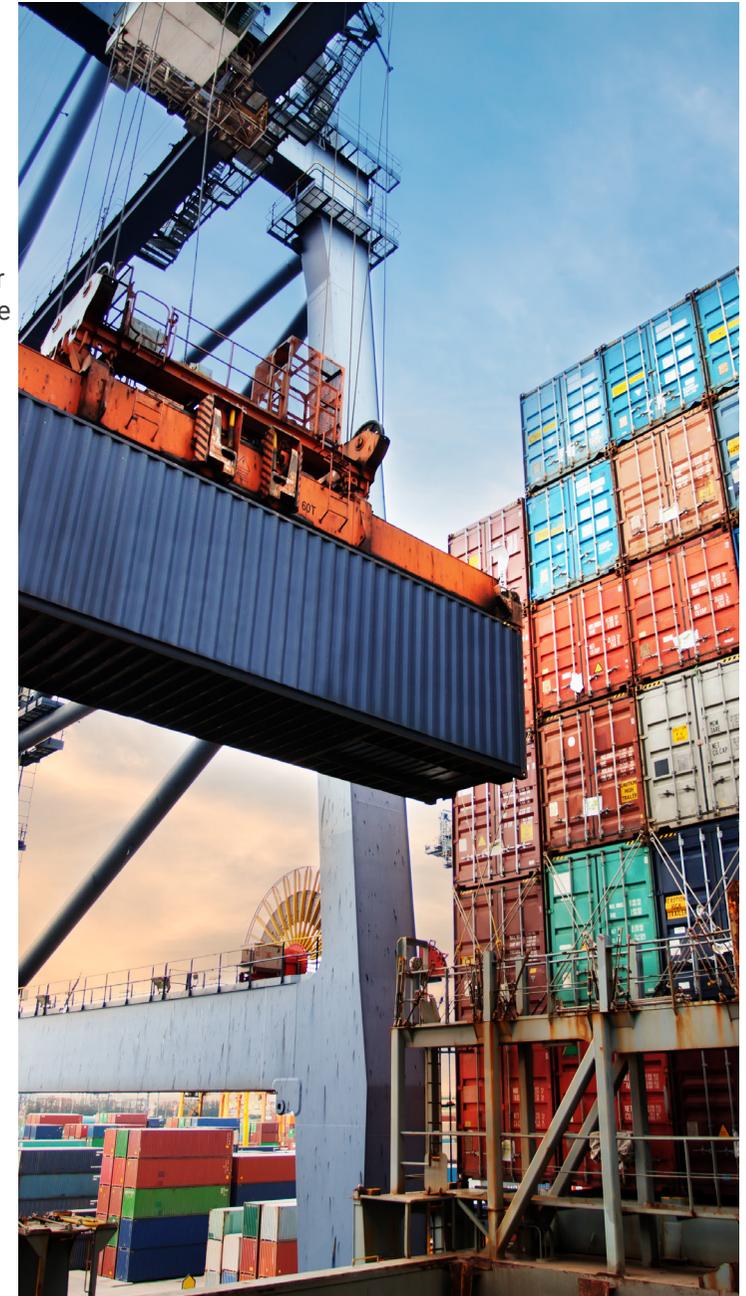
We also considered project constraints and dependencies which would require careful monitoring and management throughout the lifespan of the scheme. We then defined a series of investment objectives and specified the range of benefits associated with the implementation of the

Action Plan. The Economic Case considered a 'Do nothing', 'Do Something' and 'Do Optimum' scenario, and examined the benefits and impacts of each before appraising them against the investment objectives and defined 'Critical Success Factors'. We then set out an indicative timescale for Action Plan measure implementation and considered funding options and economic and fiscal outcomes, before recommending options considered worthy for further appraisal and evaluation at the Outline Business Case stage.

### The Outcomes

An SBC delivered in accordance with the Ayrshire Growth Deal Strategic Business Case: Five Case Model template as well as the HM Treasury Green Book principles and methodology, providing a concise and evidence based case demonstrating the economic benefits of implementing the Freight Strategy.

**Client: Strathclyde Partnership for Transport**



# SELECTED EXPERIENCE

## Reading Green Park Station, Business Case

### The Need

Stantec was commissioned to develop a business case to support delivery of a new railway station at Green Park in Reading. The station would be located on the Reading to Basingstoke railway line. The station and multi-modal interchange would significantly improve accessibility and connectivity to this area of south Reading which has a large-scale development proposed including the Business Park, Green Park Village & Royal Elm Park.

The large employment area in the vicinity of the proposed Green Park Station is currently almost exclusively served by roads which suffer from congestion in the peak hours on the A33 corridor both northwards towards central Reading and southwards to the M4 Junction 11. Whilst there are high quality bus services available from Reading town centre, for most travellers this would require an interchange.

The scheme would therefore provide significant benefits in offering greater mode choice and help alleviate congestion and the environmental and societal issues that this creates and hence assist in fighting the climate emergency. Additional drivers for change have been identified:

- Unlocking of development at Green Park Village and, indirectly, the wider committed/planned development at Green Park Business Park, Reading International Business Park, Southside, Worton Grange and Kennet Island, as well as attract businesses into the available office space (some 36,000 jobs and 1,500 homes)
- Significantly improving accessibility in south Reading (with the adaptation of the bus services)
- Providing a multi-modal interchange in the south of Reading, with rail and bus access to the local area

- and major conurbations
- Providing a parkway facility that allows for use by car drivers as both alternative access to Reading and for journeys that may otherwise be made on the M4
- Providing improved public transport access to Reading Green Park business park, allowing employees to travel from a wider area without reliance on car access and parking
- Delivering a key component of Thames Valley Berkshire's Strategic Economic Plan and Reading's Local Transport Plan (LTP3 2011)

### What we Delivered

Stantec was appointed to develop a Business Case for the Green Park Station scheme, as well as working on the design of the interchange and subsequently the preparation of a planning application. The Business Case was produced in line with DfT's five case business case guidance, DfT Transport Analysis Guidance (TAG) and Network Rail's GRIP process. The approach to the Business Case, and in particular the Economic Case required different considerations to a highway scheme business case, as TAG has specific units related to business cases associated with rail schemes and the business case had to also consider the requirements under Network Rail's GRIP process.

The main premise of the business case was to identify the potential future patronage and use at the station and in particular identify how the station could lead to growth in passenger numbers and the associated benefits that this would bring, including increased revenues, reduced car use (resulting in less congestion and improved environment) and provision of greater mode choice which would open up opportunities for employers to be able to pull on a wider work force.

Stantec developed a bespoke spreadsheet analysis tool to determine potential demand uplift. This tool had been

successfully used on other projects carried out by Stantec and had been accepted by key stakeholders including DfT, Train Operating Companies and Network Rail. The demand forecasting approach that was used was relevant to the stage of the scheme development and complies with the following guidelines, literature and organisation:

- Department for Transport (DfT) – Transport Analysis Guidance (TAG Unit A5.3)
- Passenger Demand Forecasting Council (PDFC) – Passenger Demand Forecasting Handbook (PDFH)
- Network Rail – New Stations Fund – Guidance Note for Applicants
- Association of Train Operating Companies (ATOC)
- The Office of Rail Regulator (ORR)
- Station Usage for Newly Opened Railway Lines and Stations (Report produced for DfT, August 2010)

The approach offered a proportionate approach and outputs were shared with Great Western Railway (GWR), who undertook an independent assessment of the potential patronage numbers and supported the outcomes of Stantec's work. This collaborative working helped with the success of this element of the business case, which is a fundamental element to demonstrating the overall Value for Money for the scheme.

The passenger demand modelling outputs were used directly to inform the basis of the Economic Case for the scheme and a bespoke economic case appraisal tool was developed for this process, which was again agreed as suitable by the Local Enterprise Partnership (LEP) and their Independent Transport Examiners (ITE).

The Financial Case and development of the scheme design and costings required collaborative working between the Stantec Civil Engineering team and specialist railway designers and cost consultants, as well as Network Rail and GWR.



# SELECTED EXPERIENCE

## Reading Green Park Station, Business Case

The financial viability of the proposal needed to be demonstrated to several separate stakeholders:

- Train Operating Company (TOC) – the provider of the service
- Station owner – Network Rail
- The operator of the station – usually the TOC
- Department for Transport Rail Executive

Station operating costs were produced which were verified by Network Rail and GWR.

The Commercial and Management Cases were developed in collaboration with RBC and input from GWR and Network Rail.

Stantec worked with architect Western Williams and London Bridge quantity surveyors for specialist input on scheme costs, design and risks, prior to progressing the planning application following successful funding award.

### The Outcomes

The business case for the scheme demonstrated that it offered High Value for Money and approval for funding was received through the Local Growth Fund. Detailed design and contract award is in progress and the station is programmed to open in February 2021. Since the first Business Case was prepared, Network Rail has advised that ticket office and other facilities will be required due to changes in guidance. Further funding has been successfully proven as value for money and secured with the LEP.

Rail Appraisal and business case development requires a totally different approach to that of a more traditional highway scheme for instance. Stantec has significant experience of railway business cases which was applied to gain support relatively swiftly. Collaborative working is essential to developing a successful business case, with buy-in from Network Rail and the Train Operating Company being imperative from a very early stage of the project.

Demonstration of the Value for Money of the Scheme is more complex than a traditional business case, partly due to how the revenues should be treated in accordance with franchising arrangements and who accrues any additional revenues i.e. Train Operating Companies (Private Sector) or DfT (Public Sector). Revenues deemed to be accrued to DfT should be offset against operating costs, which in many instances will lead to a negative present value of cost, due to revenues exceeding costs over the appraisal period. This has led to DfT providing specific guidance on demonstrating Value for Money in this instance, to move from reporting the traditional Benefit to Cost Ratio (BCR) (which would be negative and therefore meaningless), to reporting that a scheme is deemed to be financially affordable.

It is important to understand and consider rising costs associated with the rail industry requirements, as the funding initially sought may not be adequate.

**Client: Reading Borough Council**



# SELECTED EXPERIENCE

## East Reading Mass Rapid Transit (ERMRT), Business Case, Reading

### The Need

Stantec was commissioned by Reading Borough Council (RBC) to develop a Business Case, along with planning application and design work to support the delivery of the East Reading Mass Rapid Transit (ERMRT) Scheme.

The proposed scheme comprised 1km of a segregated fast track public transport, pedestrian and cycle route, along Napier Way to Thames Valley Park and includes associated Public Right of Way (PRoW) links, junction improvements and landscaping.

The scheme would provide a fast track public transport route between east Reading, Thames Valley Business Park, Thames Valley park and ride and Reading town centre. This would allow public transport to avoid the heavily congested area around Cemetery Junction. ERMRT is a long-established scheme within RBC's strategy to support the delivery of economic growth and housing for Reading and is subsequently within three RBC Local Transport Plans and Core Strategy, Managing Development Delivery, Local Plan, and Local Transport Plan. The scheme is part of wider strategy for development of MRT within Reading, which includes South Reading MRT which has been subject to a separate successful business cases.

Growth in Reading and the wider area is planned to continue over the coming years, with more housing and investment in employment opportunities. The purpose of the scheme is to help facilitate this growth by providing high quality public transport to improve the attractiveness of travelling more sustainably, therefore reducing private car trips, easing forecast congestion and improving forecast air quality along the existing highway network.

The scheme improves connectivity and access to wider strategic transport networks. The A4 corridor in East Reading linking the town centre and the A3290 is suffering from significant levels of congestion, particularly in the peak periods. This congestion is forecast to increase with the projected level of growth in Reading and Wokingham Borough.

### What We Delivered

Stantec drew on a multidisciplinary team to prepare the business case, providing input into highway design, scheme costing, transport modelling and economic appraisal and environmental disciplines. A suite of reports was produced which included an Options Appraisal Report (OAR), Appraisal Specification Report (ASR), Transport Modelling Reports and the Full Business Case Report. Each of these reports was produced in line with the relevant guidance provided with DfT's guidance, 'The Transport Business Cases', January 2013, along with DfT's Transport Analysis Guidance.

The first stage of the work involved the development of the OAR, which utilised the DfT Early Appraisal and Sifting Tool (EAST) to help define a preferred option for the scheme. Following this, an ASR was produced, which set out the approach to the appraisal and the specific guidance and tools to be followed. An important aspect of this part of the process was to get agreement from the LEP through their Independent Transport Evaluator (ITE), that the approach set out in the ASR set out a proportionate and appropriate approach for scheme appraisal.

An early challenge faced within the development of the business case was the change to the scope of the project. Originally the ERMRT included the park and ride site adjacent to Thames Valley Business Park at the eastern end of the scheme. However, the park and ride was removed and became part of a separate business

case. For the purposes of the ERMRT business case, the park and ride therefore became part of the do-minimum scheme and any benefits accrued from new passengers and removal of trips from the highway network were not included (only journey time benefits for those deemed to be existing users of the park and ride could be included). A strong Strategic Case was developed, which set out the objectives and need for the scheme, how it fitted with local and wider policy, how it would help deliver economic growth, whilst meeting sustainability, environmental and societal objectives. The Economic Case was supported by a range of analysis using tools developed by Stantec, alongside tools and guidance produced by DfT as part of the Transport Appraisal Guidance.

The Reading Transport Model (a SATURN model) was utilised as a basis for determining the potential patronage and then to understand the likely effects on the highway of the removal of traffic, or reassignment of traffic from unsuitable routes, as a result of the scheme and therefore freeing up capacity on key links into Reading. A bespoke spreadsheet model based public transport logit model was developed to provide outputs to determine the public transport benefits of the scheme. The outputs from these models were fed into the DfT TUBA software to produce user benefits and therefore inform the user benefits of the scheme.

The spreadsheet model required calibration against observed public transport demand and was utilised for all phases, within the appraisal. This element of the modelling was accepted by the ITE as being fit for purpose and provided a cost-effective way of understanding the appraisal in the absence of a variable demand model and a Public Transport Assignment Model. This methodology was agreed as part of the ASR at an early stage, thus avoiding abortive work which would not be accepted at a later stage.

# SELECTED EXPERIENCE

## East Reading Mass Rapid Transit (ERMRT), Business Case, Reading

### The Outcome

The business case for the scheme demonstrated that the scheme offered High Value for Money and approval for funding was received through the Local Growth Fund. The planning application was subsequently refused and the funding withdrawn, because planning permission could not be secured in time to deliver the scheme within the funding timescale requirements.

The business case considered the high political/acceptability risks and unfortunately, they became increasing apparent as the application came to be determined. The Environment Agency's objections were successfully removed (on ecology, flood risk and navigation matters) and both councils, Wokingham and Reading recommended approval, but the application was refused by WBC committee for the reasons of impact on the character of the landscape.

**Client: Reading Borough Council**



# SELECTED EXPERIENCE

## Wichelstowe Southern Access (WSA) Major Business Case

### The Need

Stantec was commissioned by Swindon Borough Council (SBC) to produce an Outline and Full Business Case for the Wichelstowe Southern Access (WSA). The scheme had been allocated provisional funding through the Local Growth Fund (LGF) process and is a Department for Transport (DfT) retained scheme, which means that DfT would provide the final approval of the scheme. The scheme is located to the south west of Swindon and straddles the M4 motorway to the east of junction 16.

The WSA scheme consists of the construction of an additional access to the Wichelstowe site crossing the M4 motorway in the form of an under-bridge, together with associated infrastructure to the south and north of the crossing to connect to existing infrastructure (to the south) and the new development (to the north). The southern end of the WSA requires a new junction to be provided on the B4005 Wharf Road, just to the east of the existing junction with Hay Lane. The route then travels in a north-easterly direction, with a new under-bridge provided where it will cross the M4 motorway. It will then travel in an east-north-east direction to tie in with infrastructure provided as part of the Wichelstowe development.

The main function of the WSA is to provide access to Wichelstowe and it is not designed as a relief road or expected to attract large volumes of through traffic. The road will be a standard two-way 30mph link.

The WSA is required as part of Condition 42 of the planning permission for the Wichelstowe development. The condition restricts the number of dwellings to 2,500 until the scheme is complete. The WSA will unlock the Wichelstowe development above the 2,500 residential units currently permitted without the scheme. The

scheme will thus make it possible to support the full 4,500 new dwellings and hence assist SBC to meet its housing needs. It will also unlock 12.5 hectares of B1/B2/B8 employment land and will support around 2,000 new jobs. The WSA will result in a positive benefit derived from 'Planning Gain', through delivery of the additional housing and employment.

### What We Delivered

Stantec produced the evidence-based information required to secure support from the Local Growth Fund for £22.9M to progress the WSA scheme. A further £3.0m in total would be provided by SBC, making up the anticipated full scheme cost of £25.9m.

To secure this funding, full scheme details and a Department for Transport (DfT) compliant scheme business case was prepared by Stantec for approval by the DfT as this was a DfT retained scheme.

Stantec prepared the business in accordance with the guidance for the preparation of Business Cases for Transport Schemes published by DfT. This is based on H.M Treasury's advice on evidence-based decision making as set out in the Green Book and uses the best practice five cases model approach.

- Are supported by a robust case for change that fits with wider public policy objectives – the strategic case;
- Demonstrate value for money – the economic case;
- Are commercially viable – the commercial case;
- Are financially affordable – the financial case; and
- Are achievable – the management case.

Stantec accordingly drew on a multidisciplinary team to prepare the business case, providing input into highway design, scheme costing, transport modelling and economic appraisal and environmental disciplines. A suite of reports was produced which included an

Options Appraisal Report (OAR), Appraisal Specification Report (ASR), Transport Modelling Reports and the Full Business Case Report. Each of these reports was produced in line with the relevant guidance provided with DfT's guidance, 'The Transport Business Cases', January 2013, along with DfT's Transport Analysis Guidance.

A fully TAG compliant SATURN highway and DIADEM Demand Model underpinned the transport evidence and Stantec worked closely with SBC officers to produce all five cases of the Business Case. Although this scheme would relieve congestion on the local network, its key purpose was to unlock development that would otherwise not be realised without the scheme. In addition to widely used TAG units, TAG guidance specific to consideration of scheme dependent development informed the business case. Stantec used the guidance to estimate Land Value Uplift (LVU) benefits that would accrue from land value gain from agricultural to residential and employment use.

LVU benefits were offset by Transport External Costs (TEC) that would arise due to the scheme dependent development trips imposing additional costs (e.g. journey time) on non-scheme dependent trips. Stantec developed a bespoke spreadsheet model to estimate the TEC following TAG guidance. It was demonstrated that LVU benefits exceeded the TEC resulting in positive Planning Gain benefits. This coupled with the scheme's 'traditional' benefits (travel time, VOC, greenhouse gases etc) estimated using TUBA, and accident benefits derived using COBALT, resulted in a High Value for Money (VfM) scheme.

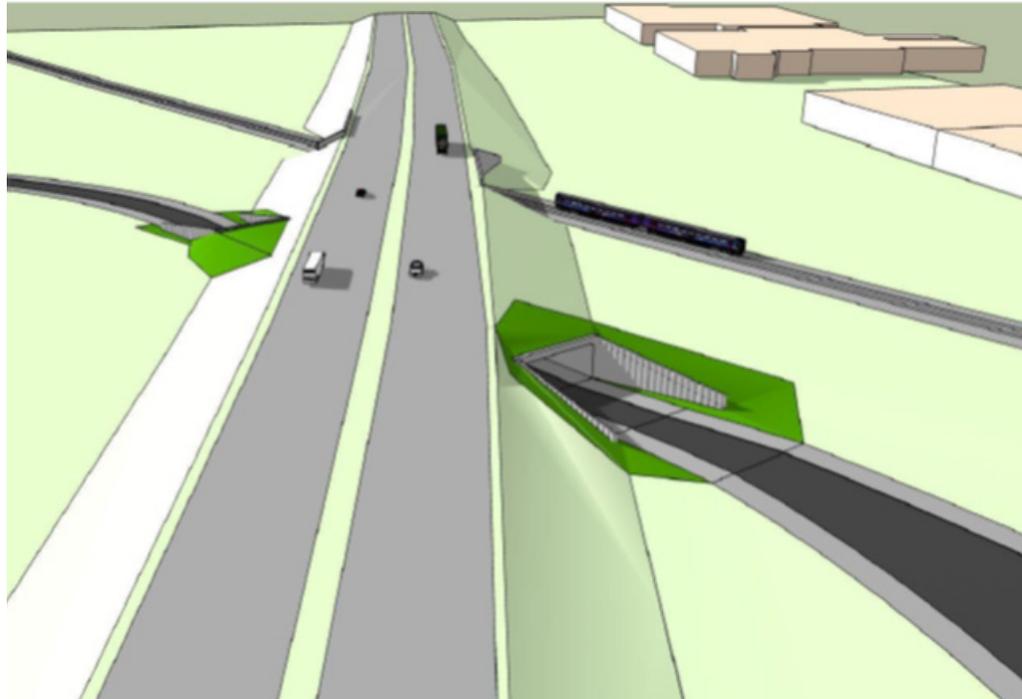
Stantec's extensive knowledge and understanding of the Wichelstowe development and relationships built with SBC and Highways England over the years, meant that Stantec was well placed to progress the WSA business case.

# SELECTED EXPERIENCE

## Wichelstowe Southern Access (WSA) Major Business Case

Stantec had been involved in the Wichelstowe development throughout the planning process including modelling to upgrade the nearby M4 Junction 16 working in conjunction with Highways England.

In view of these long-established client and stakeholder relationships and our detailed knowledge and understanding of the need for change, Stantec's commission brought added value. SBC initially proposed a Strategic Outline Business Case (SOBC). Early in the process, Stantec successfully engaged with DfT to seek approval to proceed straight to the OBC stage given the extensive work that had already been done over the years that clearly demonstrated the Strategic Case and need for change. This intervention assisted in accelerating the business case thus saving the client time and money. The full business case has since been approved.



## The Outcomes

The business case for the scheme demonstrated that the scheme offered High Value for Money. The WSA is an access scheme that unlocked scheme dependent development of 2,000 dwellings and 12.5Ha of employment. The benefits derived from the dependent development were an important part of the scheme and were pivotal in achieving a scheme that offered High Value for Money. Without the scheme progressing, the housing needs identified through the Local Plan System would not be met.

As the scheme was a DfT retained scheme, Stantec was responsible for preparing responses to any queries and clarifications raised by DfT. The scheme successfully gained funding approval.

**Client: Swindon Borough Council**



# SELECTED EXPERIENCE

## Thanet Parkway Station Business Case

### The Need

Stantec was commissioned to prepare a full business case for a new Thanet Parkway Station at Manston on the Ashford International to Ramsgate line. The station would be located on the Ashford International to Ramsgate line, south of the Manston Airport site and just to the west of the village of Cliffsend. It would be located between the existing Ramsgate and Minster stations.

The purpose of the station would be to support potential new development at Discovery Park Enterprise Zone, Manston Business Park, EuroKent Business Park and the former Manston Airport site (which are all within 3 miles of the proposed station location). The improved station access will also attract trips to London and other key employment areas, such as Canterbury.

Kent County Council commissioned Stantec to assist in developing the evidence-based information required to secure support from the Local Growth Fund for £10.0m through the South East Local Enterprise Partnership to progress the Thanet Parkway Station scheme. A further £4m of funding was sought through the LGF 3B. Stantec have provided support to KCC on the evidence base for the scheme over a number of years (SINCE 2014) as the scheme was developed.

### What We Delivered

Stantec's main role was to undertake and inform the Economic Case and hence the Value for Money category of the scheme. The work involved building a new demand model in accordance with the Association of Train Operators Council 'Passenger Demand Forecasting Handbook'(PDFH), economic appraisal over a 60-year period and commercial viability analysis with all work consistent with TAG transport appraisal guidance. Stantec undertook the passenger demand modelling and economic appraisal for the scheme at various stages throughout the development of the business case for the new station. The station has received provisional funding approval from the Local Enterprise Partnership (LEP) and KCC with Stantec's support, produced the Full Business Case to support the funding bid.

The methodology used in the Passenger Demand Modelling is what is known as a 'Trip Rate' approach and is a recognised method for assessing the likely patronage of a new station such as Thanet Parkway. Full details of the modelling were included within a Stantec produced Passenger Demand Modelling report.

Passenger demand was calculated for three future growth scenarios:

- Core Scenario/Medium Growth – with Thanet District Local Plan Growth
- Low Growth – Committed Development only
- High Growth – Committed development, Local Plan Growth and Stonehill Park development.

The economic appraisal was undertaken using a spreadsheet approach that covers a 60-year appraisal period. The model is based on a version previously approved by Network Rail. All costs and benefits were converted to 2010 prices and values in line with prevailing DfT TAG guidance.

The economic appraisal work was undertaken for the following core scenario and sensitivity test scenarios designed to test the robustness of the Value for Money case over a range of scenarios:

- Core Scenario: *Medium growth with car park revenue;*
- Sensitivity Test 1: *Low growth with car park revenue;*
- Sensitivity Test 2: *High growth with car park revenue;*
- Sensitivity Test 3: *Medium growth with car park revenue + 5% fare evasion;*
- Sensitivity Test 4: *Medium growth without car park revenue;*
- Sensitivity Test 5: *Medium growth with car park revenue plus consideration of crowding impacts.*

Sensitivity Test 5 was undertaken to give an indication of the potential implications of crowding on the Value for Money case. The approach used is as per Section 2 of Section B6.5 of PDFH May 2018 entitled 'Average loads over a period of a day'.

### The Outcomes

The outputs from the economic appraisal demonstrated that the new station at Thanet Parkway would offer 'high value for money', as the additional fare revenues accrued, more than off-set the investment cost of the station and the operation costs. The scheme is deemed viable and financially positive.

**Client: Kent County Council**

# Selected Experience

## Evaluations

# SELECTED EXPERIENCE

## Airdrie - Bathgate Rail Improvement Project: Year 2 Rail Evaluation

### The Need

We were commissioned by Transport Scotland (TS) to develop a Stage 2 Evaluation of the Airdrie to Bathgate Rail Link Improvement Project. Building on the outcomes of the Stage 1 Evaluation of the project which was completed in 2015, and working in line with TS's Rail Evaluation Guidance, the aim of this study was to produce a more comprehensive evaluation of the Airdrie to Bathgate Rail Link Improvements Project against both the Investment Objectives and wider STAG Criteria.

The Investment Objectives for the Project, as outlined in the Final Business Case (FBC), were as follows:

- Investment Objective 1: Improve direct access to labour markets in Glasgow / Edinburgh for people living in North Lanarkshire and West Lothian;
- Investment Objective 2: Encourage inward investment to and therefore stimulate economic growth in North Lanarkshire and West Lothian;
- Investment Objective 3: Assist in promoting social inclusion to communities in North Lanarkshire and West Lothian;
- Investment Objective 4: Increase the number of people using public transport in the Central Belt;
- Investment Objective 5: Offer a sustainable public transport alternative to the M8 and therefore reduce road congestion; and
- Investment Objective 6: Allow existing services to be connected and create an alternative to the Edinburgh / Glasgow main line, reducing congestion at peak times.

### WHAT WE DELIVERED

To inform the development of the Stage 2 Evaluation, the research included:

- An on-train survey of users of the Airdrie to Bathgate Line between Drumgelloch and Bathgate – this focused on current use of the rail line, potential travel patterns in the absence of the line, and any changes made due to the line opening. The survey was administered and collected back in by researchers on the trains, helping to ensure a high response rate.
- A telephone survey of residents living within the line catchment area – this was aimed at both users and non-users of the railway and aimed to establish why people were not using the line and identify key local impacts of the route.
- Secondary data analysis, including a review of ticket sales data, an analysis of

public transport connectivity, and a review of national data sets.

- A consultation exercise carried out with key stakeholders drawn from across the transport and business industry.

In total, 1,200 on-train and 500 resident survey responses were received – above the target figures. Summing the number of journeys made by respondents to the on-train survey over a year equated to over 178,000 trips – equivalent to 14% of the trips recorded on the new section of the line in 2017/18.

### The Outcomes

Through their involvement in previous large scale rail evaluations (including the evaluation of Laurencekirk Station and the re-opening of the Borders Railway), our team brought extensive experience in the design and analysis of complex public surveys and a detailed knowledge of available secondary datasets which could be used to inform the evaluation. This allowed for an efficient and robust analysis and ensured that the surveys and subsequent evaluation captured the key impacts of the railway.

The final report offered a detailed picture of how travel patterns have changed since the Airdrie Bathgate Line opened and the overall impact of these changes on the communities within West Lothian and North Lanarkshire.

Overall, the research suggested that the line was achieving all six investment objectives, and had resulted in positive environmental, safety, and economic benefits. The report was well received by the client and wider stakeholder group and the feedback provided was used by TS to help inform future rail schemes.

### Client: Transport Scotland



# SELECTED EXPERIENCE

## Borders Railway Baseline Study: Surveys of Households & Businesses

### The Need

We were commissioned by Transport Scotland (TS) to develop a baseline prior to the re-opening of the Borders Railway in September 2015. In line with Scottish Transport Appraisal Guidance (STAG) and TS's Guidance for the Evaluation of Rail Projects, an evaluation of the re-opening of the Borders Railway will be undertaken.

The aim of this research was therefore is to develop a baseline ahead of the re-opening of the new Borders Railway to fully understand the travel behaviour patterns of residents and the socio-economic characteristics of the area under a counterfactual situation. The results of the research would then provide the baseline situation in any subsequent evaluation.

### What We Delivered

The research involved an extensive primary data collection exercise which included:

- An online survey of residents in the Borders and Midlothian which aimed to gather information on travel choices, travel patterns and behaviour;
- A telephone survey of businesses in the Borders and Midlothian which aimed to gather information on business conditions and business use of the transport network; and
- A panel survey of residents in Edinburgh, East Lothian and West Lothian which aimed to capture the potential inbound impacts of the railway.

In addition, a telephone survey of residents in East Lothian and Dumfries & Galloway was also undertaken. This survey aimed to isolate the effect of the railway, with the results effectively acting as the control group in any future evaluation.

The Household Survey aimed to gather information on the current travel choices, patterns and behaviour of residents in the Scottish Borders and Midlothian ahead of the re-opening of the line. The survey included questions on respondents' intention to use the railway; lifestyle choices; frequency of trips and modal use. In order to publicise the survey, a detailed promotional strategy was developed. This included:

- Distributing of over 40,000 letters and leaflets within the catchment area of the line
- Advertising in the Borders Telegraph, The Midlothian Advertiser, Southern Reporter and the BBC news website
- Publicising via the Scottish Borders Council, Midlothian Council and the Borders Railway websites and social media feeds.

In total, 3,500 responses were received.

The purpose of the business surveys was to determine business conditions and business use of the transport network prior to the opening of the Railway. Given that the evaluation will ultimately consider the Wider Economic Benefits (WEBs) generated by the railway, the survey gathered baseline information on a number of business metrics, such as those on turnover, employment, productivity and access to markets (e.g. suppliers and customers). The survey was conducted by telephone and was supplemented with online responses. In total, 100 responses were received.

The Household and Business Surveys were largely focussed on the perspective of Midlothian and Scottish Borders residents and businesses, i.e. those that live and/or work in the area. However, the new rail line will also open up access to Midlothian and the Scottish Borders for those who do not live or work there. In order to gauge the potential inbound effects from easier access by rail, a panel survey of residents in Edinburgh,

East Lothian and West Lothian was undertaken. This included questions on perceptions of the Borders and Midlothian as business and/or leisure destinations and the propensity to visit each location.

In addition to the primary data collection exercise, the research also included a series of secondary data analysis tasks including a detailed baselining exercise which examined the socio-economic and demographic trends within both Midlothian and the Scottish Borders.

In addition to the questions discussed above, we recommended that a one-day Travel Diary also be included in the User Survey. This utilised the Scottish Household Survey (SHS) Travel Diary methodology where by one (random) adult from each household is asked to complete a detailed record of travel undertaken the previous day. Including the travel diary element within the survey enabled a consistent one-day record of travel behaviour to be collected and also provided the added benefit of allowing for the early monitoring of the impacts of Borders Railway via the ongoing Scottish Household Survey. In addition, the travel diary included questions on journey times, fares and parking costs which could be used as part of the evaluation to estimate the actual benefit cost ratio and outturn value for money.

### The Outcomes

The final report provided a detailed review of the socio-economic and demographic trends within the Scottish Borders and Midlothian and offered a detailed picture of travel patterns in the region prior to the re-opening of the railway. In keeping with TS's Rail Evaluation Guidance, the baseline information collected will be used by Transport Scotland to inform the counterfactual for the future evaluation of the new railway.

**Client: Transport Scotland**

# SELECTED EXPERIENCE

## Borders Railway Year 1 Evaluation: Surveys of Users & Non-Users

### The Need

We were commissioned by Transport Scotland (TS) to develop a Stage 1 Evaluation of the re-opening of the Borders Railway. The primary objective of this exercise was to provide a high level assessment of the extent to which the project is on track to reach its investment objectives. The Investment Objectives for the Borders Railway, as outlined in the Final Business Case (FBC) for the scheme are as follows:

- Promote accessibility to and from the Scottish Borders and Midlothian to Edinburgh and the central belt;
- Foster social inclusion by improving services for those without access to a car;
- Prevent decline in the Borders population by securing ready access to Edinburgh's labour market; and
- Create modal shift from the car to public transport.

In addition to examining the scheme against these indices, the study also aimed to examine:

- The impact of the line on visitor trips;
- Views of the service amongst both users and non-users; and
- Barriers to use.

### What We Delivered

To inform the development of the Stage 1 Evaluation a primary data collection exercise was completed comprising:

- A survey of users of the Borders Railway; and
- A telephone survey of non and one-off users of the Borders Railway based within the Scottish Borders and Midlothian.

The User Survey aimed to gather information on the current travel patterns and behaviours of users of the railway and how they had changed since the re-opening of the line. Topics covered included current journey characteristic; travel prior to the re-opening of the line; the impact of the railway on home / employment location; views on the quality of the service; and questions on visitor trips. The survey was developed in paper based format and was administered by surveyors on the train. In total, 1,112 responses were received with the sample capturing an estimated 140,000 trips on the line - over 10% of the total passenger journeys on the line in the first year of operation.

The second element of the primary research was a survey of non-users of the Borders Railway. The primary aim of this survey was to gather information about the barriers to use amongst this population. The survey included questions on reasons for not using the service; improvements which would encourage use and how often and where respondents would travel should these improvements be made. In total 227 responses were received the majority of whom were based in Midlothian reflecting the pattern of use at stations on the line.

In addition to the primary data exercise, the research included a number of secondary data analysis tasks. These included:

- A comprehensive review of ticket sales (LENNON) data for the first year of operation and a comparison against forecast figures;
- A detailed review of Scotrail passenger count data which aimed to examine the extent of capacity issues on the line; and
- An analysis of public transport service frequency within the catchment of the line.

### The Outcomes

The final report offered a detailed picture of how travel

patterns have changed since the re-opening of the railway and examined the impact of the line on housing and employment choice as well as the number and type of visitor trips. The report was well received by the client and wider stakeholder group, with Stantec and TS subsequently presenting a joint paper on the project at the Scottish Transport Applications and Research Conference.

Through their involvement in the Borders Baseline Study our team had an in-depth knowledge of Borders study area and the key transport problems, issues, opportunities and constraints in the region. This allowed for an efficient and robust analysis and ensured that the surveys and subsequent evaluation captured the key impacts of the railway including changes in the bus network and the increase in visitor numbers.

In addition, as a result of their knowledge of both the baseline work and the Guidance on Rail Evaluations, the team were able to design the surveys in such a way so as to be both consistent with the baseline study and ensure that the processes could be repeated to inform the planned Stage 2 Evaluation.

### Client: Transport Scotland



# SELECTED EXPERIENCE

## Valley Rail Strengthening Evaluation

### The Need

The 15-year Welsh rail franchise, which commenced in 2003, was based on an assumption of zero passenger growth and thus led to little commitment in the way of capital investment. However, growth on the Valleys network in particular has been significant and serious capacity constraints were being experienced in the area. In order to at least partially address this, the Welsh Government secured ERDF funding to support the initial and ongoing lease of off-hire stock, 'strengthening' services through lengthening peak train formations. Funding was also separately obtained for reopening of the Ebbw Vale branch line, consisting of eight new stations. In keeping with ERDF requirements, Welsh Government commissioned an evaluation of this investment.

### What We Delivered

The first step in this project was to develop a logic model, that identified the potential outputs, outcomes and impacts which could have emerged from the Valleys Rail Strengthening (VRS) and Ebbw Vale Line reopening. Having developed the logic model, the evaluation was undertaken as follows:

Outputs in this case were effectively a measurement of the change in rail supply, measured in terms of additional train kilometres and passenger seat kilometres provided as a result of the investment.

These were calculated by multiplying the additional services provided over the evaluation period by the route distances. Assumptions were made on the rolling stock classes deployed and instances of 'short-forming', which would effectively reduce the scale of the supply-side change. Outcomes focussed on the change in rail demand broadly attributable to the VRS and Ebbw Vale Line investment. This was calculated using a

combination of LENNON ticket sales data and ORR Station Entry & Exit data. The substantive element of the study involved the evaluation of impacts, which considered the travel change behaviour and wider societal impacts of the investment. The focus was very much on the reopening of the Ebbw Vale Line as this represented a wholly new transport connection, as opposed to an incremental improvement to existing services.

A user survey was carried out on Ebbw Vale services over a two-week period, with our fieldwork partners ensuring a representative sample in terms of demographic, time-of-day, journey purpose etc. Having established the respondent's details, journey purpose etc, the survey elicited information on the extent to which the new railway line had encouraged them to switch between (e.g. car to rail) or within modes (e.g. one rail line to another). Longer-term questions were also included on changes in home location, car ownership etc.

As well as providing a qualitative overview of the impact of the reopening of the Ebbw Vale Line, the survey data were used to quantify environmental and transport economic efficiency (TEE) impacts stemming from the reopening the line. The survey was supported by an extensive stakeholder consultation with a view to establishing the impact of the Ebbw Vale Line on regeneration (a key priority), land-use development, inward investment etc.

In terms of evaluating the impact of the strengthened services, six questions were purchased in the All Wales Omnibus Survey. Respondents in the Valleys local authorities were asked about capacity on their local rail services and the extent to which any actual or perceived capacity issued inhibited use of the services.

### The Outcomes

The evaluation report demonstrated the significant value for money and wider socio-economic benefits obtained from the reopening of the Ebbw Vale Line and the wider VRS scheme.

The requirement to carry out an evaluation was very much driven by the conclusion of an ERDF funding programme (six years after commencement). The majority of staff in Welsh Government that were involved in the VRS and the reopening of the Ebbw Vale line had moved on. Our team therefore had to guide the client through the re-scoping of the study after the Inception Meeting ensuring a robust final project could be delivered.

The ERDF evaluation requirements were also very much focussed on whether a supply-side change had been delivered but took little account of the wider demand and societal changes that such a major investment could deliver. Through the adoption of a logic modelling approach, we assisted WG in expanding the focus of the evaluation, capturing the wider and more important transport & societal outcomes and impacts. Our team also contributed towards the development of Transport Scotland's Rail Evaluation Guidance. At the time of this study, WG had no similar guidance and we therefore ensured a degree of skill share and knowledge transfer. Stage 2 Evaluation.

### Client: Welsh Government

# SELECTED EXPERIENCE

## Evaluation of Laurencekirk Rail Station

### The Need

Laurencekirk station was a calling point on the routes between the Central Belt and Aberdeen until 1967 when it was closed as part of the wide-ranging Beeching reforms.

Following the development of a business case the station was re-opened in 2009.

In line with the recommended appraisal and evaluation cycle of Rationale, Objectives, Appraisal, Monitoring, Evaluation and Feedback (ROAMEF), Transport Scotland commissioned work to undertake an evaluation of the re-opening of the station to understand whether the project is meeting its intended objectives, which are to:

- Link rural commuters to centres of employment, educational establishments and other facilities;
- Encourage modal shift from private car to public transport by constructing a Park and Ride facility serving the new station; and
- Improve road safety by encouraging a reduction in trips made by road and through reduced road traffic.

The evaluation was to be carried out using Transport Scotland's Transport Appraisal Guidance (STAG).

As part of the STAG-based process and evaluations, the client identified a number of other specific issues to be considered. These included:

- Analysis to understand why out turn passenger numbers and ticket revenue had exceeded forecasts;
- An information gathering exercise / survey to obtain a better understanding of users of Laurencekirk

station and their travel behaviour prior to the station reopening;

- Analysis to determine the impacts of the project against the STAG criteria of economy, environment, accessibility, integration and safety;
- Analysis of the out turn costs and benefits to generate a retrospective Benefit Cost Ratio for the project;
- Gaining a fuller appreciation of the 'Wider Economic Benefits' (WEBs) of the station and also how it has impacted on the local area; and, finally
- Making recommendations on the Draft Guidance on Rail Evaluation being prepared by Transport Scotland.

### What We Delivered

The majority of the evidence used to develop the analysis supporting the outcome evaluation was gathered from an extensive online passenger survey. In summary, the online survey was designed to gain a better understanding of Laurencekirk rail users' travel patterns, both currently and prior to the opening of the station.

A STAG appraisal was also undertaken using the out turn changes in travel patterns i.e. compared to what had been assumed in the pre-project appraisal. This showed that the benefits generated by the station were higher than had been assumed and the out turn benefit cost ratio was also higher.

The analysis revealed that agglomeration benefits were negligible. It also revealed that while there may have been labour supply impacts, as the new station encouraged people to move to more productive jobs or those not employed to enter the workforce, the impacts will be limited for projects similar to Laurencekirk i.e. a small station with relatively few users.

The findings from the wider impact analysis showed

that overall there is no clear evidence from the data examined that the reopening of the station at Laurencekirk had a significant and measurable wider economic and social impact. While there had been some positive impacts across a number of the metrics considered, for example the housing and labour markets, the impacts in Laurencekirk post station reopening do not appear to be significantly different from those witnessed in other areas considered.

### The Outcomes

A series of recommendations were set out for consideration as part of the development of Transport Scotland's Rail Evaluation Guidance.

A paper outlining the outcomes was presented by us at the Scottish Transport Applications and Research Conference in 2015.

**Client: Scottish Government / Transport Scotland**





Photograph: Former Exxon Site

## KEY PEOPLE



### **PAUL MCCARTNEY**

*Director, Business Cases and Appraisal*

MA Economics, University of Edinburgh, Edinburgh, 1992

APMG International, Accredited Better Business Case Practitioner

Royal Economic Society, Member

Transport Planning Society, Member

Chartered Transport Planning Professional, Transport Planning Society

Paul is an experienced Project Director and Manager with wide ranging experience and knowledge in economic appraisal of transport schemes, business case development, option appraisal, monitoring and evaluation, cost benefit analysis, demand forecasting and economic impact assessments. He is an accredited Better Business Case Practitioner.

Paul has over 20 years of experience working as a professional economist, both in the public and private sectors. He worked in Central Government where he was responsible for providing economic advice on the development of transport policy, particularly the economic viability and value for money of major transport projects, policies and programmes. He is a co-author of the Scottish Government's transport appraisal guidance (STAG). Paul also has a sound working knowledge of UK appraisal and evaluation related documents and guidance, including HM Treasury 'Green Book' and DfT's web-based transport appraisal guidance WebTAG.

Since moving to the private sector Paul has directed or managed a large number of projects for key clients, including the World Bank, UK Department for Transport, Scottish Government, Transport Scotland and Transport for London. The work has ranged from option appraisals of capital projects to the development and evaluation of national policies and strategies.

## KEY PEOPLE



### **DR SCOTT LEITHAM**

*Director, Transport Strategy, Policy and Research*

BEng (Hons), Civil and Transportation Engineering, Napier Polytechnic, Edinburgh, Scotland, 1991

PhD, Transport Infrastructure and Industrial Operation and Location, Napier University, Edinburgh, Scotland, 1996

Chartered Transport Planning Professional, Transport Planning Society

Scott Leitham's varied experience since 1991 spans academic research and transport consultancy, and includes a wide range of transport planning, strategy, appraisal and modelling work. Scott is a highly versatile and experienced project manager and director who has managed / directed a wide variety of transport planning and appraisal projects across all modes and disciplines. His experience spans demand forecasting, multi-modal modelling and multi-criteria appraisal. This has also included specifying and managing model development and implementation projects, and also post project monitoring and evaluation studies. Scott has also successfully managed the development of, and authored a number of strategy-based policy documents. He has a considerable track record in the maritime / ferry sector, having managed a number of high-profile commissions for both private and public sector clients. In addition to economic appraisal and cost-benefit analysis, he has also worked extensively on economic impact studies, following his early PhD work in this area.

## KEY PEOPLE



### **PAUL GBBETT**

*Senior Associate*

BA (Hons), Urban Studies, Sheffield City Polytechnic, Sheffield, 1991

MSc, Transport Engineering and Planning, University of Salford Salford, 1995

Chartered Member, Chartered Institute of Logistics & Transport

Transport Planning Professional, Transport Planning Society, Member

Paul has a wide range of experience that he brings to his work, through working within both the public and private sectors and in a number of modes. His strengths lie in strategic and micro-simulation modelling and the development of business cases, in particular the requirements for the economic case. Paul has extensive project management experience on a wide range of technical projects and has managed teams and mentored a large number of staff during his career.

Paul is a Transport Planner with over 20 years' experience of working with clients in both the private and public sectors. His breadth and depth of knowledge has allowed him to deliver numerous successful projects at the head of multi-disciplinary schemes and working in collaboration with clients.

Paul has led on the development of Full Business Cases produced in support of funding bids for transport schemes across a range of modes, including major highway, bus rapid transit and new rail station schemes. He has developed extensive modelling and appraisal experience with particular strengths on SATURN and S-Paramics micro-simulation software packages, as well as a strong working knowledge of all aspects of Department for Transport's Transport Appraisal Guidance (TAG) and undertaking economic appraisal work utilising TUBA. Paul has developed and worked with a number of models over the years, including the development of SATURN models for clients such as Reading Borough Council, West Sussex County Council and Plymouth City Council, as well as for testing large scale developments for private sector clients. He has managed the development of bespoke modelling tools for a number of projects, in particular to examine the impact of large strategic development sites as part of ongoing development of Local Plans for planning authorities.

He has been involved in a number of projects where collaborative working within a multi-disciplinary team have been vital. This has included working alongside highway engineers, planners and environment teams in the successful delivery of projects.



## GET IN TOUCH



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