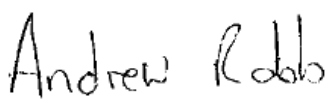



Banff Bridge Initial Appraisal Update

FINAL REPORT

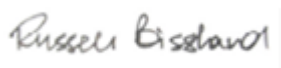
October 2016

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Banff Bridge Initial Appraisal Update

Rev No	Comments	Checked by	Approved by	Date
2	Final following Client Comment and Public Exhibition	EG	RB	28/10/2016
1	Draft for Client Comment	EG	RB	01/04/2016

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Reference M001

Date Created March 2016

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Table of Contents

1	Introduction	3
1.1	Introduction.....	3
1.2	Overview.....	3
1.3	2008 STAG Part 1 Study	6
1.4	Structure of Report	7
2	Background and Context Setting.....	9
2.1	Introduction.....	9
2.2	Traffic and Active Travel Demand.....	13
2.3	Road Safety Review	17
2.4	Socio-Economic Profile.....	18
2.5	Economic Context.....	25
2.6	Future Growth.....	29
2.7	Structural Condition of Bridge	29
2.8	Environmental Context	30
2.9	Summary	31
3	Public and Stakeholder Consultation.....	33
3.1	Introduction.....	33
3.2	Public Consultation	33
3.3	Public Consultation – Key Outcomes.....	33
3.4	Business Consultation	37
3.5	Business Consultation – Key Outcomes.....	38
3.6	Additional Consultees	38
3.7	Public Feedback	40
3.8	Summary	42
4	Problems, Issues, Opportunities and Constraints and Transport Planning Objective Setting	44
4.1	Introduction.....	44
4.2	Problems, Issues, Opportunities and Constraints.....	44
4.3	Objective Development.....	46
4.4	Banff Bridge Initial Appraisal Update – TPOs	48
4.5	Summary	48
5	Option Generation.....	50

5.1	Introduction.....	50
5.2	Option Generation	50
6	Initial Option Appraisal	55
6.1	Introduction.....	55
6.2	Initial Option Appraisal Overview	55
6.3	Do-Minimum	57
6.4	Option 1 – Widen Existing Carriageway	59
6.5	Option 2 – Widen Existing Footway with Signal Controlled Vehicular Crossing	61
6.6	Option 3 – Widen the Bridge Deck.....	64
6.7	Option 4 – Suspend Cantilevered Footway from the Existing Bridge	66
6.8	Option 5 – New Low Level Pedestrian/cycle Bridge	69
6.9	Option 6 – New High Level Pedestrian/cycle Bridge.....	72
6.10	Option 7 – New Road Bridge	75
6.11	Option 8 – New Bypass	78
6.12	Economic Activity and Location Impacts.....	80
6.13	Option Summary.....	81
7	Option Costing	85
7.1	Introduction.....	85
7.2	Option Costing.....	85
8	Risk Analysis	88
8.1	Introduction.....	88
8.2	Risk Analysis	88
8.3	Sensitivity Testing.....	90
8.4	Construction Disruption	90
8.5	Strengthening Foundations of Existing of Banff Bridge.....	90
9	Key Outcomes	92
9.1	Introduction.....	92
9.2	EALI – Key Outcomes	92
9.3	Overall Outcomes	92

Introduction

Capabilities on project:

Transportation

1 Introduction

1.1 Introduction

AECOM was commissioned by Aberdeenshire Council in autumn 2015 to undertake a study to examine the economic impact of the current Banff Bridge as a route for trips between Peterhead, Fraserburgh and Inverness. This work follows on from a STAG Part 1 study undertaken by AECOM in 2008.

The purpose of this updated initial appraisal study is to examine the economic impact of the current Banff Bridge. Concerns have been raised about the safety of the bridge for local access for all traffic between Banff and Macduff and the impact temporary restrictions or closure due to maintenance works or road traffic accidents may have in economic terms. In addition to this, the resilience of Banff Bridge has been highlighted as a problem to consider. As such, all of these factors will be considered within the parameters of the study.

As part of this study, consultations have been undertaken with key stakeholders, including interviews with local businesses and online surveys with a view to gather perspectives from members of the public. Other key elements of the study include a traffic and active travel demand study, structural and technical feasibility work and cost estimates and an appraisal of options based on STAG. All of this will be with a view to determining the economic impact the current Banff Bridge has on trips between Peterhead, Fraserburgh and Inverness.

1.2 Overview

Banff Bridge is located on the A98, a single carriageway road along the north Aberdeenshire and Moray coasts between Fraserburgh and Fochabers. At Fochabers, the A98 joins the A96 westward to Inverness. The bridge spans the River Deveron and is the only crossing point across the river in the Banff and Macduff area. In the event of closure, the resulting diversion equates to almost 30 miles.

Figure 1.1 presents an overview of the location of Banff and Macduff within Aberdeenshire and Figure 1.2 indicates the specific location of Banff Bridge.

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Figure 1.1 – Location of Banff and Macduff in Aberdeenshire

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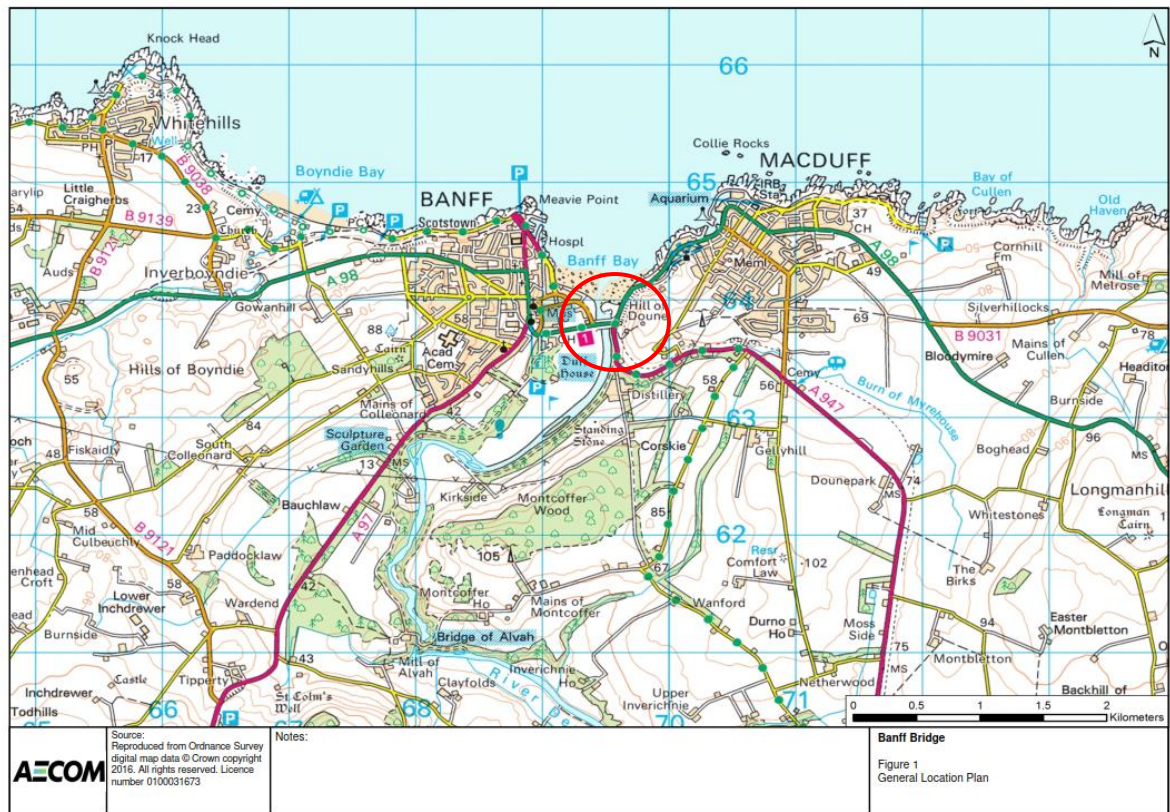


Figure 1.2 – Location of Banff Bridge

Banff Bridge spans approximately 135m over seven spans across the River Deveron. The bridge provides a running deck of 5.3m with a 1.60m and a 1.15m wide footway on the north and south parapets respectively. The narrow nature of the bridge is illustrated in the Figure 1.3, with the full extent of the problem becoming most apparent when large vehicles utilise the bridge. Banff Bridge is strategically important, not only linking Banff and Macduff, but linking settlements located along the north Aberdeenshire and Moray coastlines.



Figure 1.3 – Banff Bridge

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Annual average daily flows from Department of Transport traffic counters¹ indicate that an average of 10,739 vehicles passed along the A98 to the west of Banff Bridge, although Aberdeenshire Council estimates the number of vehicles crossing the bridge to be approximately 12,500 between the Bridge Road and A947 junctions. In addition to this, there are up to 180 pedestrian movements per day on the bridge.

1.3 2008 STAG Part 1 Study

As part of the 2008 study, a desktop review of previous studies and feedback from a stakeholder group identified a number of problems, issues and constraints associated with the crossing. The issues considered are varied, ranging from land ownership to the fact that Banff Bridge is a key bridging point for all types of modal movements. Constraints predominantly related to the actual structure of the bridge, the fact that it is Grade A listed and that the physical capacity is limited by the existing foundations. This was reflected in the Transport Planning Objectives developed for the previous STAG 1 study:

- **Objective 1** – Support economic development of the area through the provision of an iconic feature that would be an attraction in its own right aiding the generation of increased tourist revenue.
- **Objective 2** – Enhance recreational opportunities within the area.
- **Objective 3** – Increase the modal share of trips undertaken by bicycle and foot.
- **Objective 4** – Reduce the risk of conflict between vehicles and non motorised users.
- **Objective 5** – Reduce the risk of conflict between vehicles.
- **Objective 6** – Improve operational capacity of the bridge to facilitate the economic development of the area.

In addition to defining objectives, the study considered the following options:

- **Option 1** – Widen the carriageway within the constraints of the existing deck width.
- **Option 2** – Widen existing footway with signal controlled vehicular crossing.
- **Option 3** – Widen the bridge deck.
- **Option 4** – Hang new footway onto existing parapets.
- **Option 5** – Provide new pedestrian/cycle footbridge.
- **Option 6** – Provide new road bridge.

The appraisal found that Option 5 (a new pedestrian/cycle footbridge) performed the strongest against the appraisal criteria and, if implemented, may also enable the carriageway of the existing bridge to be widened, reducing issues associated with larger vehicles passing each other.

The following study builds on the 2008 study with a series of evidence based surveys, consultation and a focus on the economic impact of Banff Bridge to the local and wider economy.

¹ <http://www.dft.gov.uk/traffic-counts/cp.php?la=Aberdeenshire#80323>

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1.4 Structure of Report

The remainder of this report is structured as follows:

- Chapter 2 – Background and Context Setting;
- Chapter 3 – Public and Stakeholder Consultation;
- Chapter 4 – Problems, Issues, Opportunities and Constraints and Transport Planning Objective Setting;
- Chapter 5 – Option Generation;
- Chapter 6 – Initial Option Appraisal;
- Chapter 7 – Option Costing;
- Chapter 8 – Risk Analysis; and
- Chapter 9 – Key Outcomes.

In addition, a separate appendix document has been created which provides further detail on the key points set out in this report. This is structured as follows:

- Appendix A – Traffic and Active Travel Demand;
- Appendix B – Road Safety Review;
- Appendix C – Structural Technical Feasibility and Cost Estimates;
- Appendix D – Traffic Signals Assessment;
- Appendix E – Economic Impact of Banff Bridge;
- Appendix F – Historic Environment Initial Options Appraisal;
- Appendix G – Public and Stakeholder Consultation; and
- Appendix H – Appraisal Summary Tables (ASTs).

Background and Context Setting

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2 Background and Context Setting

2.1 Introduction

This chapter summarises the existing transport network in the Banff Bridge study area.

2.1.1 Road

Banff Bridge is located on the A98, a single carriageway road along the north Aberdeenshire coast between Fraserburgh and Fochabers. At Fochabers, the A98 joins the A96 westward to Inverness. Two additional locally significant routes are located to the south of Banff; the A97, which links Banff and Huntly/A96 to the southwest, and the A947. The A947 offers the most direct route to Aberdeen City located 45 miles to the south via the settlements of Turriff, Oldmeldrum and Newmachar. The A947 / A98 junction (the eastern approach to Banff Bridge) is shown below in Figure 2.1.



Figure 2.1 – A947/A98 Junction at Banff Bridge

Banff Bridge connects the principal A class roads along the north Aberdeenshire coast.

The principal A roads and trunk roads in the area are shown in Figure 2.2.

In the event of Banff Bridge being closed to the public, the quickest alternative route is to use the A947 south to Turriff, west along the B9025 to Aberchirder and north onto the A97.

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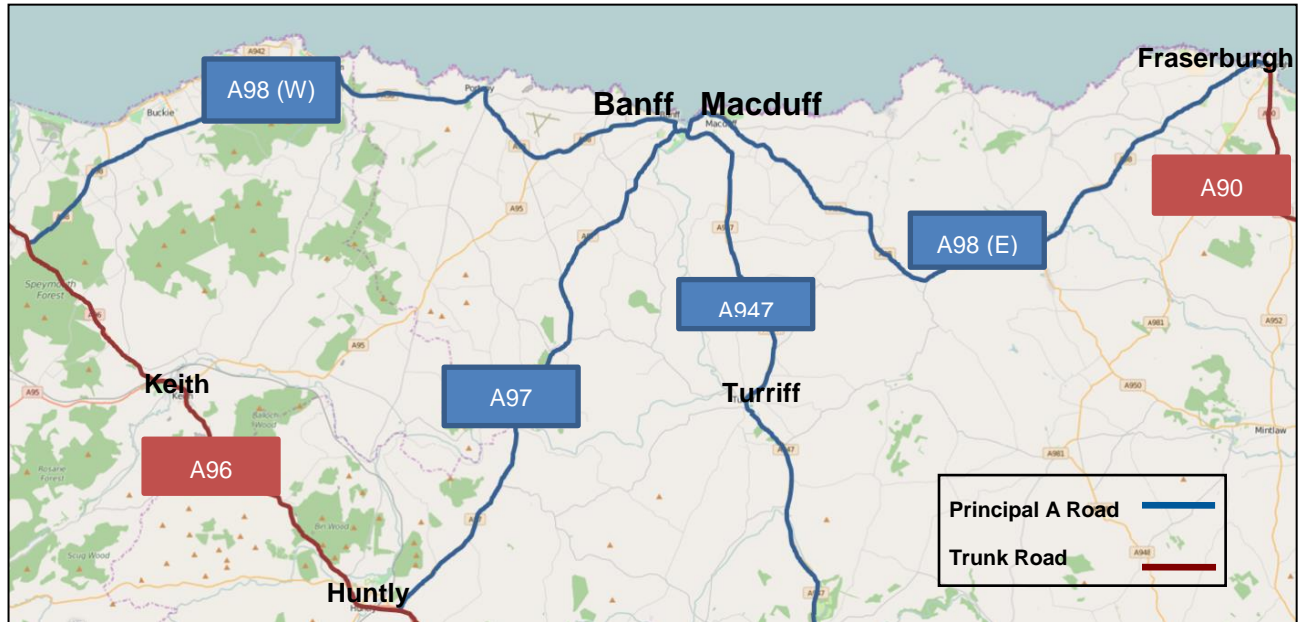


Figure 2.2 – Principal A Roads and Trunk Roads in Banff and Macduff area

2.1.2 Public Transport

As Banff Bridge is the only road link across the River Deveron in the Banff and Macduff area, all buses that travel between the two settlements utilise the bridge. These services are noted in Table 2.1.

Table 2.1 – Banff/Macduff Local Bus Services

Service	Route	Operation	Frequency	Operator
35	Aberdeen – Turriff – Macduff – Banff – Buckie – Elgin	Every day	Every 30 minutes (hourly on Sundays)	Stagecoach Bluebird
271	Banff – Macduff – Fraserburgh – Banff and Buchan College	Monday to Friday	1 per day	Stagecoach Bluebird
272	Banff – Macduff – Strichen – Fraserburgh	Monday to Friday	3 per day	Stagecoach Bluebird
273	Banff – Macduff – Gardenstown (onwards to Fraserburgh on Saturdays)	Monday to Saturday	4 per day (Banff – Gardenstown or Fraserburgh) 5 per day (Fraserburgh or Gardenstown – Banff)	Stagecoach Bluebird
300	Banff and Macduff Town Service	Monday to Saturday	Every hour	Deveron Coaches

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Service	Route	Operation	Frequency	Operator
301	Macduff – Banff – Aberchirder – Huntly	Monday to Saturday	3 per day	Stagecoach Bluebird
405	Macduff – Banff – Portsoy – Cullen	Monday to Friday	2 per day (Macduff – Boyndie or Cullen) 3 per day (Cullen or Boyndie – Macduff)	Stagecoach Bluebird
895/896	Banff Academy – Macduff	School Days Only	3 per day (Macduff – Banff Academy) 4 per day (Banff Academy – Macduff)	Deveron Coaches / Stagecoach Bluebird

Table 2.1 indicates that Banff and Macduff is well served by public transport, linking the settlements to surrounding areas located east, south and west. The number 35 service provides the only direct service to Aberdeen City, operating every half hour Monday to Saturday and once every hour on Sundays.

Banff is not served by a railway station. The closest station is located at Huntly 20 miles to the southwest, although Inverurie and Dyce Stations provide alternative connections to Aberdeen, despite being located further away. Inverurie Station is located 32 miles to the south and Dyce Station 39 miles to the southeast. Services operate throughout the day from Huntly Station, with more regular services operating from stations at Inverurie and Dyce.

2.1.3 Active Travel

As reflected in the Nestrans Active Travel Action Plan², Banff and Macduff form part of the Buchan Coast: Fraserburgh to Banff/Macduff and Moray Strategic Active Travel Network. Despite the relative remoteness of Banff Bridge from major population centres such as Aberdeen, active travel opportunities are available in the area.

Two formal cycle routes are available in the Banff and Macduff area, namely:

- Banff to Boyndie Circular via Cornhill (28 miles); and
- National Cycle Network 1 (NCN1).

NCN1 is a long distance route, which connects Dover in the southeast of England and the Shetland Islands via the east coasts of England and Scotland, coinciding with the long distance North Sea Cycle Route.

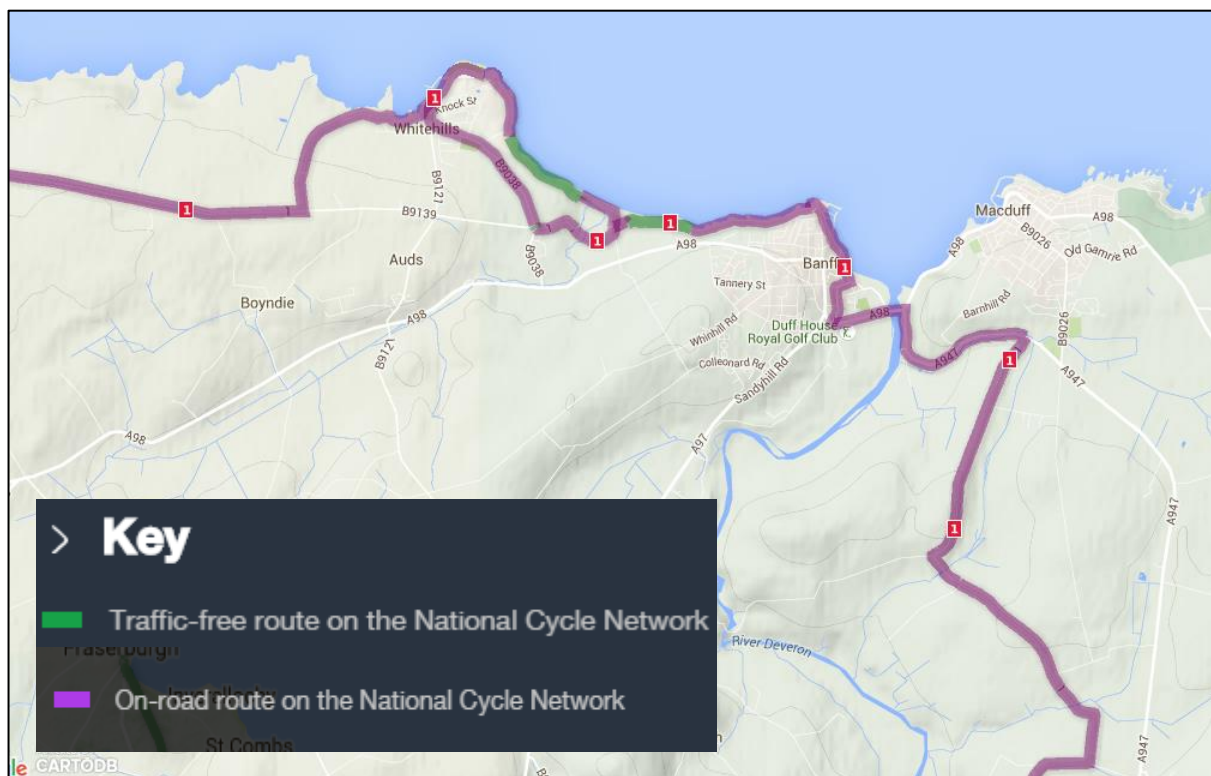
As shown in Figure 2.3, NCN1 runs parallel to the A947 north of Turriff before joining the A947 at Macduff and traversing Banff Bridge. This is the only signposted cycle route to cross Banff Bridge, although it should be noted that the bridge itself does not have any on-road or segregated cycling facilities. The only dedicated shared use pedestrian/cycling facilities in Banff and Macduff are at The Links immediately to the west of Banff, where NCN1 goes off road for approximately 200-250 metres.

²Active Travel Action Plan, Nestrans, 2014 http://www.nestrans.org.uk/db_docs/docs/AcTrAP_FINAL.pdf

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Figure 2.3 – NCN1 in Study Area³



In addition, the Aberdeenshire Core Paths Map⁴ indicates that there are Core Paths in Banff and Macduff, one of which crosses Banff Bridge.

³ Sustrans National Cycle Network Route Map <http://www.sustrans.org.uk/ncn/map/route/route-1>

⁴ Aberdeenshire North Core Paths and Long Distance Routes, Aberdeenshire Council, 2015
<https://www.aberdeenshire.gov.uk/media/7509/aberdeenshirenorthcorepathplan.pdf>

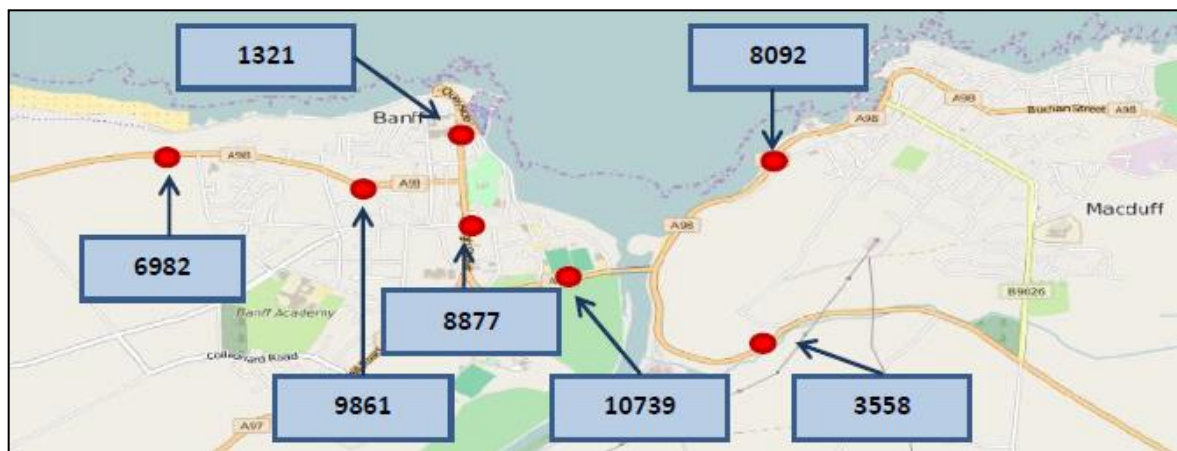
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2.2 Traffic and Active Travel Demand

This section provides an overview of existing traffic and active travel demand in Banff and Macduff and the surrounding area. A thorough analysis of traffic demand in the study area is presented within Appendix A of the supporting appendices document. The average daily traffic flows in the area are shown in Figure 2.4.

Figure 2.4 – Annual average daily flows on / on routes to Banff Bridge (DfT, 2014)⁵



Banff Bridge attracts high volumes of traffic. The traffic flows on the bridge are higher than the flows on the wider road network surrounding the study area (i.e. the A98, A947 and A97), with the bridge directly serving the Banff/Macduff area.

To gather detailed travel data on the usage of Banff Bridge, surveys were commissioned by Aberdeenshire Council in November 2015. The survey scope included the requirement to conduct automatic traffic counts, junction turning counts, queue length observations, pedestrian counts, and a review of bridge incidents by way of video recording of the bridge. The surveys classified movements according to vehicle type where appropriate, providing support for the understanding of additional traffic movements including freight flows.

2.2.1 Traffic Surveys and Analysis

Junction turning count surveys were carried out on Thursday 5th November 2015 over a 12-hour period between the hours of 0700 and 1900 at two sites on either side of Banff Bridge. The surveys found that:

- The principal vehicle movements are eastbound on the A98 and westbound on the A98 from the north.
- HGV movements comprise between 5 and 6% in the morning peak; and between 2 and 6% in the afternoon.
- There is a general lack of cycling on a daily basis on Banff Bridge.
- The highest pedestrian movements are on the north side of Banff Bridge, from Bridge Road to the A98 on approach to Macduff.

⁵ <http://www.dft.gov.uk/traffic-counts/cp.php?la=Aberdeenshire#80323>

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In addition to the junction turning count survey, automatic traffic counts were carried out over a 7-day period from Thursday 5th November to Wednesday 11th November 2015 in order to gauge any differences in traffic flow across different days of the week.

Automatic traffic counter data for a full 365 days was not available to confirm exact Annual Average Daily Traffic (AADT) flows on Banff Bridge itself. When 12-hour Banff Bridge traffic surveys are factored to a 24-hour AADT using the 7-day average from the ATC sites, and accepting that the November 2015 count is a neutral week of the year, then the AADT on Banff Bridge would be around **12,500** vehicles per day.

The surveys helped in the identification of the morning peak hour (0800-0900hrs) and the afternoon peak hour (1600-1700hrs). They also confirmed that around 80% of vehicles on the bridge are cars.

The surveys also identified a wider 3-hour weekday peak of traffic on the bridge, beginning earlier in the afternoon. (1400-1700hrs).

2.2.2 *Bridge Incidents of Delay*

On Thursday 5th November between the hours of 0700 and 1900, incidents between vehicles on the bridge requiring to slow, stop/wait or encroach on the footway while passing each other were recorded.

Examination of the survey information indicates that HGVs cause the greatest number of bridge incidents causing traffic to stop. During the survey hours, there were a total of 112 bridge incidents of delay. There were 14 cases where vehicles encroached on the footway, 39 cases where vehicles stopped completely, 27 incidents where vehicles waited and 32 incidences of vehicles slowing.

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2.2.3 Speed

The recorded traffic speeds at either side of the bridge junctions reflect the 40mph speed limit at these locations. Traffic speeds on the bridge may be affected by delay from incidents on the bridge.

2.2.4 Queue Length Observations

Video evidence was reviewed to gauge the extent of queuing on Banff Bridge and to better understand the causes of queuing at the two junctions in the Banff Bridge vicinity.

The reasons for the queues were classified as follows:

- **A98 queue from junction turning issues** - a large vehicle turning from a side road and encroaching on opposite A98 carriageway causing opposite stream to slow/stop;
- **A98 queue from bridge width issues** - a large vehicle travelling straight on the A98 and causing stopping of either itself or the opposite stream due to limited bridge width as shown in Figure 2.5;
- **A98 queue from right turn blocking**- A98 main line right turn into side road blocking traffic behind (waiting for a gap in traffic to turn); and



Figure 2.5 – Large vehicles passing each other on Banff Bridge, with encroachment of footway

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- **Side Road queue** - on a side road and waiting for a gap in traffic to turn onto the A98 (due to steady flow of traffic on A98 mainline).

The video evidence revealed that although queues were frequent and up to 15 vehicles long, they lasted less than a minute in the majority of cases. It should be noted in the case of queuing on the A947, in two out of three cases, a bus arrived with a platoon of traffic behind it which may be related to the lack of overtaking opportunities on various portions of this road. There were no instances in the longest queues observed where side road traffic was blocked by A98 bridge queuing traffic.

2.2.5 Diversion Route

The current diversion route for traffic in the event of bridge closure is shown in Figure 2.6 below. This routes via the A947 to Turriff, the B9025 to Aberchirder, joining the A97 north to Banff.

Figure 2.6 – Banff Bridge Diversion Route



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In order to understand the journey time implications of the diversion route associated with the increased distance, AECOM conducted a drive-through of the route. The distance of this route is 26 miles (42km).

Figure 2.7 indicates typical conditions on the eastbound approach to River Deveron to west of Turriff.

The findings are presented in Table 2.2 below.

Table 2.2 – Banff Bridge diversion route journey times

Macduff to:	Time Taken
<i>Turriff</i>	12 minutes
<i>Aberchirder</i>	25 minutes
<i>Banff (Welcome to Banff sign)</i>	33 minutes
<i>Banff Bridge</i>	36 minutes



Figure 2.7 – Eastbound approach to River Deveron to west of Turriff

This was undertaken on Tuesday 17th November 2015 commencing at 10:20am. Little delay was experienced on the route and therefore this represents a 'free flow' condition. The average speed over the 26 miles was 43mph. Traffic speeds may vary depending on traffic conditions.

It has been previously estimated by Aberdeenshire Council that the cost of providing a temporary bridge (if the existing Banff Bridge was closed or damaged) is high and it would have an 8-10 month construction period.

Appendix E of the supporting appendices document includes an economic impact assessment of the use of diversion routes should there be a closure of Banff Bridge.

2.3 Road Safety Review

In the last five years, there have been two damage only accidents recorded on and on the approach to Banff Bridge. There have been no personal injury accidents on the bridge itself in the last five years.

In contrast, on the Banff Bridge diversion route, there have been 52 personal injury accidents in the last five years. The majority of accidents were of slight severity and the principal location for accidents was the A947 road.

AECOM has undertaken further work to identify and review road safety issues with the existing bridge and potential conflicts between vehicular traffic and non-motorised users. This forms Appendix B of the supporting appendices document.

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2.4 Socio-Economic Profile

Table 2.3 provides a socio-economic profile⁶ of the principal settlements in the study area. Fraserburgh and Peterhead have been selected as settlements located at the eastern end of the A98 and northern end of the A90 Corridors respectively. Turriff is the largest settlement on the A947 Corridor located close to Banff and Macduff and Buckie and Fochabers represent settlements located on the A98 Corridor West. Information is also presented for Aberdeenshire to enable a comparison.

⁶ Data has been extracted from the 2011 census; <http://www.scotlandscensus.gov.uk/>

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Banff & Macduff and Surrounding Areas Socio-Economic Profile									
		Banff	Macduff	Buckie	Fochabers	Turriff	Fraserburgh	Peterhead	Aberdeenshire
Population		4,082	4,009	8,273	1,728	5,177	13,100	18,537	252,973
10 Year Population Change (2001-2011)		+2.3%	+6.4%	+2.6%	0%	+16.2%	+5.2%	+3.3%	+11.5% (2003-2013)
Age	Under 16 years old (%)	17.4	17.9	17.3	18.1	17.2	18.1	17.4	18.7
	16 to 64 years old (%)	61.8	63.6	61.3	60.0	60.1	65.2	66.0	65.2
	65 years old and over (%)	20.8	18.5	21.4	21.9	22.7	16.8	16.7	16.1
Unemployment (%)		4.2	4.1	4.5	4.0	2.1	3.8	4.4	2.5
Retired (%)		17.0	15.1	16.5	19.5	17.0	14.5	13.2	13.6
Student (%)		3.9	3.8	2.6	4.2	2.5	3.7	2.8	3.1
Key employment sectors (Top 3)		1. Human health and social work activities (20%) 2. Wholesale and retail trade* (13%) 3. Manufacturing (12%)	1. Human health and social work activities (16.7%) 2. Wholesale and retail trade* (13.9%) 3. Manufacturing (11.9%)	1. Wholesale and retail trade* 2. Manufacturing (14.0%) 3. Human health and social work activities (12.3%)	1. Wholesale and Retail trade* (16.0%) 2. Human health and social work activities (14.7%) 3. Education (12.5%)	1. Wholesale and retail trade* (20%) 2. Manufacturing (16%) 3. Construction (12%)	1. Manufacturing (25.9%) 2. Wholesale and retail trade* (15.3%) 3. Human health and social work activities (9.4%)	1. Manufacturing (17.6%) 2. Wholesale and retail trade* (17.2%) 3. Human health and social work activities (10.7%)	1. Wholesale and retail trade* (14%) 2. Human health and social work activities (12%) 3. Manufacturing (10%)
Car Ownership	No car or van (%)	31.9	25.2	27.5	20.2	20.3	29.1	28.7%	14.3
	1 car or van (%)	44.1	47.2	49.3	46.0	49.4	46.6	45.5%	40.2
	2 cars or van (%)	19.6	21.9	18.7	27.7	24.7	18.3	19.9%	33.7
	3 or more cars or vans (%)	4.4	5.7	4.5	6.0	5.6	6.0	5.8%	11.8

*Wholesale and retail trade includes repair of motor vehicles and motorcycles

Table 2.3 – Banff & Macduff and surrounding areas Socio-Economic Profile

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Key observations from Table 2.3 include:

- Car ownership is significantly lower in the selected settlements when compared to the Aberdeenshire average;
- Macduff's population percentage increase is more than double that of Banff's (a 6.4% increase compared to a 2.6% increase in Banff);
- When compared to surrounding settlements, Banff and Macduff have a significantly smaller population (with the exception of Fochabers);
- Manufacturing makes up a slightly larger percentage of the total workforce in Banff and Macduff when compared to the Aberdeenshire average; and
- Unemployment is almost double the Aberdeenshire average in Banff and Macduff.

2.4.1 Car Availability

Expanding on the information presented in Table 2.3, Figure 2.8 outlines car and van availability in Banff and Macduff and surrounding settlements.

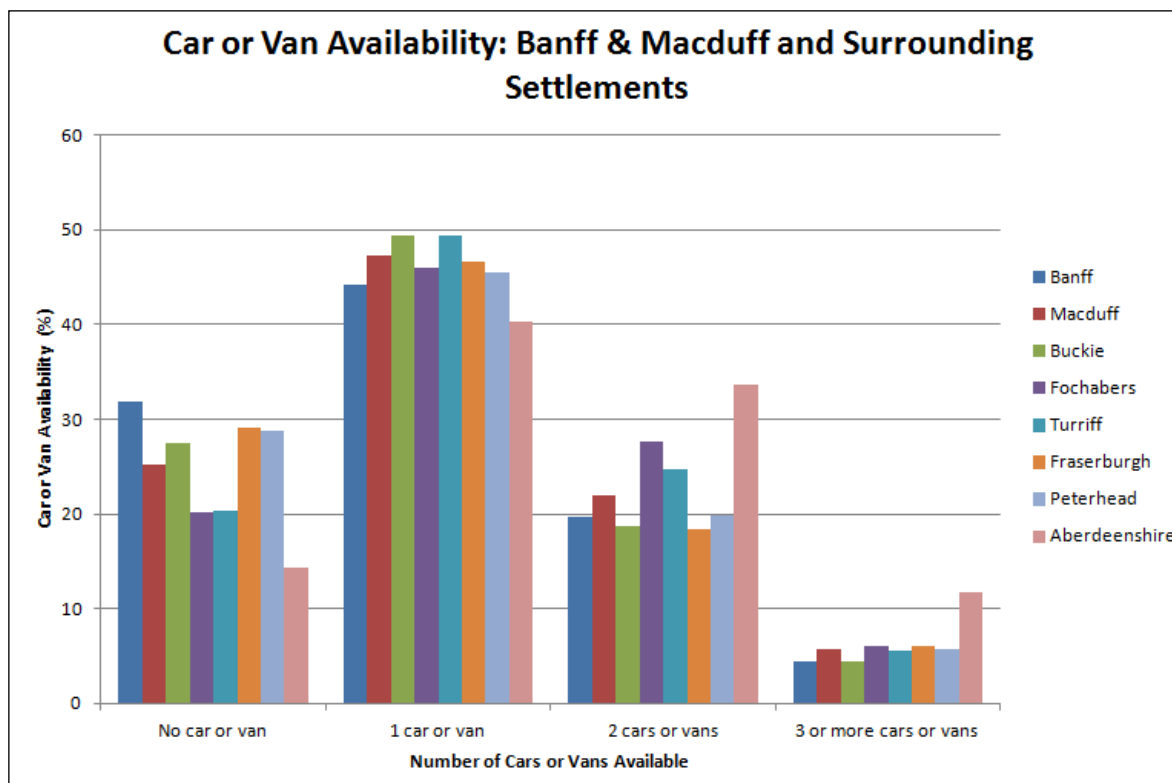


Figure 2.8 – Car or Van Availability in Banff & Macduff and Surrounding Settlements

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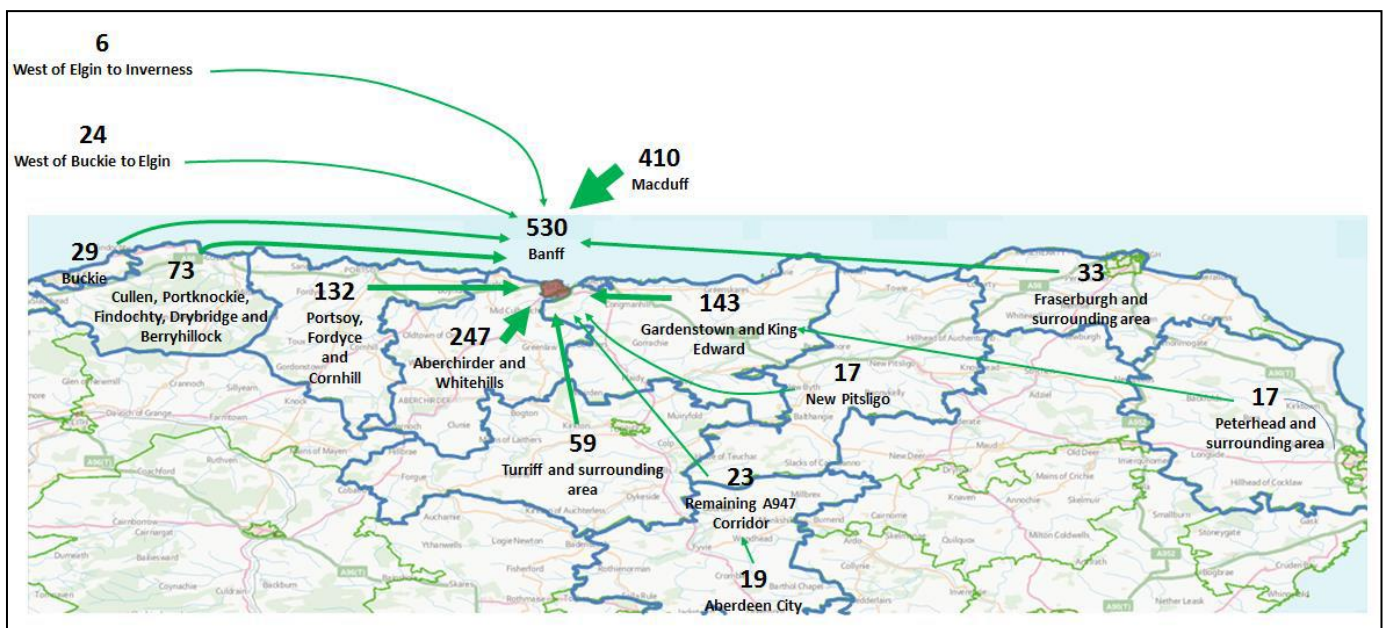
Key findings from Figure 2.8 are outlined below.

- The percentage of households with one car or van makes up the highest percentage of any availability across all settlements.
- All settlements have a lower percentage of households with three or more cars or vans when compared to the Aberdeenshire average.
- Banff has the highest percentage of households with no cars or vans (31.9%), more than double the Aberdeenshire average (14.3%).
- Macduff has a marginally higher percentage of car or van availability compared to Banff for all categories.

2.4.2 Origin Destination Data

In this section, origin/destination data show flows of individuals between their place of home and employment. This section includes all modes of travel, focusing on O/Ds based on the 2011 Census⁷ for the key study towns of Banff and Macduff. Figure 2.9 outlines origin destination data⁸, highlighting how many individuals' usual place of employment is located within Banff.

Figure 2.9 – Destination Banff (those working in Banff)



In total, 1,762 individuals travel to Banff for employment, with the highest proportion of people travelling from within Banff itself (30%) and Macduff (23%). A total of 721 (41%) people who travel to Banff for work have

⁷ <http://www.scotlandscensus.gov.uk/ods-web/data-warehouse.html#additionaltab>

⁸ Note that the origin destination data does not include individuals who work from home. All origins and destinations given are the individual's usual area of residence and usual area of workplace.

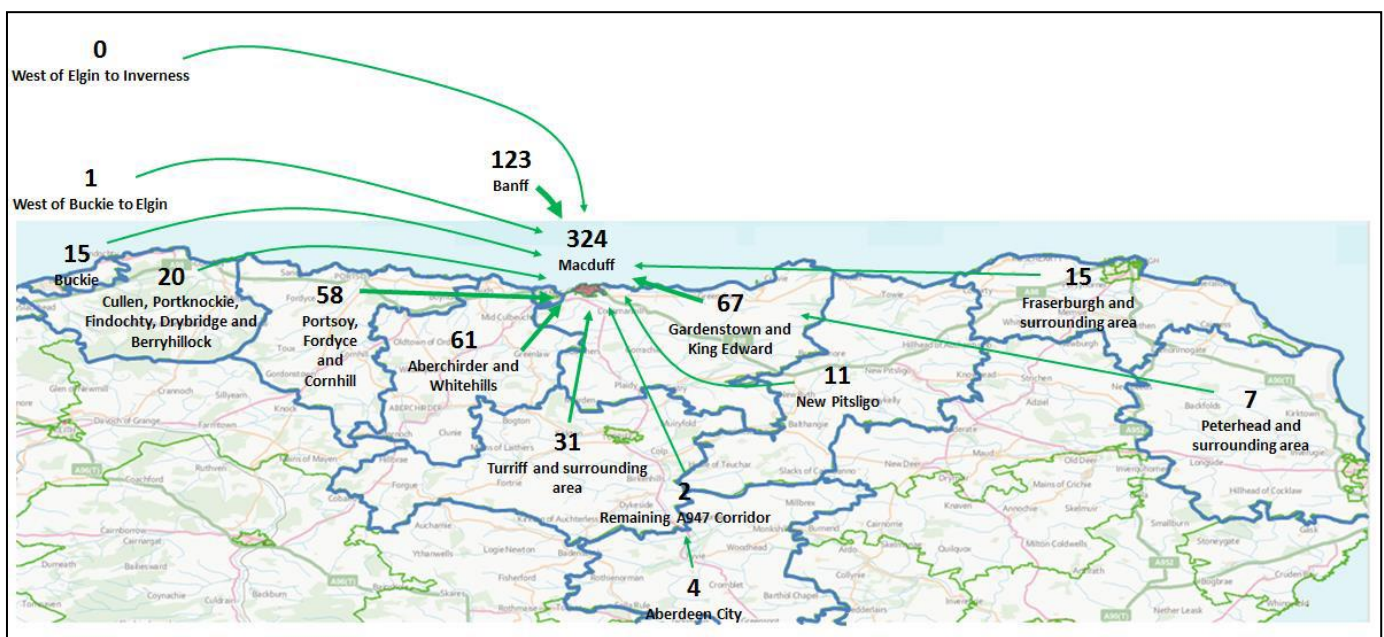
Capabilities on project:

Transportation

an origin to the east/south-east of Banff. This figure includes individuals travelling from Aberdeen City and the A947 Corridor. 511 (29%) people working in Banff reside to the west of the settlement.

Figure 2.10 outlines origin destination data, highlighting how many individuals' usual place of employment is located within Macduff.

Figure 2.10 – Destination Macduff (those working in Macduff)



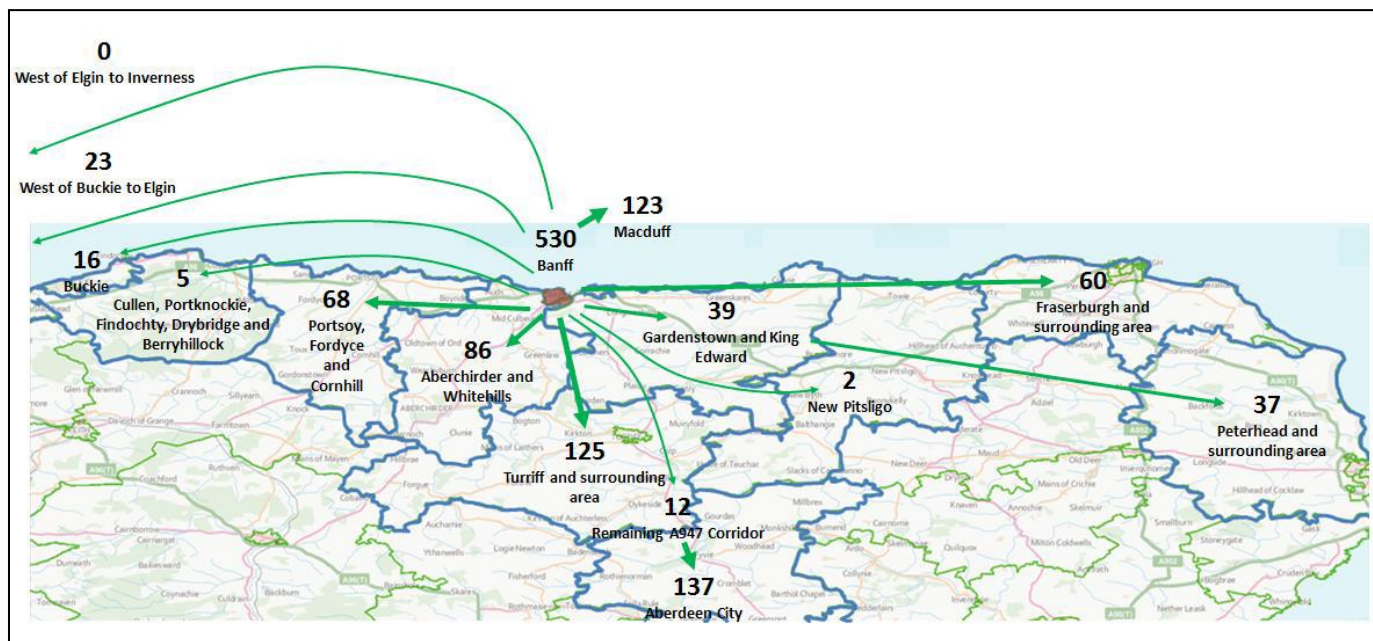
A total of 739 people travel to Macduff for employment, which is notably lower than the total number of people travelling to Banff for work. Of this total, most people travel from within Macduff itself (44%) and Banff (17%). Individuals residing within Macduff make up the highest proportion of people that work there. 278 individuals (38%) have an origin to the west of Macduff and work there. Only 19% of people that work in Macduff have an origin to the east of the settlement.

Figure 2.11 below shows the reverse direction of trips to those shown in Figure 2.9, demonstrating how many people reside in Banff and travel to other areas (including those that remain in Banff) for their usual place of work.

Capabilities on project:

Transportation

Figure 2.11 – Origin Banff (those living in Banff)



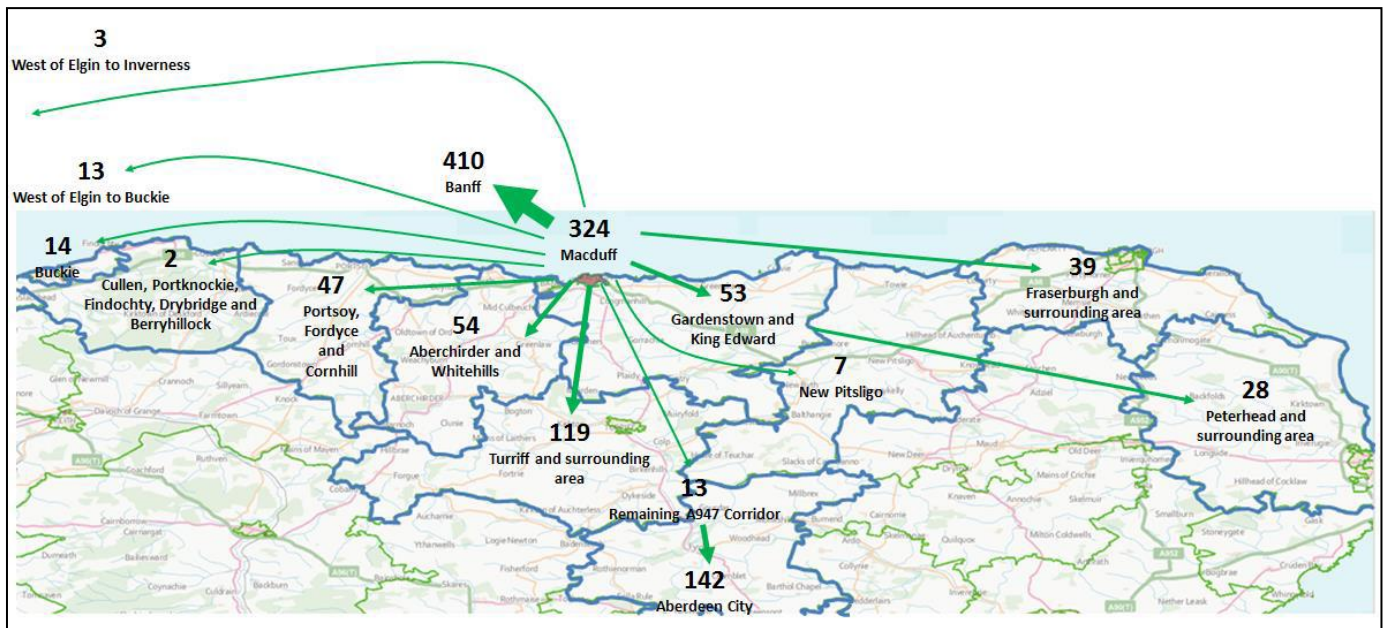
In total, 1,263 individuals reside in Banff and have a usual area of workplace. As noted in Figure 2.9, 530 individuals reside and work within Banff. Location of work for those that reside in Banff is more spread out compared to those that travel to Banff for work. After Banff, Turriff and the immediate surrounding area (Auchterless and Monquhitter) is the most common destination for usual area of work, accounting for 125 trips made (10%), although this is closely followed by Macduff, which accounts for 123 trips (also 10%). When destinations are grouped together, most individuals have a destination to the east of Banff (535 trips). This figure is very similar to the 530 individuals that reside and work within Banff.

Figure 2.12 shows the reverse direction of trips to those shown in Figure 2.10, demonstrating how many people reside in Macduff and travel to other areas (including those that remain in Macduff) for their usual place of work.

Capabilities on project:

Transportation

Figure 2.12 – Origin Macduff (those living in Macduff)



In total, 1,268 individuals reside in Macduff and recorded a usual area of workplace. Of this total, Banff accounts for the most common destination, accounting for 410 individuals (32%). As previously noted in Figure 2.10, 324 individuals recorded Macduff as their origin and destination. When destinations are grouped together, settlements to the west of Macduff account for the most common destination, with 543 individuals (43%) travelling westward, with the remaining going east.

2.4.3 The Linkage between Banff and Macduff

The O/D data shown in the section above underlines the strong linkages between Banff and Macduff in terms of trip origins and destinations. In particular, Banff is the principal destination of trips originating in Macduff, with Macduff also one of the key destinations for trips beginning in Banff. This very high degree of local trips between the two towns not only highlights their interdependence, but also the importance of Banff Bridge as the only means of providing this connection.

The towns are also subject of Town Centre Action Plans being carried forward by Aberdeenshire Council. These form part of a wider regeneration strategy by the Council for the main towns on the north Aberdeenshire coast.

Capabilities on project:

Transportation

2.4.4 *Travel to Work*

The following presents the key statistics with regard to mode of travel to work in the study area.

- Driving a car or van is the most popular mode of travel for those travelling to Banff from most areas, exceeding 80% for most origins within the study area.
- The key exception to this pattern is those individuals that reside and work within Banff, with 55.1% of individuals travelling to work on foot; however, the overall figure (for all areas of usual residence) is considerably lower at 17.6%.
- 18.5% of people travel to Banff from Macduff by bus, minibus or coach, which is a greater percentage than those residing in other areas.
- Driving a car or van is the most popular mode of travel for those working in Macduff, averaging 62.8% across all origins, although eight 2011 Census intermediate zones have car/van mode shares greater than 80%.
- Similarly to Banff, by foot is a popular mode of travel for those originating in Macduff and working in Macduff, accounting for 53.1% of all trips made to work within the town.
- The percentage of people driving a car or van from Banff to their destination of work is 59.9%. The only difference to this trend is those individuals that reside and work within Banff, with 55.1% of people travelling to work on foot.
- Driving a car or van is the most popular mode of travel for those with an origin of Macduff travelling to work, averaging 64.5% across all areas. The only exception to this trend are those individuals which have Macduff as an origin and destination, with 53.1% travelling on foot compared to 38.3% travelling to work by driving a car or van.

2.5 **Economic Context**

Economic Activity and Locational Impacts can be seen at a number of different levels. In terms of the Banff Bridge study the following economic levels are applicable.

- National => Support to the Scottish economy.
- Regional => Support to the North East economy (Aberdeen City and Shire).
- Local => Support to the study area (Banff & Buchan - Fraserburgh to Fochabers)
 - A98 Corridor Study Area.
 - Banff & Macduff.

The economy can be represented by a number of indicators including population and Gross Value Added (GVA). GVA is available for National and regional comparisons but at a local level number of jobs, unemployment levels and average incomes are often shown as indicators of local economic activity.

Banff Bridge supports the local, regional and national economy from a greater to lesser extent. The local study area economy is not wholly dependent on the bridge but should there be any need for closure of the bridge then lengthy diversions may take place that would have an impact on travel time and travel costs. In cases of non-motorised users some trips may no longer be possible due to loss of accessible connectivity.

Work has been undertaken by AECOM to quantify the likely economic impacts of any bridge closure for one year under existing traffic conditions:

Capabilities on project:

Transportation

- Scenario 1 – This assumes that all trips that currently cross the Banff Bridge would use the available diversion routes (via Aberchirder and Turriff) for the duration of the bridge closure.
- Scenario 2 – This assumes that 50% of the 5,600 vehicles per day travelling locally between Banff and Macduff would no longer take place during the period of bridge closure with road users choosing to reduce the frequency of their trips, car share or use other options due to the significant increase in travel costs along the recommended diversion route. The remaining 50% of trips have been assumed to use the recommended diversion route via Aberchirder and Turriff as defined in Scenario 1.

Key Point: The estimated Transport Economic Efficiency impact associated with closure of the Banff Bridge for a period of one year in 2017 under Scenario 1 is £33.2M.

Key Point: Under Scenario 2, it is estimated that the Transport Economic Efficiency impact associated with closure of the Banff Bridge for a period of one year in 2017 would reduce to £17.6M.

Further information on the economic impact of a closure of Banff Bridge is set out in Appendix E of the supporting appendices document.

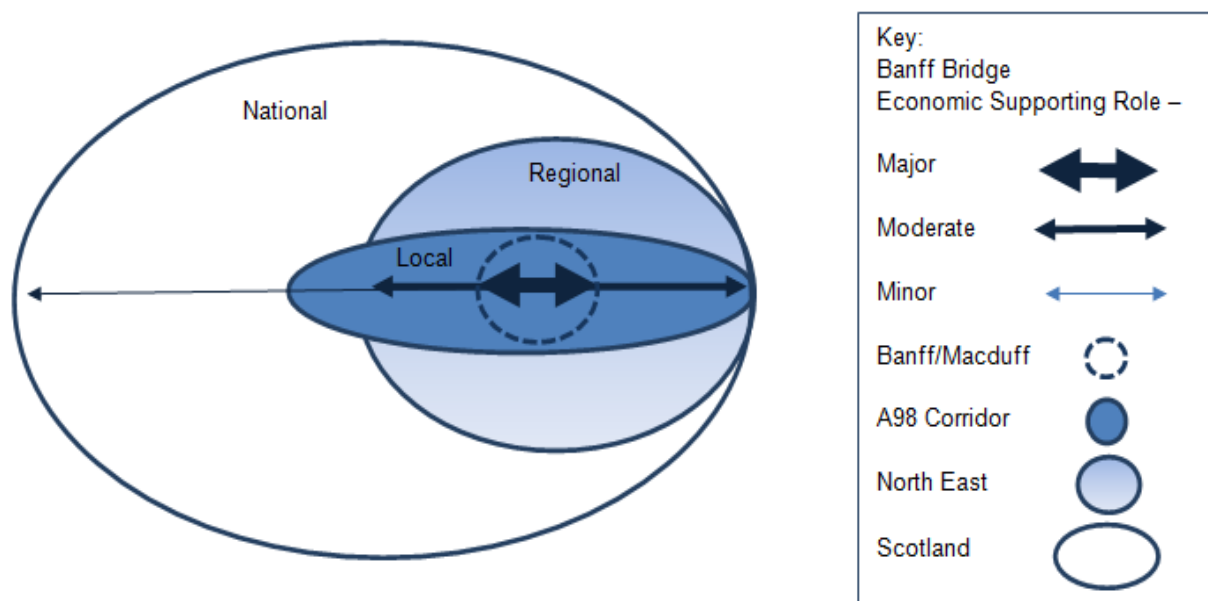
The local study area has towns identified for regeneration plans (Fraserburgh, Peterhead, Banff and Macduff). The area has had low population growth, a rural mix of job types (agriculture, construction and manufacturing) with higher unemployment than the rest of Aberdeenshire. The update of this study introduces a new opportunity to consider using the bridge as a focal point for local celebrations/events: a unique selling point to bring people to the area and to support regeneration plans with such events as light shows or fireworks.

Banff Bridge supports the local, regional and national economy by providing access to employment, employees and provides for the movement of goods by road and access to shipping from its ports, and has a tourism function. A Banff Bridge inter-regional economic relationship has been detected where routes to and from the north east and Moray use the bridge. Moray is traditionally associated with the Highland and Islands region but due to the close proximity to Banff and Buchan there is evidence of economic ties between the two regions that is facilitated by Banff Bridge. Although the majority of traffic using Banff Bridge appears to support the direct local economy in the environs immediately adjacent to the bridge, traffic modelling has shown that around 19% of traffic is more strategic using the A98 to pass through Banff and Macduff to access areas either side including Fraserburgh, Elgin and some trips beyond.

Capabilities on project:

Transportation

Figure 2.13 – Economy and Banff Bridge Economic Supporting Role



The indicative diagram shown in Figure 2.13 illustrates the importance of Banff Bridge in terms of its national, regional and local significance to supporting the economy at these different levels. Within the local study area, the supporting role ranges from major (with respect to the direct day-to-day economic importance of the link between the two towns) to moderate and then minor with increasing distance from the Bridge.

As noted previously, 1,762 individuals travel to Banff for employment, with the highest proportion of people travelling from within Banff itself (30%) and Macduff (23%). A total of 721 (41%) people who travel to Banff for work have an origin to the east/south-east of Banff. This figure includes individuals travelling from Aberdeen City and the A947 Corridor. A total of 739 people travel to Macduff for employment. Of this total, 17% travel from Banff. 278 individuals (38%) have an origin to the west of Macduff and work in the town.

In total, 1,263 individuals reside in Banff and have a usual area of workplace. As noted in Figure 2.9, 530 individuals reside and work within Banff.

Location of work for those that reside in Banff is more dispersed compared to those that travel to Banff for work. After Banff, Turrieff and the immediate surrounding area (Auchterless and Monquhitter) is the most common destination for usual area of work, accounting for 125 trips made (10%), although this is closely followed by Macduff, which accounts for 123 trips (also 10%). When destinations are grouped together, most individuals have a destination to the east of Banff (535 trips).

In total, 1,268 individuals reside in Macduff and recorded a usual area of workplace. Of this total, Banff accounts for the most common destination, accounting for 410 individuals (32%). When destinations are grouped together, including Banff, settlements to the west of Macduff account for the most common destination, with 543 individuals (43%) travelling westward.

Capabilities on project:

Transportation

In addition to local trips for work in the Banff-Macduff locale, there are also a number of work related trips on the A98 extending across the study area. This is particularly notable in the case of the Fraserburgh and Peterhead areas, with a combined total of 50 trips having a destination of Banff from these locations; with 77 trips originating in Banff for these areas.

Key Point: The above figures all serve to demonstrate that these journeys to work rely on Banff Bridge as a means of accessing employment on a daily basis in both directions. In particular, it is apparent that bridge is a key link for residents of Macduff, with settlements to the west, including Banff, (i.e. across the bridge) accounting for nearly half of all travel to work journeys and nearly three times as many people travelling from Macduff to Banff for employment than Banff to Macduff. However, it is also apparent that the bridge serves as a key link for work-related journeys, particular to the east, with a number of individuals living in Banff and working in the Fraserburgh and Peterhead areas, and vice versa supporting the economy on the A98 corridor.

Regionally the bridge has a supporting role to play but only in the study area. The route is recognised by Nestrans in their Regional Transport Strategy as one of the routes catering for strategic and regional movements within the North East. The A98 is included within the 470 miles of class local roads in the Nestrans area which carry 27% of all regional traffic.⁹

Using modelled traffic flows, an estimate of the strategic importance of the A98 Banff Bridge has been determined. The strategic importance relates to A98 traffic that does not originate or is not destined for Banff or Macduff, it also discounts A947 and A97 routing traffic.

The data output has been taken from the recently developed A96 Corridor Road Assignment Model, by kind permission of Transport Scotland. The model has not been calibrated or validated in the Banff area in detail, as the model was designed for A96 trunk road intervention testing; the model does provide a strategic link feed to the A96 providing some indication of strategic movements from the A98 corridor. A single validation check of the model on the A98 Banff Bridge indicated an AADT of 11,800 vehicles that correlates to data collected in November 2015 that indicated a level of around 12,500 AADT.

For the purposes of understanding the strategic importance and the order of magnitude of vehicles and distribution, the A96 model can be seen as giving an indication of strategic 2012 base traffic movements on the A98 in the Banff area. Further calibration and validation would be necessary to use the model for any intervention testing purposes. Proportional differences have been used to take account of any difference between the 2012 model and 2015 surveys.

The resulting number of A98 strategic trips = 2,256vehs per day, which is 19% of the 11,800 modelled AADT.

Furthermore, as the study area is a subsection of the economy of the North East it has moderate benefits for the economy. As the economy of the study area is a small part of the national economy, the bridge subsequently has a minor impact on the national economy.

Appendix E of the supporting appendices document (EALI Assessment) provides a detailed economic commentary on the Banff Bridge study area.

⁹ Extracted from Nestrans Regional Transport Strategy.

Capabilities on project:

Transportation

2.6 Future Growth

The Proposed Aberdeenshire Local Development Plan (LDP) 2016 indicates there is a development allocation for 729 homes in Banff, and 85 homes and 4 hectares of employment land in Macduff.¹⁰ However, it is understood that demand is generally low in this area, with future completions anticipated to be in the region of only around 15-20 per year, based on the most recent Housing Land Audit.¹¹

Additionally, there is an aspiration to link the A97 with the A98 and thus, land for a link road between the A97 and the A98 should be safeguarded in development sites OP2 and OP4.¹²

A review of Local Development Plan growth aspirations is shown in Appendix A of the supporting appendices document. The overall indication is that traffic growth has been and will continue to be low in nature with no intense development expected within the term of the Local Development Plan.

There is a need to protect the access roads to the bridge, with junctions on the Banff side in particular required as part of planning consent for a supermarket development.

2.7 Structural Condition of Bridge

Banff Bridge was designed by John Smeaton and completed in 1780. It was extended transversely on both sides in the late 1800's.

The bridge comprises 7 arches, formed in masonry, supported on masonry piers on timber piles¹³. Recent works, including construction of breakwaters, rip-rap protection and concrete works, have protected the foundations from scour, considering a 1:100 year flood event.

Quantitative structural assessments of the superstructure of the original bridge and its extensions are not available. However, considering the lack of significant cracking and no signs of structural distress, qualitatively the superstructure appears to be sufficient for the current applied loads. The foundations also appear to be sufficient on the basis of deflections and cracking in the superstructure. However, the record drawings show small piles and it is likely that a quantitative assessment would demonstrate the piles to be non-compliant with current standards. The sands and gravels may be sufficient without the piles, for the applied bearing pressures. However, without appropriate scour protection, scour could undermine the foundations resulting in structural damage.

Prior to scour protection works being installed, it was possible that in the event of a major flood, scour would be so severe that the pier pilecaps would be undermined, exposing the timber piles. If unsupported by the surrounding soils, the piles would probably fail and severe damage to the bridge may result. Mott MacDonald has designed scour protection to the existing bridge to guard against a 1:100 year flood event.¹⁴

¹⁰ <https://www.aberdeenshire.gov.uk/planning/plans-and-policies/the-proposed-aberdeenshire-local-development-plan-2016-shaping-aberdeenshire/>

¹¹ <https://online.aberdeenshire.gov.uk/apps/hla/>

¹² <http://www.aberdeenshire.gov.uk/media/11411/sqbanffandbuchan.pdf>

¹³ Copies of original drawings provided in letter from The Royal Society to Donald MacPherson, Aberdeenshire Council, Dated 10th May 2002.

¹⁴ Drawing No. 6/A98/612/B/100, Aberdeenshire Council, February 2011.

Capabilities on project:

Transportation

¹⁵ ¹⁶ ¹⁷ However, BA59 of the DMRB¹⁸ requires a 1:200 year event to be considered. A 1:200 year event is significantly more severe than a 1:100 year event, and it is possible that the scour protection works provided would not be adequate for the 1:200 year event specified by the DMRB.

On the basis of a brief visual inspection, the bridge appears to be in good condition with no significant signs of distress.

2.8 Environmental Context

Banff Bridge is a Category A listed building. It is located within the landscape of Duff house, listed on the Inventory of Gardens and Designed Landscapes and the Banff Conservation Area. In addition there are 42 heritage assets recorded within the 1km study area. These assets include one Scheduled Monument, 15 listed buildings and multiple assets dating from the prehistoric to the modern period.

There are no statutory ecological designations within 2km of the site and none within 5km designated for bats or birds.

It should be noted however that a geological Site of Special Scientific Interest (SSSI), the Whitehills to Melrose Coast designated for its Dalradian geology, is located within 2km of the site and it may be appropriate for consideration to be given to potential impacts on this site in a geological assessment.

There are a number of areas of non-statutory designated ancient woodland and semi-natural ancient woodland located south of Banff Bridge. This includes a stretch of woodland that runs from the south east bank of Banff Bridge along the southern side of the A947 and also along the eastern bank of the River Deveron.

Other areas of ancient and semi-natural ancient woodland are located to the west of the River Deveron, west of the Duff House Royal Golf Club. There are a number of linear strips and pockets of woodland within the wider area.

There are two Sites of Interest to Natural Science located within 1-2km of the Study Area, however both are geological sites and neither has been included within the Aberdeenshire Local Development Plan (LDP) (Aberdeenshire Council, 2012). The Sites of Interest to Natural Science designation is currently being updated along with the LDP. The new designation will be Local Nature Conservation Sites (LNCS). No LNCSSs have been designated within the Study Area in the proposed 2016 Aberdeenshire LDP.

There are a number of protected species that have been recorded within 2km of the site (and 5km for bats and birds) primarily within the last 10 years. There are also a number of notable and locally important species located within 2km on the site.

Appendix F of the supporting appendices document sets out a full ecological desk based study and options appraisal for Banff Bridge.

¹⁵ Drawing No. 6/A98/612/B/101, Revision B, Aberdeenshire Council, April 2011.

¹⁶ Drawing No. 6/A98/612/B/103, Revision A, Aberdeenshire Council, May 2011.

¹⁷ Banff Bridge, Scour Options Appraisal Report, Mott MacDonald, June 2007.

¹⁸ BA59/94 – The design of highway bridges for hydraulic action, Volume 1, Section 3, Design Manual for Roads and Bridges.

Capabilities on project:

Transportation

2.9 Summary

This chapter has provided an overview of the key characteristics of the Banff Bridge study area. This provides important context for the establishment of the main problems, issues, opportunities and constraints affecting the bridge.

Chapter 3 sets out the key outcomes of public and stakeholder consultation undertaken to qualify the key issues associated with Banff Bridge.

Public and Stakeholder Consultation

Capabilities on project:

Transportation

3 Public and Stakeholder Consultation

3.1 Introduction

Analysis of problems and opportunities is a core foundation of any transport study developed in accordance with STAG.

Analysis of the key issues associated with Banff Bridge has been initially informed by the review of the key characteristics of the study area, and work undertaken as part of the initial appraisal in 2008.

In order to further explore problems, issues, opportunities and constraints in the study area, an online public consultation and series of targeted consultations with local stakeholders has been undertaken to support the study.

This chapter summarises the key outcomes of these consultations.

3.2 Public Consultation

In order to better understand existing issues experienced by regular users of Banff Bridge, an online survey was developed and promoted to the communities of Banff and Macduff and the surrounding area. The survey was launched on 26th January 2016, running for 6 weeks until the 8th of March 2016 and was promoted primarily through social media alerts (on Facebook and Twitter) and the local press.

The survey was designed to capture the following information.

- Frequency of travel (by mode) on Banff Bridge;
- Trip origins and destinations;
- Purpose of trip via Banff Bridge;
- Typical mode of travel on Banff Bridge;
- Frequency of experiencing having to slow down or stop on the bridge, or encroach on the footway and contributing factors towards these;
- Frequency of witnessing vehicles having to slow down or stop on the bridge, encroach on the footway, exceeding the speed limit, frequency of witnessing road rage or aggressive behaviour, and accidents/collisions;
- For pedestrians and cyclists, perceptions of safety when using the bridge; and
- Awareness of routes that could be used as an alternative to Banff Bridge.

In addition, respondents were given opportunity to comment on specific issues and problems on Banff Bridge, as well as potential improvements that could be considered by Aberdeenshire Council.

A copy of the survey form is included within Appendix G of the supporting appendices document.

3.3 Public Consultation – Key Outcomes

This section provides an overview of the public consultation results. A full report of the results is provided within Appendix G of the supporting appendices document.

3.3.1 Response Rate

The online survey received a total of 756 responses. This very high level of engagement equates to approximately 10% of the combined population of Banff and Macduff.

Capabilities on project:

Transportation

3.3.2 *Travel Patterns*

The main findings of the survey are listed below.

- The survey found that the majority of those using Banff Bridge do so on a regular basis, with around 78% of respondents travelling on the bridge at least 3 days per week. In terms of frequency of driving across Banff Bridge, the majority of respondents indicated that they do so regularly, with 76% suggesting they do so at least 3 days per week.
- The most common places of origin for those travelling on Banff Bridge are Macduff (32%) and Banff (31%).
- The most common destination for users of Banff Bridge was Banff, which was the destination for 41% of those completing the survey. Macduff (24%) and Aberdeen City (9%) were other common destinations.
- Most respondents (34%) were travelling via Banff Bridge for work purposes highlighting the important role of the bridge in providing access to jobs. Other common reasons for travelling on the Bridge included leisure (18%) and visiting friends or family (18%).
- Respondents' most common method of transport via Banff Bridge was the car with 89% of respondents travelling via this mode.
- Very few people indicated that they travel regularly by bicycle or on foot to cross Banff Bridge.

3.3.3 *Travel Perceptions*

This section summarises the key perceptions of the bridge, as communicated in the online survey responses.

- The majority of drivers regularly ('nearly all the time' and 'often') **experience** having to slow down on Banff Bridge (82%).
- The proportion of respondents who indicated that they have to regularly stop on the bridge was significantly less than this (46%).
- 9% stated that they have to regularly encroach on the footway whilst driving on the bridge. However, over half of respondents indicated that at some time they have had to encroach on the footway whilst driving on the bridge.
- Further analysis of the contributing factors causing slowing, stopping or encroaching on the footway when driving on Banff Bridge suggests that the principal hold ups on the bridge are when vehicles are turning onto or off of Banff Bridge, especially heavy goods vehicles and buses.
- Respondents also frequently stated that they regularly **witness** vehicles having to slow down and stop on the bridge and less regularly witnessed vehicles having to encroach on the footway, road rage or aggressive behaviour or accidents and collisions.
- Of the 460 respondents who stated that they walk across Banff Bridge, over 60% indicated that they feel unsafe whilst doing so. The most common contributing factors given were the high presence of lorries/HGVs, the narrow footways and the high volume of traffic.
- Of the 124 respondents who stated that they cycle across Banff Bridge, over 70% reported feeling unsafe whilst doing so. The most common contributing factors given were the high presence of lorries/HGVs, the narrow carriageways and the high volume of traffic.

Capabilities on project:

Transportation

3.3.4 Specific Issues and Problems

Respondents were also given opportunity to comment on specific issues and problems associated with the bridge. Responses have been grouped into categories to aid the identification of issue types and sorted according to the issue raised the most frequently. This is shown in Table 3.1 below.

Table 3.1 – Problems and Issues experienced on Banff Bridge

Category	Summary of Problem	Approximate numbers of times raised
Bridge width (General)	Banff Bridge is generally too narrow for current levels of traffic.	129
Bridge width (Large vehicles)	Banff Bridge is too narrow for the large vehicles that use it, including HGVs and buses. This is especially the case when two large vehicles have to pass each other on the bridge.	104
Safety concerns	Primarily safety concerns of and for pedestrians due to: the narrow footways, the proximity to passing traffic, vehicles encroaching on the footways, the low height of the bridge walls	91
Encroachment on the footway	Encroachment on the footway most commonly occurs when there are two large vehicles passing each other on the bridge.	66
Footway width	Footway width regarded as an issue on both sides of the bridge, however especially on the south side. Contributing reason for many refusing to make their trip on foot.	61
Bridge no longer suitable for purpose	Banff Bridge is an old, narrow bridge which was never intended to accommodate the traffic levels that it is currently withstands.	57
Junction Issues at Macduff side	There is a lack of space to turn from the A947 onto the bridge and traffic from the bridge turning right onto the A947 is a frequent cause of hold-ups as it is required to cross the line of westbound traffic.	40
Junction Issues (General)	Difficulty of turning onto the bridge from the junctions, queues due to vehicles making right-turns at either sides of the bridge (onto Bridge Road and the A947).	39
Volume of traffic	Large volumes of traffic can cause congestion at times.	37
Implications of closure	Banff Bridge is a vital link, especially for the residents of Banff and Macduff and closure can involve a very lengthy detour if the trip is to still be made.	35
Driver behaviour	Issues including speeding, not using indicators, not giving way to other vehicles (especially large vehicles), overtaking cyclists on the bridge.	22
Junction Issues for Large Vehicles	Difficult for large vehicles to turn onto the bridge from the junctions at either side without crossing the central line of the bridge. This means that it is necessary for drivers travelling in the opposite direction to give way to these vehicles, meaning that it can take a while for large vehicles to be allowed out onto the bridge.	19
Visibility Issues	Issues with visibility when waiting on Bridge Road to turn right onto the A98 (towards Banff) and when on the Macduff side of the bridge waiting to turn right onto the A947 (towards Turriff). At Bridge Road visibility is obscured by the curve of the bridge and traffic travelling westbound and when waiting to turn onto the A947, visibility is obscured by the wall on the west side of the A98 carriageway.	14
Other	Other general concerns about Banff Bridge	9

Capabilities on project:

Transportation

Category	Summary of Problem	Approximate numbers of times raised
Maintenance Delays	Delays due to a build-up of traffic related to any roadworks that are being carried out on or in close proximity to the bridge.	7
Junction Issues at Banff side	A build-up of traffic due to people waiting to turn right onto Bridge Road from the A98 across the line of eastbound traffic, and a build-up of traffic on Bridge Road waiting to turn right onto the A98 towards Banff.	5
Effect of Weather Conditions	Effects of snow and ice, and drainage issues on the Macduff side of the bridge.	5

As shown, the most common issues raised are in relation to the width of the bridge for traffic in general and for large vehicles specifically.

3.3.5 Potential Improvements

Respondents were also given opportunity in the survey to comment on potential improvements that could be considered by Aberdeenshire Council. Responses to this question have also been grouped into categories. This is shown in Table 3.2 below.

Table 3.2 – Potential Improvements

Category	Summary of Suggestion for Improvement	Approximate numbers of times raised
New Road Bridge	Build a new road bridge to cope with the traffic and active travel demands currently placed on the existing bridge. The existing bridge could be maintained for pedestrians and cyclists.	293
New Cycle/Foot Bridge	Build a separate foot/cycle bridge to make the crossing safer for those walking or cycling. A separate foot/cycle bridge may also make these travel modes a more attractive option.	185
Traffic Management/Restrictions	Implement traffic management measures/restrictions to improve flow of traffic on the bridge.	92
Widen/Improve Existing Bridge	Widen/improve the existing bridge.	89
Junction Improvements	Widen the A947 junction with the A98 to facilitate left-turns onto the bridge. Introduce a roundabout, at either or both of the junctions at each side of the bridge in order to ease the hold-ups of traffic undertaking right-turns.	35
Other	Other suggestions to improve Banff Bridge.	18

As shown, the most common suggestion for improvement on Banff Bridge was to build a new bridge entirely.

Capabilities on project:

Transportation

3.4 Business Consultation

The second element of the consultation programme was a targeted series of discussions with key local business contacts provided by Aberdeenshire Council.

Key lines of enquiry (where applicable) for the business consultations were as follows.

- Frequency and purpose of Banff Bridge usage for business purposes;
- What, if any, freight the business transports across the bridge;
- Any specific issues that the business faces in using Banff Bridge;
- Impacts on business in event of closure or restrictions on the bridge;
- Any allowances made in the event of closure (e.g. alternative routing, additional time-allowances etc.);
- Importance of access to markets;
- Importance of access for supply of materials;
- Importance of access for supply and retention of staff;
- What, if anything, could Aberdeenshire Council do to improve the bridge; and
- Would any potential improvements benefit the business, and if so, in what way?

Consultations were successfully undertaken with the following:

- The Spotty Bag Shop – a large shop located in close proximity to Banff Bridge;
- The Banff Springs Hotel – hotel located off the A98 to the west of Banff; and
- Hamlyn's of Scotland – oatmeal supplier located at Boyndie.

Capabilities on project:

Transportation

3.5 Business Consultation – Key Outcomes

This section provides an overview of the public consultation results. Further detail of the consultations is provided within Appendix G of the supporting appendices document.

Table 3.4 – Business Consultation Feedback

Business Consultee	Key Feedback
The Spotty Bag Shop	<ul style="list-style-type: none"> 6-8 deliveries a day are made to the SBS, including at peak times, with most of the goods being transported from south of the border (and as a result, up the A947 from Aberdeen and across Banff Bridge). Previous closures of the bridge have impacted on operations.
The Banff Springs Hotel	<ul style="list-style-type: none"> Banff Bridge is very important for the day to day running of the hotel in terms of the movement of staff, customers and deliveries.
Hamlyn's of Scotland	<ul style="list-style-type: none"> The bridge is used by the company every day. The company employs between 50-60 people, with half living on the other side of the bridge (Macduff side). This movement is undertaken three times per day as there are three shifts per day. In the event of closure, staff are keen to get home before the bridge closes. Inward Goods average around 20 lorries per day, with the movement across the bridge usually replicated on the return journey. An average of ten lorries leave Hamlyn's per day, with 98% using Banff Bridge.

3.6 Additional Consultees

In addition to the public and business consultation, additional stakeholders were invited to comment on Banff Bridge.

These included:

- Police Scotland;
- The Scottish Fire and Rescue Service; and
- The Scottish Ambulance Service.

In addition to this, Sustrans and Banffshire Coast Tourism Partnership were also contacted with regards the study.

Capabilities on project:

Transportation

3.6.1 Additional Consultees – Key Findings

Of the stakeholders consulted, feedback was received from Police Scotland, Sustrans and the Banffshire Coast Tourism Partnership. The key findings of this feedback are summarised in Table 3.5 below, with further detail provided in Appendix G of the supporting appendices document.

Table 3.5 – Additional Feedback

Stakeholder	Key Feedback
Police Scotland	<ul style="list-style-type: none"> The link is a key connection for the A98 and A947. On occasions where there is a requirement to close the bridge, it was noted that police cars are stationed at opposite ends of the bridge, with officers walking across the bridge to service calls. This has a massive impact in responding to calls. The diversion route (via Aberchirder) is long. As the bridge is very narrow, this is not conducive to walking or cycling. Lorries also encroach on the footway/straddle the middle of the carriageway, meaning that the 40mph speed limit is unlikely to be exceeded. In terms of potential improvements to the bridge, the removal of the footway on the north (sea) side of the bridge could improve safety by giving HGVs turning from the A947 greater clearance, though it was noted that while this would be beneficial in traffic flow terms, the greatest footfall is on this side of the bridge due to movements between Banff and Macduff. An alternative would be to consider the removal of the south side (inland) footway.
Regional Cycling Officer (joint funded by Nestrans/Sustrans)	<ul style="list-style-type: none"> Narrow pavements may lead to potential conflict between cyclists/pedestrians and vehicles. Narrow pavements also prevent a safer option (for cyclists) of shared use path. As NCR1 traverses Banff Bridge, Sustrans would support measures to bring it up to an appropriate level for cycling. There is potential for work to be done in and around the local schools/especially Banff Academy, to encourage walking and cycling. The Nestrans Active Travel Action plan supports a strategic cycling network, stretching from Fraserburgh through Macduff/ Banff and onto Portsoy and Moray. A bridge which accommodates for cyclist and walking traffic would be seen as strategically important to this route and the NCR1.
Banffshire Coast Tourism Partnership	<ul style="list-style-type: none"> Tourism is a vital business sector in the Banffshire Coast area. The Partnership promotes both the coastline and inland areas. Easy movement around the area is vital. Banff Bridge is a critical component in linking the areas along the coastline and from inland. The Partnership would support any measures emerging from the study which achieves safe and continuous movement of cars, cyclists and pedestrians.

Capabilities on project:

Transportation

3.7 Public Feedback

Following development of a draft Report, members of the local community around Banff and Macduff were invited to view and comment on the emerging key outcomes of the study at a public drop-in session and exhibition which was held in Banff Academy on Wednesday 21 September 2016.

Exhibition boards were prepared to outline the key outcomes of the study and summarised:

- Feedback received during the initial public consultation;
- The ways in which the feedback has been subsequently used in the study;
- The range of study options and their associated advantages and disadvantages; and
- Information on the economic impact of the bridge.

Representatives of both Aberdeenshire Council and AECOM were available to answer any questions, with attendees invited to complete (or take away) forms allowing comment on the options.

Around 60 members of the community attended the session, which ran between 4pm and 8pm, and a total of 31 feedback forms were completed.

Key feedback from the event is summarised below and illustrated in Figure 3.1.

- The vast majority of feedback (90%) was from members of the public. The majority of respondents were from Banff (35%), and Macduff (52%).
- The most common way to travel on Banff Bridge was by car/van (94% of those responding), followed by walking (48% of those responding)¹⁹.
- In terms of options, Option 7 – a new road bridge – was by far the most preferred option, with all respondents reporting that this would bring a positive benefit.
- Option 4 – a suspended cantilevered footway – was also reasonably favourable with the community, with 41% of respondents perceiving that this would bring a positive benefit.
- Option 2 – Widen existing footway with signal controlled vehicular crossing – was the least popular option amongst members of the community, with 93% reporting that this would have a negative impact and none believing that it would bring a positive benefit.

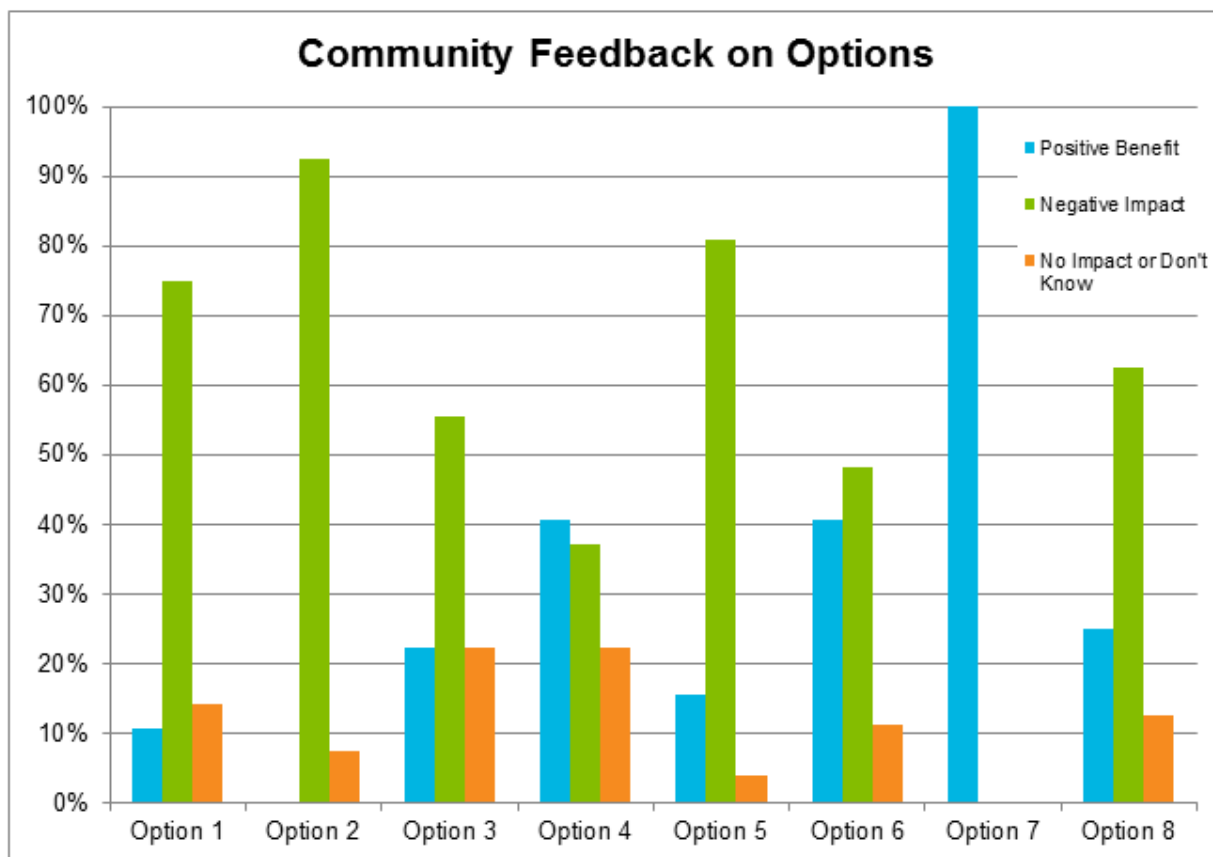
¹⁹ Respondents were able to select more than one mode.

Capabilities on project:

Transportation

Figure 3.1 – Community Feedback* on Banff Bridge Study Options

*based on 31 feedback sheets



Option 1 – Widen Existing Carriageway

Option 2 – Widen Existing Footway with Signal Controlled Vehicular Crossing

Option 3 – Widen the Bridge Deck

Option 4 – Suspend Cantilevered Footway from the Existing Bridge

Option 5 – New Low Level Pedestrian/cycle Bridge

Option 6 – New High Level Pedestrian/cycle Bridge

Option 7 – New Road Bridge

Option 8 – New Bypass

Capabilities on project:

Transportation

This feedback has been taken on board in finalising this report.



Figure 3.2 – Banff Bridge Public Exhibition, Banff Academy, 21 September 2016

3.8 Summary

This chapter has provided a summary of the Public and Stakeholder Consultations undertaken to support the Banff Bridge Initial Appraisal Update. Chapter 4 brings together these key findings, together with the background and context setting information set out in Chapter 2, to confirm the main problems, issues, opportunities and constraints associated with Banff Bridge, and the Transport Planning Objectives for the study.

Problems, Issues, Opportunities and Constraints and Transport Planning Objective Setting

Capabilities on project:

Transportation

4 Problems, Issues, Opportunities and Constraints and Transport Planning Objective Setting

4.1 Introduction

This chapter confirms the problems, issues, opportunities and constraints relating to Banff Bridge and provides a set of transport planning objectives (TPOs) for the Initial Appraisal Update. The objectives have been informed by the review of problems and issues in the study area and the outcomes of the targeted discussions with key stakeholders and online public consultation.

In addition, cognisance has been taken of the objectives developed for the previous appraisal in 2008, as well as the objectives of the Aberdeenshire Local Transport Strategy. These have been reviewed in the context of the revised problems and issues, to ensure that they provide appropriate focus for the initial appraisal update.

4.2 Problems, Issues, Opportunities and Constraints

The principal problems, issues, opportunities and constraints associated with Banff Bridge are set out in Figure 4.1 below.

<p>PROBLEMS</p> <ul style="list-style-type: none"> Perceived problems are the width of the bridge for the size of vehicles and level of traffic using it, safety concerns for pedestrians and encroachment of vehicles on the footway. Space available on the bridge is limited with narrow (sub-standard) footways and a narrow carriageway, causing larger vehicles to span both sides of the carriageway and pedestrian accessibility to be below current standards. There is evidence of instances of vehicles on the bridge requiring to slow down, stop or wait, or encroaching on the footway to pass other vehicles. Survey data has shown that over a 12 hour period, there were 112 such instances, 74 of which involved HGVs. There was a total of 14 footway encroachments on the day of the survey. There is therefore a road safety concern relating to the interaction risk of pedestrians/cyclists and vehicles on the bridge. There have been two previous incidents of the bridge parapet being hit by vehicles in the last 5 years but no personal injury accidents. There is regular intermittent queuing on the approaches to the bridge primarily caused by large vehicles encroaching on opposing traffic streams at the junctions and on the bridge. Banff Bridge suffers from scouring of its foundations due to the action of the river, tidal flows and coastal ground conditions. 	<p>ISSUES</p> <ul style="list-style-type: none"> The bridge has high traffic flows – with flows on the bridge higher than on the wider road network surrounding the study area (i.e. the A98, A947 and A97), with the bridge directly serving the Banff/Macduff area. 12,500 vehicle movements per day. Origin-destination data from the 2011 census highlights the importance of the bridge, particularly for movements between Banff and Macduff. The bridge is very important for the two towns for typical ‘everyday life’ activities. Surveys have found a 3-hour weekday peak of traffic on the bridge, beginning earlier in the afternoon. (2-5pm). There are up to 180 pedestrian movements per day between Banff and Macduff across the bridge. The principal flow of people is from Bridge Road towards Macduff and vice versa, using the north side of Banff Bridge. These movements are tidal (with the majority Macduff-Banff earlier in the day, and Banff-Macduff later in the day). Measures have been taken to increase the resilience of the bridge to severe flood events, but as with all similar structures, there remains a potential vulnerability during severe storm / flood events. Should there be any need for closure of the bridge, lengthy diversions may take place (via the A947, B9025 and A97) that have an impact on travel times and costs. There is understood to be desire within the Banff/Macduff community for a new road bridge or new footbridge (from the public consultation). Any full or partial closure and subsequent repair/replacement of the existing bridge would be extremely disruptive to communities and the wider region, as evidence by the disruption and impact of recent flood events on Deeside and elsewhere during the winter of 15/16. Significant engineering resource would be required to deal with such a situation.
<p>OPPORTUNITIES</p> <ul style="list-style-type: none"> Both Banff and Macduff are the subject of Town Centre Action Plans by Aberdeenshire Council. Banff Bridge is a key link of the regionally strategic A98 route from the regeneration towns of Fraserburgh and Peterhead to Fochabers, Elgin and on to Inverness via the A96. Nestrans Active Travel Action plan supports a strategic cycling network along the north Aberdeenshire coast from Fraserburgh to Moray – a Banff-Macduff link would be strategically important to this route and National Cycle Route 1. Opportunity to safeguard the existing historic Banff Bridge as an attraction in its own right. This was previously highlighted in the 2008 study. Opportunity to use the bridge as a focal point for local celebrations/events, a unique selling point to bring people to the area for anniversaries/promotions/light shows/fireworks. 	<p>CONSTRAINTS</p> <ul style="list-style-type: none"> Footway widths are narrow for pedestrians, particularly on the south side of the bridge. No viable alternative route between Banff and Macduff for non-motorised users. There is a need to protect the access roads to the bridge, with junctions on the Banff side in particular required as part of planning consent for a supermarket development. Constraints associated with the historical listed status of the existing bridge. Environmental constraints exist in the vicinity of the bridge including the protected landscape from Duff House. Rare moths inhabit the existing bridge, and otters may be present near the bridge. Banff Bridge is exposed to a salt air environment at the mouth of the River Deveron as it meets the North Sea, and is susceptible to stormy weather conditions.

Capabilities on project:

Transportation

4.3 Objective Development

The following objectives were established as part of the initial appraisal in 2008.

- To support economic development of the area through the provision of an iconic feature that would be an attraction in its own right aiding the generation of increased tourist revenue.
- To enhance recreational opportunities within the area.
- Increase the modal share of trips undertaken by bicycle and foot.
- Reduce the risk of conflict between vehicles and non-motorised users.
- Reduce the risk of conflict between vehicles.
- Improve operational capacity of the bridge to facilitate the economic development of the area.

This Initial Appraisal Update provides opportunity to reconsider the ongoing validity of these objectives in light of the problems, issues, constraints and opportunities identified above.

Table 4.1 – Review of Previous Study TPOs

Existing Objective	Comment
<i>To support economic development of the area through the provision of an iconic feature that would be an attraction in its own right aiding the generation of Increased tourist revenue.</i>	It is considered that the existing objective places too much emphasis on the bridge as an 'attraction'. The objective should have a stronger focus on the role of the bridge as a key transport link for Banff and Macduff and the wider businesses and communities along the A98.
<i>To enhance recreational opportunities within the area.</i>	This does not fully address any of the problems/issues/opportunities/constraints identified and is recommended to be removed as an objective.
<i>Increase the modal share of trips undertaken by bicycle and foot.</i>	Addresses the role the bridge can play in supporting walking and cycling, but does not address issues associated with these modes. It is considered that this 'objective' would be more appropriate as a target / basis for monitoring the impact of options.
<i>Reduce the risk of conflict between vehicles and non-motorised users.</i>	Addresses problem relating to space availability on the bridge, and bridge footway encroachment incidents. Should be combined with objective below. It is considered that the need to reduce conflict risks should be maintained in the revised objective.
<i>Reduce the risk of conflict between vehicles.</i>	Addresses problem relating to space availability on the bridge, and bridge delay incidents. Should be combined with objective above. It is considered that the need to reduce conflict risks should be maintained in the revised objective.

Capabilities on project:

Transportation

Existing Objective	Comment
<i>Improve operational capacity of the bridge to facilitate the economic development of the area</i>	Addresses issue of bridge being a delay point for traffic. However, overlaps with Objective 1 in terms of focus on economic development. Requirement to consider demand for all modes.

4.3.1 Established Policy Directives

In reviewing the objectives for the Initial Appraisal Update, cognisance has also been taken of the objectives in the 2012 Aberdeenshire Local Transport Strategy, to ensure that objectives in relation to Banff Bridge complement the overall transport policies of the Council. These are:

- Promote Sustainable Economic Growth – maximise the effectiveness of the transport network, services and facilities.
- Promote Social Inclusion and Accessibility – improve connections within and between communities, increasing accessibility of the transport network.
- Protect the Environment – remove barriers to active and sustainable travel helping to improve health and reduce emissions.
- Improve Safety – enhance the safety of all users of the transport network.
- Improve Integration – develop and improve integration between all forms of transport and improve connectivity within and beyond Aberdeenshire.

In addition to this, the objectives for the study have also been carefully developed such that they do not compromise wider established policy directives in:

- The National Transport Strategy (NTS);
- The Nestrans Regional Transport Strategy (RTS);
- The Nestrans Active Travel Action Plan (AcTrAP); and
- Scottish Planning Policy (SPP).

Capabilities on project:

Transportation

4.4 Banff Bridge Initial Appraisal Update – TPOs

Drawing on the above, the following objectives are considered to be appropriate and relevant in the context of the work that has been undertaken to date. Table 4.2 confirms the TPOs for the study, and the problems, issues, constraints and opportunities (PICOs) that they will address.

Table 4.2 – Banff Bridge TPOs

Objective	PICOs addressed
Maximise the effectiveness of the link between Banff and Macduff, as the principal enabler of economic and social activity within and between the two towns.	<ul style="list-style-type: none"> • Recognises the dependence of both towns on the bridge for day-to-day activities. • Supports Banff and Macduff Town Centre Action Plans.
Maximise the effectiveness of the link between Banff and Macduff, to provide a viable connection to businesses and communities along the A98 east and west of the bridge.	<ul style="list-style-type: none"> • Protects regionally strategically important A98 route. • Seeks to address structural concerns associated with Banff Bridge.
Improve the user experience of the transport link between Banff and Macduff by reducing the risk of conflict between vehicles and non-motorised users, enhancing safety for all.	<ul style="list-style-type: none"> • Addresses space availability issues on the bridge. • Addresses concerns relating to interaction of pedestrians/cyclists/vehicles on the bridge.
Provide active and sustainable travel opportunities between Banff and Macduff, improving local accessibility and connectivity, helping to improve health and reduce emissions, and providing a historic social connection between two communities.	<ul style="list-style-type: none"> • Provides support for NMU demand between Banff and Macduff. • Increased walking/cycling has the potential to lessen emission impacts of queuing vehicles on bridge/bridge approaches. • Emphasises local linkages between Banff and Macduff.
Enhance opportunities to celebrate and sensitively promote the historic local built environment and landscape of Banff Bridge as an asset to the local environment and economy.	<ul style="list-style-type: none"> • Addresses the constraints associated with the historical listed status of the existing bridge and other constraints associated with biodiversity and landscape features.

4.5 Summary

This chapter has confirmed the TPOs for the Initial Appraisal Update. The options to be considered for appraisal (Chapter 5) will be appraised against these objectives in Chapter 6.

Option Generation

Capabilities on project:

Transportation

5 Option Generation

5.1 Introduction

The initial Banff Bridge STAG study in 2008 considered six options. These were:

- **Option 1** – Widen the carriageway within the constraints of the existing deck width.
- **Option 2** – Widen existing footway with signal controlled vehicular crossing.
- **Option 3** – Widen the bridge deck.
- **Option 4** – Hang new footway onto existing parapets.
- **Option 5** – Provide new pedestrian/cycle footbridge.
- **Option 6** – Provide new road bridge.

The appraisal found that Option 5 (a new pedestrian/cycle footbridge) performed the strongest against the appraisal criteria and, if implemented, may also enable the carriageway of the existing bridge to be widened, reducing issues associated with larger vehicles passing each other.

5.2 Option Generation

In taking forward this initial appraisal update, the original six options for the study have been re-examined, with a principal aim of confirming that they remain viable in technical terms, and ensuring that they provide a response to the problems/issues and objectives that have been developed in this current piece of work.

Taking this into account, the following options have been developed for the purposes of appraisal based on STAG. Appendix C of the supporting appendices document provides further detail on each of the options, and option cost estimates.

Table 5.1 – Banff Bridge Initial Appraisal Update: Study Options

Option	Option Description
Option 1 – Widen existing carriageway within constraints of existing deck width	This option requires the south footway to be reduced in width to the 450mm minimum required by TD27 ²⁰ , so that the carriageway width can be increased to 5930mm. This is marginally lower than the minimum requirement of 6000mm specified in TD27. The other footway would become 1500mm wide. It would require detailed assessment of pedestrian crossing opportunities at the east and west ends of the bridge.
Option 2 – Widen existing footway with signal controlled vehicular crossing	<p>This option reduces the width of the carriageway to 4000mm consistent with a single lane as recommended in TD27. Both footways can be widened to achieve or exceed the 2000mm desirable width specified in TD27. Traffic lights will be provided at each end of the bridge to control direction of traffic movement.</p> <p>To support this option, a separate assessment to determine the feasibility of implementing a one-way working traffic signal arrangement on Banff Bridge has been undertaken. This forms Appendix D in the supporting appendices document.</p>

²⁰ TD27/05, Cross-Sections and Headrooms, Volume 6, Section 1, Design Manual for Roads and Bridges.

Capabilities on project:

Transportation

Option	Option Description
Option 3 – Extend bridge deck	This option involves strengthening the existing foundations and providing extensions to both the existing foundations and the existing superstructure. The extension(s) would allow for a 2m footpath on the north and south side of the bridge and 7.3m wide carriageway.
Option 4 – Suspend Cantilevered Footway from the Existing Bridge	This option comprises suspending a cantilevering footway from the south side of the existing bridge. The General Arrangement drawing for this option is provided in Appendix C, drawing number 60443702/BR/004. The footways on the bridge could then be reduced in width to increase the available carriageway width for road vehicles. Pedestrian deterrent paving could be used on the remaining footways on the existing bridge to encourage pedestrians to use the cantilevered footway.
Option 5 – New low level pedestrian/cycle bridge	<p>This option provides a low level pedestrian/cycle bridge north of the existing road bridge.</p> <p>The majority of pedestrian users of the existing bridge are heading east-west, so the desire lines suggest the proposed footbridge should be located north of the road bridge. The north footway of the road bridge could be reduced to a minimum, with the south footway also reduced, to increase the carriageway width for road users.</p>
Option 6 – New high level pedestrian/cycle bridge	<p>This option provides a high level pedestrian/cycle bridge north of the existing road bridge.</p> <p>The majority of pedestrian users of the existing bridge are heading east-west, so the desire lines suggest the proposed footbridge should be located north of the road bridge. The north footway of the road bridge could be reduced to a minimum, with the south footway also reduced, to increase the carriageway width for road users.</p>
Option 7 – New road bridge	<p>If a new road bridge was constructed upstream of the original bridge, traffic could be removed from the original bridge, which could then be used for pedestrian/cycle use. Full width carriageways and footways could also be provided on the new road bridge. A roundabout would be required west of the bridge, with a junction to the east.</p> <p>There would be modest departures with respect to road alignment at each end of the new bridge. A closed abutment would be required at the east end of the bridge, to support the required road alignment for the junction at this location. A closed abutment would also be provided at the west abutment in the interests of symmetry and aesthetics.</p>

Capabilities on project:

Transportation

Option	Option Description
Option 8 – New Bypass	This option involves providing a significant length of new road running along the east bank of the River Deveron before crossing it close to the south extremity of the golf club. The road would then re-join either the local road network at Sandyhill Road, 200 metres south-west of Banff, or continue to bypass Banff before re-joining the A98 near Inverboyndie. This concept has been developed based on the ambition in the Aberdeenshire Local Development Plan to provide a link between the A97 and A98 west.

In addition, it is important for the purposes of a transparent and objective-led appraisal that a **Do-Minimum scenario** is established. This will provide a basis in which to compare the relative benefits or disbenefits of the options listed above. This appraisal assumes that a Do-Minimum scenario retains the status quo; i.e. there are no changes to the existing Banff Bridge.

5.2.1 Changes to Options Since 2008 Appraisal

As Table 5.1 indicates, there have been some amendments to the options since the 2008 work. Table 5.2 below confirms the changes which have been made, and the reason for these changes.

Table 5.2 – Derivation of Options for Initial Appraisal Update

Original Option	2016 Initial Appraisal Update Changes
Option 1 – Widen the carriageway within the constraints of the existing deck width.	No change to the concept but further design detail investigated.
Option 2 – Widen existing footway with signal controlled vehicular crossing.	No change to the concept but further design detail investigated. Supporting transport modelling undertaken.
Option 3 – Widen the bridge deck.	No change to the concept but further design detail investigated.
Option 4 – Hang new footway onto existing parapets.	No change to the concept but further design detail investigated.
Option 5 – Provide new pedestrian/cycle footbridge.	Option has been split into two variants: a low level pedestrian/cycle footbridge (Option 5) and a high level pedestrian/cycle footbridge (Option 6).

Capabilities on project:

Transportation

Original Option	2016 Initial Appraisal Update Changes
Option 6 – Provide new road bridge.	<p>This is now Option 7. This option now considers a new road bridge on to the south of the existing Banff Bridge, as opposed to a new bridge downstream (i.e. north of the existing Bridge), which was the focus of the option appraised in 2008, from a design developed in the 1970s.</p> <p>Option 8 (new bypass) is a new option that has not previously been considered.</p>

Option Appraisal

Capabilities on project:

Transportation

6 Initial Option Appraisal

6.1 Introduction

This chapter presents the initial appraisal of the Banff Bridge study options outlined in Chapter 5.

6.2 Initial Option Appraisal Overview

This initial appraisal update will be undertaken in accordance with STAG. The key assessment criteria for the Banff Bridge study options are set out in the sections below.

6.2.1 Do-Minimum

Each option will be appraised overall against a Do-Minimum scenario. For this appraisal, this scenario assumes no changes to the existing Banff Bridge are made (i.e. the status quo is retained).

6.2.2 Transport Planning Objectives

Each option will be subject to a qualitative appraisal against the Transport Planning Objectives that have been established for the study:

1. Maximise the effectiveness of the link between Banff and Macduff such that it supports sustainable economic growth in the area, and provides a viable wider connection to businesses and communities along the A98 corridor.
2. Improve the user experience of the transport link between Banff and Macduff by reducing the risk of conflict between vehicles and non-motorised users, enhancing safety for all.
3. Provide active and sustainable travel opportunities between Banff and Macduff, improving local accessibility and connectivity, helping to improve health and reduce emissions, and providing a historic social connection between two communities.
4. Enhance opportunities to celebrate and sensitively promote the historic local built environment and landscape of Banff Bridge as an asset to the local environment and economy.

6.2.3 STAG Criteria

Each option will also be subject to an initial appraisal against each of the five STAG criteria.

Table 6.1 – STAG Criteria

STAG Criteria	Description
Environment	<ul style="list-style-type: none"> Highlights the environmental impacts of an option, against a number of environment sub-criteria. Appendix F of the supporting appendices document contains a detailed initial options environmental appraisal.
Safety	<ul style="list-style-type: none"> Comprises two sub-criteria of accidents and security.
Economy	<ul style="list-style-type: none"> Comprises three sub-criteria of Transport Economic Efficiency, Wider Economic Benefits and Economic Activity and Location Impacts (EALI). For this study, specific focus has been given to an EALI assessment as requested by Aberdeenshire Council. This is detailed in full in Appendix E of the supporting appendices document and summarised in this chapter.
Integration	<ul style="list-style-type: none"> Comprises three sub-criteria of Transport Integration, Transport and Land-Use Integration and Policy Integration.
Accessibility and Social Inclusion	<ul style="list-style-type: none"> Comprises two sub-criteria of Community Accessibility and Comparative Accessibility.

Capabilities on project:

Transportation

For the initial appraisal update, the assessment will consider an overall impact on each criterion, rather than impacts on the individual components described above.

6.2.4 Implementability Criteria

Options will also be assessed on the grounds of their implementability, as described in the STAG Guidance²¹, as noted below:

Table 6.2 – Implementability Criteria

Implementability Criteria	Description
Technical	<ul style="list-style-type: none"> Initial assessment of the feasibility of construction or implementation of an option as well as any associated cost, timescale or deliverability risks.
Operational	<ul style="list-style-type: none"> An assessment of who would operate the option and any other issues which may impact on its operation.
Affordability	<ul style="list-style-type: none"> An assessment of the scale of financial burden on the promoting authority and other possible funding organisations, as well as associated risks.
Public Acceptability	<ul style="list-style-type: none"> An assessment of the likely public response to an option.

Technical and operational feasibility and public acceptability are assessed on the extent of risk (ranging from low risk to very high risk). Affordability takes account of the anticipated cost of the option, with options being scored as high risk (highly likely to be unaffordable), medium risk (some risk of being unaffordable) and low risk (little risk of being unaffordable).

6.2.5 Scale of Impacts

For each assessment criterion, impacts of options will be assessed using the seven-point scale as set out in STAG, as specified within Table 6.3 below.

Table 6.3 – STAG Guidance Seven-Point Scale

Impact	Description
Major beneficial impact (+3)	These are benefits or positive impacts which, depending on the scale of benefit or severity of impact, should be a principal consideration when appraising an option.
Moderate beneficial impact (+2)	The option is anticipated to have only a moderate benefit or positive impact, and although they would not be taken in isolation, these scores may be a key consideration in the overall appraisal of an option when considered alongside other factors.
Minor beneficial impact (+1)	The option is anticipated to have only a small benefit or positive impact. Small benefits or impacts are those which are worth noting, but are not likely to contribute materially to determining whether an option is taken forward.
No benefit or impact (0)	The option is anticipated to have no or negligible benefit or negative impact.

²¹<http://www.transportscotland.gov.uk/report/i9760-05.htm>

Capabilities on project:

Transportation

Impact	Description
Minor negative impact (-1)	The option is anticipated to have only a small negative impact. Small impacts are those which are worth noting, but are not likely to contribute materially to determining whether an option is taken forward.
Moderate negative impact (-2)	The option is anticipated to have only a moderate negative impact, and although they would not be taken in isolation these scores may be a key consideration in the overall appraisal of an option when considered alongside other factors.
Major negative impact (-3)	These are negative impacts which, depending on the severity of impact, should be a principal consideration when appraising an option.

6.2.6 *Rationale for Selection or Rejection*

The appraisal of the options against the suite of assessment criteria above will determine whether any option should be rejected from further consideration, or retained for further assessment by Aberdeenshire Council.

6.2.7 *Appraisal Summary Tables*

Appraisal Summary Tables (ASTs) for each of the options considered in the study are set out in Appendix H of the supporting appendices document.

6.3 **Do-Minimum**

This appraisal assumes that a Do-Minimum scenario retains the status quo; i.e. there are no changes to the existing Banff Bridge.

6.3.1 *Performance against Transport Planning Objectives*

Objective 1 – Maximise the effectiveness of the link between Banff and Macduff, as the principal enabler of economic and social activity within and between the two towns

As the Do-Minimum retains the status quo, it maintains the current level of connectivity between the two towns, although does not provide opportunity to maximise the effectiveness of the link between Banff and Macduff.

Objective 2 – Maximise the effectiveness of the link between Banff and Macduff, to provide a viable connection to businesses and communities along the A98 east and west of the bridge

As noted for Objective 1, the Do-Minimum retains the status quo, maintaining the current level of connectivity between the two towns, although does not provide opportunity to enhance the viability of the connection to businesses and communities along the A98 east and west of the bridge.

Objective 3 – Improve the user experience of the transport link between Banff and Macduff

As the Do-Minimum retains the status quo, it does not provide opportunity to improve user experience.

Objective 4 – Provide active and sustainable travel opportunities between Banff and Macduff

No new active and sustainable travel opportunities are associated with the Do-Minimum.

Objective 5 – Enhance opportunities to celebrate and sensitively promote the historic local built environment and landscape of Banff Bridge

The Do-Minimum would have limited impact on the historic local built environment and landscape of Banff Bridge as it retains the status quo.

Capabilities on project:

Transportation

6.3.2 *Environment*

The Do-Minimum would be anticipated to result in no discernible change on the visual amenity of neither the bridge nor its setting. There would be no effects on landscape character, visual amenity, ecology or any other environmental criteria.

6.3.3 *Safety*

As the Do-Minimum option involves no improvements to the existing Banff Bridge, there would be negative impacts on safety, as occurrences of large vehicles crossing the bridge and mounting the kerb in order to pass each other would continue, as would the need to rely on the judgement of drivers. Therefore there continues to be a risk of severe injury to pedestrians if no other options were considered.

6.3.4 *Economy*

This option would be expected to generally have a negligible impact on the economy. Impacts would most likely be felt were the bridge required to be closed for any reason (e.g. during adverse weather or maintenance).

6.3.5 *Integration*

The Do-Minimum offers no opportunities for improvement in transport integration.

6.3.6 *Accessibility and Social Inclusion*

The Do-Minimum may have a minor negative impact on accessibility as it is associated with some safety and pedestrian amenity issues.

6.3.7 *Technical Feasibility*

The Do-Minimum assumes no changes to the current bridge and is therefore technically feasible.

6.3.8 *Operational Feasibility*

The Do-Minimum does nothing to enhance the resilience of the bridge to scour damage in the event of a flood significantly more onerous than a 1:100 year event.

6.3.9 *Affordability*

There are no costs associated with the Do-Minimum, other than those relating to any bridge maintenance that would be undertaken by Aberdeenshire Council. However, should there be closure of the bridge for weather/maintenance reasons, there would be a cost to society in terms of extra costs associated with diversion routes.

6.3.10 *Public Acceptability*

There is a preference amongst the local population of Banff and Macduff for improvements to the current link between the two towns.

Of the 756 respondents to the public consultation, 544 stated a need for an improvement over the current situation.

6.3.11 *Rationale for Selection or Rejection*

The Do-Minimum should be retained for the purposes of comparison, and in the result of no other action, it represents the default status quo scenario.

Capabilities on project:

Transportation

6.4 Option 1 – Widen Existing Carriageway

This option involves the reduction of the south footway on Banff Bridge to support the widening of the existing A98 Banff Bridge carriageway.

6.4.1 Performance against Transport Planning Objectives

This option provides some support for elements of the Transport Planning Objectives for the study.

Objective 1 – Maximise the effectiveness of the link between Banff and Macduff, as the principal enabler of economic and social activity within and between the two towns

This option recognises the importance of the link between Banff and Macduff. In doing so, the option will provide wider support for the Banff and Macduff Town Centre Action Plans. In particular, it would support the objective to celebrate the rich history, heritage and culture of Banff and Macduff (facilitating and supporting events that increase footfall and keep people in the area). However, in the short term it may cause disruption during construction.

Objective 2 – Maximise the effectiveness of the link between Banff and Macduff, to provide a viable connection to businesses and communities along the A98 east and west of the bridge

This option protects the regionally strategically important A98 route. As noted for Objective 1, the option will provide wider support for the Banff and Macduff Town Centre Action Plans. In particular, it would support the objective to celebrate the rich history, heritage and culture of Banff and Macduff (facilitating and supporting events that increase footfall and keep people in the area). However, in the short term it may cause disruption during construction.

Objective 3 – Improve the user experience of the transport link between Banff and Macduff

For pedestrians on the north side of the bridge, this option represents an improvement in footway width, and, as a result, a reduced likelihood of vehicles mounting the kerb and impacting on pedestrians and feelings of safety. However, this option removes the south footway, and consequently introduces additional need to cross the carriageway for some pedestrians. This should be considered further (see Section 6.4.3).

Objective 4 – Provide active and sustainable travel opportunities between Banff and Macduff

This option would provide some support for this TPO, given that the north footway would become wider for pedestrians, and there would be greater space on the road carriageway (including for cyclists), however, as this option removes the south footway, there would be additional need to cross the carriageway for some pedestrians. This should be considered further (see Section 6.4.3).

Objective 5 – Enhance opportunities to celebrate and sensitively promote the historic local built environment and landscape of Banff Bridge

This option would have limited impact on the historic local built environment and landscape of Banff Bridge.

6.4.2 Environment

The extent of the proposed change would be at the level of the deck within the existing structure and therefore result in no discernible change on the visual amenity of neither the bridge nor its setting. As a result, there are no anticipated effects on landscape character or visual amenity.

This option would have a physical effect on the Category A bridge, although the effect on the significance of the bridge would be minimal. There would be limited negative effect on the significance of other heritage assets from the alterations to the decking of the bridge.

The ecological impacts associated with this option are predicted to be restricted to the construction phase. There may be temporary loss of habitat to accommodate a construction compound, although there should be the potential to site this away from sensitive habitat. Vibration and noise from construction has the potential to disturb any bats that may be roosting within the bridge structure.

Bats surveys would be required in Stage 2.

Capabilities on project:

Transportation

6.4.3 *Safety*

This option would reduce the necessity for large vehicles crossing the bridge to mount the kerb in order to pass each other. As a result, the need to rely on the judgement of drivers and potential risk of severe injury to pedestrians would also be reduced.

However, as Option 1 removes the footway provision on the upstream (south) side of the bridge, then a review of pedestrian crossing facilities at both ends of the bridge would require to be undertaken in detail as a mitigation measure. The safety assessment has already identified that the Bell-mouth of the western junction would benefit from improved pedestrian provision and that it would be difficult to provide a suitable crossing on the bridge on the desire line at the east end of the bridge. However, at the east end of the bridge, there is scope to review a crossing point on the straight before the entry to the bridge in a section of central hatching. This type of crossing would be subject to a detailed pedestrian crossing assessment.

In this option, it is assumed National Cycle Route 1 would continue to remain on-road across Banff Bridge.

6.4.4 *Economy*

This option would be expected to have a minor beneficial impact on the local economy in Banff and Macduff through more efficient movement of traffic, particularly HGVs and larger vehicles. Regular intermittent queuing on the approaches to the bridge should be reduced under this option, though there may still be issues with people waiting to turn right.

6.4.5 *Integration*

In terms of transport integration, a widened carriageway may provide support for the movement of buses across the bridge. No impacts on transport and land-use integration are anticipated with this option.

However, as this option may contravene national policies including Scottish Planning Policy, particularly as it involves the removal of facilities for pedestrians, this option is considered to have a minor negative impact on integration overall, however, mitigation measures may assist in addressing this.

6.4.6 *Accessibility and Social Inclusion*

This option will result in an overall improvement in accessibility for vehicular movements between Banff and Macduff, owing to the additional space afforded for passing vehicles by the widened carriageway.

However, this option would have a negative impact on accessibility for non-motorised users due to the increase in road space it provides. This could make pedestrian access into Banff in particular more difficult from the A947 side of the bridge, as the width of the south footway on the bridge would be reduced. Alternative crossing points would be required elsewhere.

6.4.7 *Technical Feasibility*

Overall, this option is considered to be technically feasible. There would be a requirement to reroute services within the south footway to accommodate the increased carriageway width. In structural terms, this option may increase eccentric loading by vehicles on the foundations, which could potentially be highly utilised at present. It is also likely to increase loading on the extensions to the arch and precipitate arch ring separation.

6.4.8 *Operational Feasibility*

There are no significant issues anticipated with regard to the operational feasibility of this option. However it does nothing to enhance the resilience of the bridge to scour damage in the event of a flood significantly more onerous than a 1:100 year event.

6.4.9 *Affordability*

There will be costs associated with the re-routing of services within the south footway. However, overall, this option is more affordable than some other options which involve a change relative to the Do-Minimum.

Capabilities on project:

Transportation

6.4.10 *Public Acceptability*

This option is likely to be publicly supported by road users in Banff and Macduff, as it removes constraints associated with vehicular movements across the existing bridge. It is also anticipated that it would be supported by local businesses that rely on goods deliveries, and by other HGV operators that traverse the A98 route.

However, it is unlikely to be supported by non-motorised users, particularly those that access the bridge from the A947 as this option introduces a new barrier to walking. Increased walking distances would affect 16% of people using the bridge and may cause a perceived safety concern with people seeking to cross the road at unsuitable locations. Mitigation measures should be considered to address this.

6.4.11 *Rationale for Selection or Rejection*

On the grounds that this option supports several of the TPOs for this study, and has some positive impacts against STAG and implementability criteria, it is **selected** for further assessment, and more detailed design of pedestrian mitigation measures at both junctions at each end of the bridge.

6.5 **Option 2 – Widen Existing Footway with Signal Controlled Vehicular Crossing**

This option reduces the width of the carriageway to 4000mm consistent with a single lane. In this option, both footways would be widened, with traffic lights provided at each end of the bridge to control direction of traffic movement.

6.5.1 *Performance against Transport Planning Objectives*

This option provides some support for elements of the Transport Planning Objectives for the study.

Objective 1 – Maximise the effectiveness of the link between Banff and Macduff, as the principal enabler of economic and social activity within and between the two towns

This option would limit the effectiveness of the link between Banff and Macduff by reducing the flow of traffic to one direction at a time. As a further consequence, it may impact on the objectives and proposals within the Banff and Macduff Town Centre Action Plans by restricting movement between them.

Objective 2 – Maximise the effectiveness of the link between Banff and Macduff, to provide a viable connection to businesses and communities along the A98 east and west of the bridge

This option would increase congestion and delay at this point of the regionally strategically important A98 route. As noted for Objective 1, as a further consequence, it may impact on the objectives and proposals within the Banff and Macduff Town Centre Action Plans by restricting movement between them.

Objective 3 – Improve the user experience of the transport link between Banff and Macduff

This option will significantly reduce the risk of vehicle collisions and addresses the concerns relating to space availability issues on the bridge, with particular reference to the interaction of pedestrians/cyclists/vehicles on the bridge. However, this will introduce additional delay to vehicular journeys, which will detract from user experience.

Objective 4 – Provide active and sustainable travel opportunities between Banff and Macduff

This option provides for non-motorised user demand between the towns by providing widened footways and reducing the amount of vehicular traffic on the bridge at one time.

Objective 5 – Enhance opportunities to celebrate and sensitively promote the historic local built environment and landscape of Banff Bridge

This option would provide some support for this TPO by enabling the existing Banff Bridge to be used more sustainably by reducing live loading on the existing foundations, though it does not enhance the resilience of the bridge to scour damage in the event of a flood significantly more onerous than a 1:100 year event.

Capabilities on project:

Transportation

6.5.2 *Environment*

The introduction of traffic lights on either side of the bridge would introduce further urbanising features into the Garden and Designed Landscape (GDL) of Duff House and the Banff Conservation Area, however given the existing highway lighting and signage, such features are not unprecedented. The introduction of traffic lights would be considered as a visual detractor in relation to the setting of the Banff Bridge and Duff House GDL. Overall, Option 2 is considered to be a very minor shift away from baseline conditions resulting in a neutral effect on landscape and visual amenity.

This option would have a physical effect on the Category A bridge, although the effect on the significance of the bridge would be minimal. There may be a minimal negative effect on the significance of the Conservation Area and the Designed Landscape due to the addition of the traffic lights on the bridge.

The ecological impacts associated with this option are predicted to be restricted to the construction phase. There may be temporary loss of habitat to accommodate a construction compound, although there should be the potential to site this away from sensitive habitat. Vibration and noise from construction has the potential to disturb any bats that may be roosting within the bridge structure.

Bats surveys would be required in Stage 2.

6.5.3 *Safety*

This option would remove occurrences of large vehicles mounting the kerb when passing each other on the bridge, as the traffic lights would restrict the flow of traffic to one direction at a time. This would remove the need to rely on the judgement of drivers and the potential risk of severe injury to pedestrians would be significantly mitigated.

The provision of wider footways would reduce the risk of pedestrian-vehicle conflicts on the bridge.

In this option, it is assumed National Cycle Route 1 would continue to remain on-road across Banff Bridge. Cyclists would be afforded additional space on the carriageway due to the one-way movement of traffic.

6.5.4 *Economy*

This option would be expected to have a major negative impact on the local economy in Banff and Macduff by restricting the movement of all vehicular traffic, including HGVs and larger vehicles. This would lengthen journey times across the bridge, and would cause delays to business deliveries.

Work to assess the feasibility of implementing a one-way working traffic signal arrangement on the bridge (with pedestrian phases included) has shown that the scheme would operate considerably over capacity with a maximum degree of saturation (DoS) of 139.0%, with queues forming during the day.

6.5.5 *Integration*

In terms of transport integration, this option would place some restrictions on the movement of buses across the bridge (where the traffic lights require stopping). Negative impacts on transport and land-use integration are anticipated with this option. The arrangement would be a throttle on basic day-to-day activities in and between Banff and Macduff.

This option should provide support for national policies including Scottish Planning Policy, particularly as it protects and promotes facilities for pedestrians. This option is therefore considered to have a minor negative impact on integration overall on balance.

6.5.6 *Accessibility and Social Inclusion*

This option will have a major negative impact on accessibility for vehicular movements between Banff and Macduff, owing to the traffic light operation.

However, this option would have beneficial impacts on accessibility for non-motorised users due to the increase in bridge footway widths it provides. This could make pedestrian access into Banff safer, in

Capabilities on project:

Transportation

particular from the A947 side of the bridge, as the width of the south footway on the bridge would be enhanced under this option.

6.5.7 *Technical Feasibility*

Overall, this option is considered to be technically feasible. Both footways can be widened to achieve or exceed the 2000mm desirable width specified in TD27.²²

Modest disruption would be anticipated associated with implementation.

6.5.8 *Operational Feasibility*

As noted above, this option has high risks in terms of operational feasibility. The bridge capacity assessment has indicated that the bridge would operate considerably over capacity (139.0% degree of saturation) if traffic signals (with pedestrian phases) were to be introduced, with associated queues and delays. This is detailed further in Appendix D of the supporting appendices document.

6.5.9 *Affordability*

This is considered to be a relatively low cost option, and is more affordable than other options which involve a change relative to the Do-Minimum.

6.5.10 *Public Acceptability*

This option is considered to be high risk in terms of public acceptability. It is unlikely to be supported by residents of Banff and Macduff as the introduction of traffic lights will remove the current free-flow of traffic. It is also anticipated that it would not be supported by local businesses that rely on goods deliveries, and by other HGV operators that traverse the A98 route.

This option will have support from non-motorised users as it improves opportunities for walking and cycling. However, as the online public survey demonstrated, 89% of the survey respondents travel on the bridge as a car driver or car passenger. This suggests that the majority of bridge users will not be supportive of this option.

6.5.11 *Rationale for Selection or Rejection*

On the grounds that this option contravenes elements of the TPOs for this study, and has negative impacts against several STAG and implementability criteria (particularly public acceptability), it is **not** recommended for further assessment.

²² TD27/05, Cross-Sections and Headrooms, Volume 6, Section 1, Design Manual for Roads and Bridges.

Capabilities on project:

Transportation

6.6 Option 3 – Widen the Bridge Deck

This option involves strengthening the existing foundations and providing extensions to both the existing foundations and the existing superstructure of Banff Bridge.

6.6.1 *Performance against Transport Planning Objectives*

This option provides some support for elements of the Transport Planning Objectives for the study.

Objective 1 – Maximise the effectiveness of the link between Banff and Macduff, as the principal enabler of economic and social activity within and between the two towns

This option recognises the importance of the link between Banff and Macduff. In doing so, the option will provide wider support for the Banff and Macduff Town Centre Action Plans. In particular, it would support the objective to celebrate the rich history, heritage and culture of Banff and Macduff (facilitating and supporting events that increase footfall and keep people in the area). However, in the short term it may cause disruption during construction.

Objective 2 – Maximise the effectiveness of the link between Banff and Macduff, to provide a viable connection to businesses and communities along the A98 east and west of the bridge

This option protects the regionally strategically important A98 route. In doing so, the option will provide wider support for the Banff and Macduff Town Centre Action Plans. In particular, it would support the objective to celebrate the rich history, heritage and culture of Banff and Macduff (facilitating and supporting events that increase footfall and keep people in the area). However, in the short term it may cause disruption during construction.

Objective 3 – Improve the user experience of the transport link between Banff and Macduff

This option will reduce the risk of vehicle collisions and addresses the concerns relating to space availability issues on the bridge, with particular reference to the interaction of pedestrians/cyclists/vehicles on the bridge.

Objective 4 – Provide active and sustainable travel opportunities between Banff and Macduff

This option provides for non-motorised user demand between the towns by providing widened footways and additional road space (which will benefit cyclists).

Objective 5 – Enhance opportunities to celebrate and sensitively promote the historic local built environment and landscape of Banff Bridge

This option would result in at least one face of the original bridge being hidden from view by the extension. Effort could be made to re-use the existing masonry and to reproduce the original elevation of the bridge.

6.6.2 *Environment*

The Landscape Character information for the area notes the views along the river as a 'key characteristic', and therefore any noticeable changes to the bridge would alter the baseline character. However, the proposal to clad the face of this extension with the original arch bricks suggests that there would be very little change and therefore result in very slight or no variance from baseline conditions. Option 3 would be considered to result in no noticeable effect on landscape and visual amenity.

This option could potentially have a major effect on the architectural significance of the bridge. There is also a potential to affect previously unrecorded archaeological assets along the bank or on the bed of the river during the widening works. The widening of the bridge could also potentially have a negative effect on the setting of the Conservation Area, the Designed Landscape and several listed buildings within the visual range. The works to the bridge would alter its appearance, and, as a result, affect how it sits in the landscape, which could in turn affect the significance of the surrounding assets.

General construction activities may result in temporary loss of habitat to accommodate a construction compound and access to the river, although there should be the potential to site this away from sensitive

Capabilities on project:

Transportation

habitat. If conducted during the bird breeding season, noise associated with general construction activities may also disrupt schedule 1 seabird species breeding in the estuary area.

This option would require works on the existing bridge. Vibration and noise from these works has the potential to disturb any bats that may be roosting within the bridge structure. Option 3 would also require in-water works that would result in a permanent alteration to a small section of the river habitat. Construction noise and vibration within the watercourse has the potential to impact upon fish, sea mammals and otters. The in-river machinery may also present a physical barrier to fish passage and a potential pollution risk.

Further bat and otter surveys would be required in Stage 2.

6.6.3 *Safety*

This option would reduce the necessity for large vehicles crossing the bridge to mount the kerb in order to pass each other. As a result, the need to rely on the judgement of drivers and potential risk of severe injury to pedestrians would also be reduced.

The provision of wider footways alongside a widened carriageway would reduce the risk of pedestrian-vehicle conflicts on the bridge.

In this option, it is assumed National Cycle Route 1 would continue to remain on-road across Banff Bridge. Cyclists would be afforded additional space on the widened carriageway.

6.6.4 *Economy*

This option would be expected to have a minor beneficial impact on the local economy in Banff and Macduff through more efficient movement of traffic, particularly HGVs and larger vehicles. Regular intermittent queuing on the approaches to the bridge should be mitigated under this option, but there is likely to be short term disruption during construction.

6.6.5 *Integration*

In terms of transport integration, a widened carriageway may provide support for the movement of buses across the bridge. Positive beneficial impacts on transport and land-use integration are anticipated with this option, allowing for growth as set out in the LDP.

This option provides for non-motorised user demand between the towns by providing widened footways and greater space for cyclists.

6.6.6 *Accessibility and Social Inclusion*

This option will result in an overall improvement in accessibility for vehicular movements between Banff and Macduff, owing to the additional space afforded for passing vehicles by the widened carriageway.

Accessibility for non-motorised users should also be improved under this option.

6.6.7 *Technical Feasibility*

This option involves strengthening the existing foundations and providing extensions to both the existing foundations and the existing superstructure. Significant heavy civil engineering works in the River Deveron are anticipated. There would be risks associated with gaining consent for significant alterations to the existing bridge.

The services in the South footway add complication. However overall, the disruption caused by the services is unlikely to be significant compared to the works extending the bridge.

A Structural Assessment of the existing superstructure will be required to establish the required strengthening works. These could be designed to ensure resilience to scour in the event of a 1:200 year flood event, subject to further investigation.

Capabilities on project:

Transportation

6.6.8 *Operational Feasibility*

There are no significant issues anticipated with regard to the operational feasibility of this option, though impacts would be anticipated during construction.

6.6.9 *Affordability*

There will be high costs associated with this option. It is anticipated to be significantly less affordable than Option 1, which also involves widening of the bridge (within the constraints of the existing deck width).

6.6.10 *Public Acceptability*

This option is likely to be publicly supported by road users in Banff and Macduff, as it removes constraints associated with vehicular movements across the existing bridge. It is also anticipated that it would be supported by local businesses that rely on goods deliveries, and by other HGV operators that traverse the A98 route.

This option will have support from non-motorised users as it improves opportunities for walking/cycling through widened footways/additional road space. 53 respondents to the online survey stated that they would specifically like to see the existing bridge widened.

6.6.11 *Rationale for Selection or Rejection*

On the grounds that this option has the potential to deliver several of the TPOs for this study, and complements a number of elements of the STAG and implementability criteria, it is recommended that this option is **selected** for further assessment. This will require further consideration of environmental and structural issues associated with the proposal.

6.7 **Option 4 – Suspend Cantilevered Footway from the Existing Bridge**

This option comprises the suspension of a cantilevering footway from the existing bridge. The footways on the bridge could then be reduced in width to increase the available carriageway width for road vehicles. Pedestrian deterrent paving could be used on the remaining southern footway on the existing bridge to encourage pedestrians to use the cantilevered footway.

6.7.1 *Performance against Transport Planning Objectives*

This option provides some support for elements of the Transport Planning Objectives for the study.

Objective 1 – Maximise the effectiveness of the link between Banff and Macduff, as the principal enabler of economic and social activity within and between the two towns

This option recognises the importance of the link between Banff and Macduff. In doing so, the option will provide wider support for the Banff and Macduff Town Centre Action Plans. In particular, it would support the objective to celebrate the rich history, heritage and culture of Banff and Macduff (facilitating and supporting events that increase footfall and keep people in the area). However, in the short term it may cause disruption during construction.

Objective 2 – Maximise the effectiveness of the link between Banff and Macduff, to provide a viable connection to businesses and communities along the A98 east and west of the bridge

This option protects the regionally strategically important A98 route. In doing so, the option will provide wider support for the Banff and Macduff Town Centre Action Plans. In particular, it would support the objective to celebrate the rich history, heritage and culture of Banff and Macduff (facilitating and supporting events that increase footfall and keep people in the area). However, in the short term it may cause disruption during construction.

Objective 3 – Improve the user experience of the transport link between Banff and Macduff

This option provides improvements in the functionality of the bridge with respect to both pedestrian and vehicular use by segregating these competing demands for access across the bridge. Pedestrians in

Capabilities on project:

Transportation

particular would have a more pleasant crossing experience across the Deveron segregated from the traffic flow on the A98 carriageway.

Objective 4 – Provide active and sustainable travel opportunities between Banff and Macduff

This option provides for non-motorised user demand between the towns by providing a segregated cantilevered walkway suspended from the existing bridge. Cyclists would also benefit from the increased road width.

Objective 5 – Enhance opportunities to celebrate and sensitively promote the historic local built environment and landscape of Banff Bridge

This option would involve changes to the appearance and setting of the existing Banff Bridge, although measures to minimise the visual impact of the improvements could be undertaken as part of the design.

6.7.2 Environment

The introduction of a cantilevered bridge from the existing structure may result in adverse visual effects which would be somewhat noticeable in views from the Temple of Venus monument over a limited extent. It is also expected to slightly alter existing views across the mouth of the River Deveron within the Banff Conservation Area, namely from Bridge Road and the A98. The existing bridge is a key link in the continuation of the Garden and Designed Landscape (GDL) over the River Deveron and any modifications of this scale would likely compromise the appearance and historic character of the GDL and Banff Conservation Area. This proposal would therefore be considered to have a slight adverse effect on the landscape and visual resource of the area.

This option would potentially have a major negative effect on the architectural significance of the bridge. There is also a potential to negatively affect previously unrecorded archaeological assets along the bank or on the bed of the river where the supports of the bridge would be positioned.

The addition of the walkway could also negatively affect the setting of the Conservation Area, the Designed Landscape and several listed buildings within the visual range. The works to the bridge would alter its appearance and as a result could affect how it sits in the landscape, which could in turn affect the significance of the surrounding assets.

This option may result in temporary loss of habitat to accommodate a construction compound. Vibration and noise from construction also has the potential to disturb any bats that may be roosting within the bridge structure.

General construction activities may result in temporary loss of habitat to accommodate a construction compound, although there should be the potential to site this away from sensitive habitat. If conducted during the bird breeding season, noise associated with general construction activities may also disrupt schedule 1 seabird species breeding in the estuary area.

This option would require works on the existing bridge. Vibration and noise from these works has the potential to disturb any bats that may be roosting within the bridge structure. If this option were to involve in-river works then construction noise and vibration within the watercourse has the potential to impact upon fish, sea mammals and otters. The in-river machinery may also present a physical barrier to fish passage and a potential pollution risk.

Further bat and otter surveys would be required in Stage 2.

6.7.3 Safety

This option would reduce the necessity for large vehicles crossing the bridge to mount the kerb in order to pass each other. In addition, the need to rely on the judgement of drivers and potential risk of severe injury to pedestrians would also be reduced as pedestrians would use the cantilevered footway, with deterrent paving dissuading use of the reduced south footway on Banff Bridge.

Capabilities on project:

Transportation

In this option, it is assumed that National Cycle Route 1 would continue to remain on-road across Banff Bridge. Cyclists would be afforded additional space on the widened carriageway.

6.7.4 *Economy*

This option would be expected to have a minor beneficial impact on the local economy in Banff and Macduff through more efficient movement of traffic, particularly HGVs and larger vehicles. Regular intermittent queuing on the approaches to the bridge should be reduced under this option.

6.7.5 *Integration*

In terms of transport integration, a widened carriageway may provide support for the movement of buses across the bridge. Positive beneficial impacts on transport and land-use integration are anticipated with this option, allowing for growth as set out in the LDP.

This option provides for non-motorised user demand between the towns via a cantilevered footbridge for pedestrians and greater space for cyclists (on the widened carriageway).

6.7.6 *Accessibility and Social Inclusion*

This option will result in an overall improvement in accessibility for vehicular movements between Banff and Macduff, owing to the additional space afforded for passing vehicles by the widened carriageway.

Accessibility for non-motorised users should also be improved under this option; with pedestrians using the segregated cantilevered footbridge and cyclists afforded additional space by the widened carriageway.

6.7.7 *Technical Feasibility*

In broad terms, this option is technically feasible. Anchoring a cantilevered structure from the south elevation of the bridge may also require movement of the services within the bridge. There would be risks associated with gaining consent for significant alterations to the existing bridge.

6.7.8 *Operational Feasibility*

This option will increase foundation loads on the bridge by approximately 4%. While this increase is modest, careful consideration will need to be given as to whether the existing foundations may be overloaded under this additional loading.

This option does nothing to enhance the resilience of the bridge to scour damage in the event of a flood significantly more onerous than a 1:100 year event.

6.7.9 *Affordability*

Overall, this option is more affordable than some other options which involve a change relative to the Do-Minimum.

6.7.10 *Public Acceptability*

This option is likely to be publicly supported by road users in Banff and Macduff, as it removes constraints associated with vehicular movements across the existing bridge. It is also anticipated that it would be supported by local businesses that rely on goods deliveries, and by other HGV operators that traverse the A98 route.

This option will have support from non-motorised users as it improves opportunities for walking/cycling through the provision of the cantilevered footway/additional road space. However, in the case of the former, if the footway is hung from the south parapet, it may not be well used given that the majority of pedestrian flows are presently along the north side footway.

6.7.11 *Rationale for Selection or Rejection*

On the grounds that this option has the potential to deliver several of the TPOs for this study, and complements a number of elements of the STAG and implementability criteria, it is recommended that this

Capabilities on project:

Transportation

option is **selected** for further assessment. This will require further consideration of environmental and structural issues associated with the proposal.

6.8 Option 5 – New Low Level Pedestrian/cycle Bridge

This option provides a low level pedestrian/cycle bridge north of the existing A98 Banff Bridge. The north footway on the existing bridge could then be reduced in width to increase the available carriageway width for road vehicles. The logic behind this is that pedestrians heading south (i.e. towards the A947) would not use the new footbridge, whereas the new footbridge will become the new desire line for pedestrian users crossing between Banff and Macduff.

6.8.1 Performance against Transport Planning Objectives

This option provides support for elements of the Transport Planning Objectives for the study.

Objective 1 – Maximise the effectiveness of the link between Banff and Macduff, as the principal enabler of economic and social activity within and between the two towns

This option recognises the importance of the link **for all users** between Banff and Macduff. In doing so, the option will provide wider support for the Banff and Macduff Town Centre Action Plans. In particular, it would support the objective to celebrate the rich history, heritage and culture of Banff and Macduff (facilitating and supporting events that increase footfall and keep people in the area).

Objective 2 – Maximise the effectiveness of the link between Banff and Macduff, to provide a viable connection to businesses and communities along the A98 east and west of the bridge

This option protects the regionally strategically important A98 route. In doing so, the option will provide wider support for the Banff and Macduff Town Centre Action Plans. In particular, it would support the objective to celebrate the rich history, heritage and culture of Banff and Macduff (facilitating and supporting events that increase footfall and keep people in the area).

Objective 3 – Improve the user experience of the transport link between Banff and Macduff

This option provides some improvements in the functionality of the bridge with respect to both pedestrian and vehicular use by segregating these competing demands for access across the bridge. Pedestrians travelling between Banff and Macduff in particular would have a more pleasant crossing experience across the Deveron segregated from the traffic flow on the A98 carriageway. However, in this option, it is assumed that pedestrians travelling to/from the A947 (though fewer in number) would continue to use the existing Banff Bridge footways, and as these would be widened in this scenario, pedestrians travelling in this direction may have a more desirable crossing experience.

Objective 4 – Provide active and sustainable travel opportunities between Banff and Macduff

This option provides for non-motorised user demand between the towns by providing a segregated crossing for pedestrians travelling between Banff and Macduff. There would be a moderate positive impact on pedestrian movements to and from the A947 (due to the increase in footway width on the existing bridge). Cyclists would benefit from the increased road width on Banff Bridge (NCR1), as well as the new link provided by the pedestrian/cycle bridge. The ability to use the existing northern footway would be severely impacted.

Objective 5 – Enhance opportunities to celebrate and sensitively promote the historic local built environment and landscape of Banff Bridge

This option would involve changes to the appearance and setting of the existing Banff Bridge, although measures to minimise the visual impact of the improvements could be undertaken as part of the design. If appropriately designed, the new footbridge could become an asset and a tourist attraction.

6.8.2 Environment

Although this option would introduce a new feature into the landscape, the existing bridge would remain visually 'intact'. The proposed location of the bridge to the north of the existing bridge would limit adverse

Capabilities on project:

Transportation

effects on the Garden and Designed Landscape (GDL) since the existing bridge would likely mask its presence from the majority of this designation. However, the proposal would be likely to have a modernising effect on the character of the Banff Conservation Area. Such effects could be limited by sensitive siting, design and materials palette. The low level of the proposed bridge would be expected to limit more distant views including those from the sea. The proposed bridge option is unlikely to encroach on open views afforded from the existing bridge out to sea.

The physical effect on the significance of Banff Bridge would be minimal. There is also a potential to affect previously unrecorded archaeological assets along the bank or on the bed of the river where the supports of the bridge would be positioned. The addition of the new bridge could negatively affect the setting of Banff Bridge, the Conservation Area, the Designed Landscape and listed buildings within the visual range. Its proposed location on the north side of the current bridge may, however, assist in limiting this effect.

This option may result in temporary loss of habitat to accommodate a construction compound. Vibration and noise from construction also has the potential to disturb any bats that may be roosting within the bridge structure.

General construction activities may result in temporary loss of habitat to accommodate a construction compound, although there should be the potential to site this away from sensitive habitat. If conducted during the bird breeding season, noise associated with general construction activities may also disrupt schedule 1 seabird species breeding in the estuary area.

This option would result in permanent loss of habitat and may result in the loss or greater fragmentation of a maritime plant community.

Further bat surveys would be required in Stage 2.

6.8.3 *Safety*

This option provides minor beneficial impact in terms of vehicular safety by reducing the necessity for large vehicles crossing the bridge to mount the kerb in order to pass each other.

Pedestrians travelling between Banff and Macduff would benefit from improved safety through the separate, traffic-free crossing on the footbridge and the south footway could be widened for access to the A947.

However, the existing northern footway would be reduced and the new route would not be as accessible.

In this option, it is assumed National Cycle Route 1 would continue to remain on-road across Banff Bridge. Cyclists would be afforded additional space on the widened carriageway, and they would also have the option of a traffic-free crossing on the new pedestrian/cycle bridge for local journeys between Banff and Macduff.

6.8.4 *Economy*

This option would be expected to have a minor beneficial impact on the local economy in Banff and Macduff through more efficient movement of traffic, particularly HGVs and larger vehicles. Regular intermittent queuing on the approaches to the bridge should be reduced under this option.

6.8.5 *Integration*

In terms of transport integration, a widened carriageway may provide support for the movement of buses across the bridge. It would support transport and land-use integration.

This option provides for non-motorised user demand between the towns via the low level footbridge for pedestrians travelling between Banff and Macduff and greater space for cyclists (on the widened carriageway), however, the narrowing of the existing footway on Banff Bridge will place restrictions on the movement of pedestrians to/from the A947.

Capabilities on project:

Transportation

6.8.6 *Accessibility and Social Inclusion*

This option will result in an overall improvement in accessibility for vehicular movements between Banff and Macduff, owing to the additional space afforded for passing vehicles by the widened carriageway.

Accessibility for non-motorised users travelling between Banff and Macduff should also be improved under this option. However, the new low level bridge would require ramps to descend from the high ground south-east of the existing bridge, and this could discourage use, and removal of existing facilities may contravene planning policy.

The narrowing of the footway on Banff Bridge itself will restrict the movement of pedestrians to/from the A947, and may dissuade vulnerable users from travelling.

6.8.7 *Technical Feasibility*

Overall, this option is considered to be technically feasible.

6.8.8 *Operational Feasibility*

This option is considered to have a number of operational issues. Firstly, water levels due to tidal variations, waves and river flooding are such that a low level bridge would become submerged to varying degrees, relatively frequently. This would lead to premature deterioration of the bridge. There is potential for the low level bridge to adversely affect flood water levels upstream and for it to be damaged by river borne debris. There is also evidence of the sand banks downstream of the road bridge moving significantly with time. This could mean that, with time, the river channel moves from beneath the footbridge to its approaches. This would render the low level bridge inaccessible from one side and redundant.

During periods of significantly adverse weather conditions, the bridge may not be safe to use.

This option does nothing to enhance the resilience of the bridge to scour damage in the event of a flood significantly more onerous than a 1:100 year event.

6.8.9 *Affordability*

Overall, this option is more affordable than some other options which involve a change relative to the Do-Minimum. This is principally due to the relatively short length of crossing that would be required.

6.8.10 *Public Acceptability*

This option is likely to have a degree of public support by road users in Banff and Macduff, as it removes constraints associated with vehicular movements across the existing bridge. It is also anticipated that it would be supported by local businesses that rely on goods deliveries, and by other HGV operators that traverse the A98 route.

This option will have general support from non-motorised users as it improves opportunities for walking/cycling through the provision of the low level footbridge/additional road space. However, it is unlikely to be supported by pedestrians that would seek to continue to use the existing bridge to travel to/from the A947 as the footways would be narrowed, decreasing the attractiveness (and perceptions of safety) of the link.

However, overall, it would be broadly supported. This was evident during the public consultation where 219 people stated a desire to see a separate pedestrian/cycle link introduced to link Banff and Macduff.

6.8.11 *Rationale for Selection or Rejection*

On the grounds that this option has negative impacts against several implementability criteria (particularly operational feasibility), it is **not** recommended for further assessment.

Capabilities on project:

Transportation

6.9 Option 6 – New High Level Pedestrian/cycle Bridge

The majority of pedestrian users of the existing bridge are heading east-west, so the desire lines suggest the proposed footbridge should be located north of the road bridge. The north footway of the road bridge could be reduced to a minimum, with the south footway also reduced slightly, to increase the carriageway width for road users.

6.9.1 *Performance against Transport Planning Objectives*

This option provides support for elements of the Transport Planning Objectives for the study.

Objective 1 – Maximise the effectiveness of the link between Banff and Macduff, as the principal enabler of economic and social activity within and between the two towns

This option recognises the importance of the link **for all users** between Banff and Macduff. In doing so, the option will provide wider support for the Banff and Macduff Town Centre Action Plans. In particular, it would support the objective to celebrate the rich history, heritage and culture of Banff and Macduff (facilitating and supporting events that increase footfall and keep people in the area).

Objective 2 – Maximise the effectiveness of the link between Banff and Macduff, to provide a viable connection to businesses and communities along the A98 east and west of the bridge

This option protects the regionally strategically important A98 route. In doing so, the option will provide wider support for the Banff and Macduff Town Centre Action Plans. In particular, it would support the objective to celebrate the rich history, heritage and culture of Banff and Macduff (facilitating and supporting events that increase footfall and keep people in the area).

Objective 3 – Improve the user experience of the transport link between Banff and Macduff

This option provides some improvements in the functionality of the bridge with respect to both pedestrian and vehicular use by segregating these competing demands for access across the bridge. Pedestrians travelling between Banff and Macduff in particular would have a more pleasant crossing experience across the Deveron segregated from the traffic flow on the A98 carriageway.

However, in this option, it is assumed that pedestrians travelling to/from the A947 (though fewer in number) would continue to use the existing Banff Bridge footway, as this would be widened. The northern footway would no longer be useable.

Objective 4 – Provide active and sustainable travel opportunities between Banff and Macduff

This option provides for non-motorised user demand between the towns by providing a segregated crossing for pedestrians travelling between Banff and Macduff. However, there would be a moderate negative impact on pedestrian movements wanting to still use the northern footway. Cyclists would benefit from the increased road width on Banff Bridge (NCR1), as well as the new link provided by the pedestrian/cycle bridge.

Objective 5 – Enhance opportunities to celebrate and sensitively promote the historic local built environment and landscape of Banff Bridge

This option would involve changes to the appearance and setting of the existing Banff Bridge, although measures to minimise the visual impact of the improvements could be undertaken as part of the design. Focus would be placed on providing a footbridge which was relatively modest and had the least possible impact on the sea view. If appropriately designed, the new footbridge could become an asset and a tourist attraction.

6.9.2 *Environment*

The introduction of a high level pedestrian bridge would introduce a new focal point/ landmark feature into a range of views including from the Temple of Venus monument, within the Duff House GDL. This bridge option would become a focal point of the foreground views from the A98 across the river within the Banff Conservation Area. The height of the proposed bridge, when viewed in conjunction with the existing bridge,

Capabilities on project:

Transportation

would likely detract from the simplicity of the existing single crossing and has potential clutter views of the river.

The negative physical effect on the significance of the Banff Bridge would be minimal. There is also a potential to affect previously unrecorded archaeological assets along the bank or on the bed of the river where the supports of the bridge would be positioned.

The addition of the new bridge would negatively affect the setting of Banff Bridge, the Conservation Area, the Designed Landscape and listed buildings within the visual range. Its proposed location on the north side of the current bridge may, however, assist in limiting this effect.

This option may result in temporary loss of habitat to accommodate a construction compound. Vibration and noise from construction also has the potential to disturb any bats that may be roosting within the bridge structure.

General construction activities may result in temporary loss of habitat to accommodate a construction compound, although there should be the potential to site this away from sensitive habitat. If conducted during the bird breeding season, noise associated with general construction activities may also disrupt schedule 1 seabird species breeding in the estuary area. This option would result in permanent loss of some bank habitat.

Further bat surveys would be required in Stage 2.

6.9.3 *Safety*

This option provides minor beneficial impact in terms of vehicular safety by reducing the necessity for large vehicles crossing the bridge to mount the kerb in order to pass each other.

Pedestrians travelling between Banff and Macduff would benefit from improved safety through the separate, traffic-free crossing on the footbridge.

However, relative to the Do-Minimum and other options, this option compromises the safety of other pedestrians travelling to/from the A98, as the northern footway would not be available. This could increase the risk of collision with passing vehicles.

In this option, it is assumed National Cycle Route 1 would continue to remain on-road across Banff Bridge. Cyclists would be afforded additional space on the widened carriageway, and they would also have the option of a traffic-free crossing on the new pedestrian/cycle bridge for local journeys between Banff and Macduff.

6.9.4 *Economy*

This option would be expected to have a minor beneficial impact on the local economy in Banff and Macduff through more efficient movement of traffic, particularly HGVs and larger vehicles. Regular intermittent queuing on the approaches to the bridge should be mitigated under this option.

6.9.5 *Integration*

In terms of transport integration, a widened carriageway may provide support for the movement of buses across the bridge. It would support transport and land-use integration.

This option provides for non-motorised user demand between the towns via the high level footbridge for pedestrians travelling between Banff and Macduff and greater space for cyclists (on the widened carriageway), however, the narrowing of the existing footway on Banff Bridge will place restrictions on the movement of pedestrians to/from the A98 northern footway.

6.9.6 *Accessibility and Social Inclusion*

This option will result in an overall improvement in accessibility for vehicular movements between Banff and Macduff, owing to the additional space afforded for passing vehicles by the widened carriageway.

Capabilities on project:

Transportation

Accessibility for non-motorised users travelling between Banff and Macduff should also be improved under this option.

The narrowing of the footway on Banff Bridge itself will restrict the movement of pedestrians to/from the A98, and may dissuade vulnerable users from travelling.

6.9.7 *Technical Feasibility*

Overall, this option is considered to be technically feasible.

6.9.8 *Operational Feasibility*

This option is considered to be more practical in terms of operational feasibility than Option 5.

It is anticipated that the structure would be suitable for use year-round, and would not be subject to the same limitations as the low level bridge considered in Option 5. However, it should be noted that severe weather conditions in the Bay may make the crossing unpleasant at times and the alternative northern footway would no longer be available.

However, this option also does nothing to enhance the resilience of the bridge to scour damage in the event of a flood significantly more onerous than a 1:100 year event.

6.9.9 *Affordability*

Overall, this option is less affordable than some other options which involve a change relative to the Do-Minimum. It is more expensive than Option 5.

6.9.10 *Public Acceptability*

This option is likely to have a degree of public support by road users in Banff and Macduff, as it removes constraints associated with vehicular movements across the existing bridge. It is also anticipated that it would be supported by local businesses that rely on goods deliveries, and by other HGV operators that traverse the A98 route.

This option will have general support from non-motorised users as it improves opportunities for walking/cycling through the provision of the high level footbridge/additional road space. It is likely to be more favoured than the alternative option of providing a low level bridge. However, it is unlikely to be supported by pedestrians that would seek to continue to use the existing bridge to travel to/from the A98 as the footways would be narrowed, removing this option for pedestrians.

However, overall, it would be broadly supported. This was evident during the public consultation where 219 people stated a desire to see a separate pedestrian/cycle link introduced to link Banff and Macduff.

6.9.11 *Rationale for Selection or Rejection*

On the grounds that this option has the potential to deliver several of the TPOs for this study, and complements a number of elements of the STAG and implementability criteria, it is recommended that this option is **selected** for further assessment. This will require further consideration of environmental and structural issues associated with the proposal.

Capabilities on project:

Transportation

6.10 Option 7 – New Road Bridge

If a new road bridge was constructed upstream of the original bridge, traffic could be removed from the original bridge, which could then be used for pedestrian/cycle use. Full width carriageways and footways could also be provided on the new road bridge. A roundabout would be required west of the bridge, with a junction to the east.

There would be modest departures with respect to road alignment at each end of the new bridge. A closed abutment would be required at the east end of the bridge, to support the required road alignment for the junction at this location. A closed abutment would also be provided at the west abutment in the interests of symmetry and aesthetics.

6.10.1 Performance against Transport Planning Objectives

This option provides support for elements of the Transport Planning Objectives for the study.

Objective 1 – Maximise the effectiveness of the link between Banff and Macduff, as the principal enabler of economic and social activity within and between the two towns

This option recognises the importance of the link **for all users** between Banff and Macduff. In doing so, the option will provide wider support for the Banff and Macduff Town Centre Action Plans. It has a significant advantage over other options of not being reliant on the original Banff Bridge to maintain transport links through Banff and Macduff.

Objective 2 – Maximise the effectiveness of the link between Banff and Macduff, to provide a viable connection to businesses and communities along the A98 east and west of the bridge

This option protects the regionally strategically important A98 route. In doing so, the option will provide wider support for the Banff and Macduff Town Centre Action Plans. It has a significant advantage over other options of not being reliant on the original Banff Bridge to maintain transport links through Banff and Macduff.

Objective 3 – Improve the user experience of the transport link between Banff and Macduff

This option significantly improves pedestrian, cyclist and road vehicle user functionality, with full width carriageways and footways.

Objective 4 – Provide active and sustainable travel opportunities between Banff and Macduff

This option provides significantly improved pedestrian and cyclist functionality through full width carriageways and footways on the new bridge. This option also affords enhanced active and sustainable travel opportunities on the existing Banff Bridge.

Objective 5 – Enhance opportunities to celebrate and sensitively promote the historic local built environment and landscape of Banff Bridge

This option would ensure that the existing Banff Bridge would have much reduced loading impacts, potentially improving the ability to preserve it. However, it would have a significant effect on the views and landscape to the south of the existing Banff Bridge. The environmental impact of a new road bridge south of the original bridge would impact Duff House and its Garden Designed Landscape. There would be impacts on the golf club, and environmental implications for the river under this option.

6.10.2 Environment

The scale and materials of a new road bridge would likely result in it becoming a dominant feature within the landscape and therefore a substantial shift away from baseline conditions. The proposed road bridge and associated road alterations would detract from views from the eastern side of the river toward the Banff Conservation Area and would be apparent in views to and from the GDL. It is thought that this proposal would be out of keeping with the otherwise simple and moderately scaled landscape. Overall this option has the potential to damage the quality of the characteristic features and sense of place.

Capabilities on project:

Transportation

The physical effect on the significance of Banff Bridge would be minimal. The reduction in motorised traffic may have a potentially positive effect on the structure of the bridge. There could be a negative physical effect within the designed landscape of Duff House. There is also a potential to negatively affect previously unrecorded archaeological assets along the bank of the river when the new bridge connects to the land and along the length of any new section of connecting road. There may also be archaeological assets on the river bed that could be affected by the supports of the bridge.

The addition of the new bridge would potentially have a significant negative effect on the setting of Banff Bridge, the Conservation Area, the Designed Landscape and listed buildings within the visual range. Its proposed location on the south side of the current bridge may magnify this effect as it will sever the connection and views between Duff House, its designed landscape and the listed Banff Bridge. It would also have a negative effect on the approach to the town from the east and the relationship between the bridge and the Conservation Area.

General construction activities may result in temporary loss of habitat to accommodate a construction compound and access to the river, although there should be the potential to site this away from sensitive habitat. If conducted during the bird breeding season, noise associated with general construction activities may also disrupt schedule 1 seabird species breeding in the estuary area.

This option would require works near the existing bridge. Vibration and noise from these works has the potential to disturb any bats that may be roosting within the bridge structure. This option would require in-river works and would result in permanent alteration to a small section of river habitat. Construction noise and vibration within the watercourse has the potential to impact upon fish, sea mammals and otters. The magnitude of the vibration and noise associated with the in-river construction will likely be greater than in the alternative options due to the foundation piling. The in-river machinery may also present a physical barrier to fish passage and a potential pollution risk. There will also be loss of a small section of semi-natural ancient woodland that may contain Wych Elm.

Further bat, otter, sea mammal and fish surveys would be required in Stage 2.

6.10.3 *Safety*

This option provides major beneficial impact in terms of vehicular safety by moving traffic to the new road bridge, removing the necessity for large vehicles crossing the existing Banff Bridge to mount the kerb in order to pass each other.

Pedestrians and cyclists travelling between Banff and Macduff would benefit from improved safety on the existing bridge, which would become traffic-free.

6.10.4 *Economy*

This option would be expected to have a moderate beneficial impact on the local economy in Banff and Macduff through more efficient movement of traffic, particularly HGVs and larger vehicles.

Problems associated with vehicle flow and queuing on the existing Banff Bridge would be reduced under this option.

6.10.5 *Integration*

In terms of transport integration, the new bridge would support the movement of buses. Positive impacts on transport and land-use integration are anticipated with this option, giving flexibility for growth.

This option provides for non-motorised user demand between the towns via the existing Banff Bridge, which would become traffic-free under this option.

6.10.6 *Accessibility and Social Inclusion*

This option will result in a significant improvement in accessibility for vehicular movements between Banff and Macduff, owing to the provision of the new bridge.

Capabilities on project:

Transportation

Non-motorised users will experience an overall improvement in accessibility.

6.10.7 *Technical Feasibility*

Overall, this option is considered to be technically feasible. A roundabout would be required west of the bridge, with a junction to the east. There would be modest departure with respect to road alignment at each end of the new bridge. A closed abutment would be required at the east end of the bridge, to support the required road alignment for the junction at this location. A closed abutment would also be provided at the west abutment in the interests of symmetry and aesthetics.

6.10.8 *Operational Feasibility*

No significant operational feasibility issues are associated with the new road bridge. With regard to the original bridge, this would benefit from the removal of vehicle loading.

6.10.9 *Affordability*

As this option involves the construction of a new bridge and associated supporting infrastructure, it is associated with high costs.

Additional costs may be associated with this option, particularly whether any land compensation costs are required to deliver this option.

6.10.10 *Public Acceptability*

This option is likely to have a significant degree of public support by the local community in Banff and Macduff, having been frequently cited as a key solution for the problems and issues associated with the existing Banff Bridge. In the public survey, 185 responses focussed on a desire to build a new bridge, with an additional 42 suggesting a new bridge should be built to ease the pressure on the existing bridge.

This option will have wide support from non-motorised users as it frees up the existing bridge for exclusive use by pedestrians and cyclists. 34 respondents to the online survey highlighted the benefits of this freed up capacity.

However, it would be anticipated that there would be some objection to this option, particularly in relation to the impact on Duff House Royal Golf Club, and the wider impact on the setting of Duff House.

6.10.11 *Rationale for Selection or Rejection*

On the grounds that this option has the potential to deliver several of the TPOs for this study, and complements a number of elements of the STAG and implementability criteria, it is recommended that this option is **selected** for further assessment. This will require further consideration of environmental, structural and junction capacity issues associated with the proposal.

Capabilities on project:

Transportation

6.11 Option 8 – New Bypass

This option involves providing a significant length of new road running along the east bank of the River Deveron before crossing it close to the south extremity of the golf club. The road would then re-join either the local road network at Sandyhill Road, 200 metres south-west of Banff, or continue to bypass Banff before re-joining the A98 near Inverboyndie.

6.11.1 Performance against Transport Planning Objectives

This option provides support for elements of the Transport Planning Objectives for the study.

Objective 1 – Maximise the effectiveness of the link between Banff and Macduff, as the principal enabler of economic and social activity within and between the two towns

This option limits the effectiveness of the link between Banff and Macduff by introducing a significant diversion for local road users driving between Macduff and Banff.

Objective 2 – Maximise the effectiveness of the link between Banff and Macduff, to provide a viable connection to businesses and communities along the A98 east and west of the bridge

This option protects the regionally strategically important A98 route.

Objective 3 – Improve the user experience of the transport link between Banff and Macduff

This option significantly improves pedestrian, cyclist and road vehicle user functionality, with full width carriageways and footways. However, it is considered that a bypass would not serve a key function of the local link – to connect Banff and Macduff.

Objective 4 – Provide active and sustainable travel opportunities between Banff and Macduff

This option does not improve active travel links as the existing Banff Bridge will remain as it is for local connectivity by all modes.

Objective 5 – Enhance opportunities to celebrate and sensitively promote the historic local built environment and landscape of Banff Bridge

Although involving a new bypass, this option in itself does little to increase the long term resilience of the existing bridge to scour damage. There would also be a number of impacts of this scheme on the environment and landscape of Banff Bridge.

6.11.2 Environment

This option would likely present a shift away from baseline conditions and fundamentally alter the rural perception of the watercourse. The new road would result in an adverse effect on the setting and character of the GDL and the Banff Conservation Area. Furthermore, this Option has the potential to result in a range of adverse effects on landscape character due to the extent of the road proposed. Primary mitigation measures could reduce impacts through sensitive siting of the road within the landscape and screening views from within the Duff House GDL.

This option would have a potentially significant negative effect on the scheduled and listed Duff House mausoleum. The proposed new section of road and bridge would also have a significant negative physical effect on the designed landscape of Duff House.

There is also a potential to negatively affect previously unrecorded archaeological assets along the bank of the river where the new bridge would connect to the land and along the length of any new section of connecting road. There may also be archaeological assets on the river bed that could be negatively affected by the supports of the bridge. The addition of the bypass and the new bridge would potentially have a significant negative affect the setting of the Duff House and its Designed Landscape, and other listed buildings within the visual range. There may be a positive effect on the Banff Conservation area due to the reduction in traffic in the town centre.

Capabilities on project:

Transportation

General construction activities may result in temporary loss of habitat to accommodate a construction compound and access to the river, although there should be the potential to site this away from sensitive habitat.

As the design of the new bridge has not yet been determined, the potential impacts of this element of the option have been assumed on a worst case scenario including in-river working and piled foundations. This option would result in permanent alteration to a small section of river habitat. Construction noise and vibration within the watercourse has the potential to impact upon fish and otters. The in-river machinery may also present a physical barrier to fish passage and a potential pollution risk.

As a result of the proposed new road there would be habitat loss and fragmentation, specifically of semi-natural ancient woodland. The proposed new roads for Option 8 will result in some loss of semi-natural ancient woodland, which is associated with several notable and protected species including; badger, bat, breeding bird, red squirrel and otter. There will also be some loss of agricultural land that may contain arable field margins, water vole habitat or areas important for breeding birds.

Further detailed ecological surveys of the agricultural land between the river and Inverboyndie along with protected species surveying including badgers and otters would be required in Stage 2.

6.11.3 *Safety*

This option provides minor beneficial impact in terms of vehicular safety by moving traffic to the bypass. This would reduce the necessity for large vehicles (e.g. HGVs – which would be expected to re-route) crossing the existing Banff Bridge to mount the kerb in order to pass each other.

Pedestrians and cyclists travelling between Banff and Macduff would benefit from some improvements in safety due to the likely diversion of larger vehicles.

6.11.4 *Economy*

This option would be expected to have a moderate negative impact as it would take regionally strategic traffic away from the existing Banff Bridge – this could have a negative effect on the local economies of Banff and Macduff with benefits from passing trade etc. potentially lost, particularly if the bypass were to re-join the A98 near Inverboyndie.

6.11.5 *Integration*

In terms of transport integration, the bypass ties in with longer term aspirations for growth as set out in the LDP.

This option provides some minor beneficial impact for non-motorised user demand between the towns via the existing Banff Bridge, which would benefit from a reduction in larger vehicles under this option.

6.11.6 *Accessibility and Social Inclusion*

Overall, this option would be expected to have a neutral impact on accessibility and social inclusion. Strategic access along the A98 would be improved for journeys that do not have Banff or Macduff as an end destination, however, there would be little change in accessibility for local vehicular movements (if it is assumed that local trips would still continue to use the existing bridge) or non-motorised users.

6.11.7 *Technical Feasibility*

This option would likely involve a number of technical and engineering challenges. Further assessment of these would be subject to confirmation of an alignment for the bypass.

6.11.8 *Operational Feasibility*

This option is considered to be broadly feasible in operational terms. It would support more efficient movement of traffic, but it should be noted that currently only up to 20% of A98 traffic using Banff Bridge is considered 'through' traffic.

Capabilities on project:

Transportation

6.11.9 Affordability

Overall, this option would have very high costs, and is considerably less affordable than all other options being considered in this study.

6.11.10 Public Acceptability

This option is unlikely to have significant public support. Although it would remove constraints associated with vehicular movements across the existing bridge, it would be unlikely that residents of Banff and Macduff would use the bypass and new bridge when undertaking trips between the towns, due to the length of diversion involved.

However, there would be some support for this option, particularly by non-motorised users, who may benefit from the displacement of larger vehicles on the existing bridge to the bypass.

In spite of this, it would be anticipated that this option would be less favoured by the community overall than Option 7 (New Road Bridge). A bypass option was only mentioned by 15 respondents to the online survey.

6.11.11 Rationale for Selection or Rejection

On the grounds that this option contravenes elements of the TPOs for this study, and has negative impacts against several STAG and implementability criteria (particularly in terms of affordability), it is **not** recommended for further assessment.

6.12 Economic Activity and Location Impacts

All options considered as part of the Banff Bridge Initial Appraisal Update have the potential to generate impact in terms of economic activity and location impacts (EALI). EALI analysis aims to describe the impacts of transport investment on the economy using measures of income or employment.

With the exception of the Do-Minimum, which would typically retain the status quo (sustaining the current impacts of Banff Bridge in terms of economic activity), the remaining options would all have varying degrees of impacts on economic activity, and on the Banff-Macduff locale and in so doing supporting access to employment and promoting income to the local area and to a lesser extent supporting the region. Some options have potential to promote active tourism in the local areas of the bridge and region, and the majority of options provide a minor role to supporting wider businesses along the A98 corridor and between Peterhead, Fraserburgh and Inverness.

Options 1, 3, 4, 5 and 6 would be expected to have minor beneficial impacts on economic activity by promoting more efficient movement of traffic. These will also have wider locational impacts by improving access across the regionally strategic A98 for longer distance traffic.

Option 7 would be expected to have a moderate beneficial impact on economic activity due to the presence of the new bridge providing a more efficient link between Banff and Macduff.

Options 2 and 8 would have the most significant negative impacts on economic activity. Option 2 would restrict movement between Banff and Macduff due to traffic signal operation, with Option 8 taking regionally strategic traffic away from the existing bridge, resulting in local businesses potentially losing passing trade.

Several options provide improved accessibility at the local level for non-motorised users, though it is highlighted that Option 1 would introduce the requirement for separate crossing points for pedestrians, with Options 5 and 6 affecting pedestrians on the existing bridge due to the narrowing of footways.

Capabilities on project:

Transportation

6.13 Option Summary

Tables 6.4 provides a summary of the Option Appraisal, based on the Scale of Impacts set out in Section 6.2.5. These are also reflected in the Appraisal Summary Tables set out in Appendix H of the supporting appendices document.

Table 6.4 – Appraisal Summary

Capabilities on project:

Transportation

Option	Transport Planning Objectives					Implementability Criteria				STAG Criteria				
	TPO1	TPO2	TPO3	TPO4	TPO 5	Technical	Operational	Affordability	Public Acceptability	Environment	Safety	Economy	Integration	Accessibility and Social Inclusion
Do-Minimum	0	0	0	0	0	0	0	0	-2	0	-1	0	0	-1
Option 1 – Widen existing carriageway within constraints of existing deck width	+2	+1	+1	-1	0	-1	0	+1	0	-1	+1	+1	-1	-1
Option 2 – Widen existing footway with signal controlled vehicular crossing	-3	-2	+1	+2	+1	+1	-3	+2	-3	-1	+2	-3	-1	-2
Option 3 – Extend bridge deck	+2	+1	+2	+2	-1	-1	0	-2	+2	-2	+2	+1	+1	+1
Option 4 – Suspend Cantilevered Footway from the Existing Bridge	+2	+1	+2	+2	-1	+1	-1	+1	+2	-2	+2	+1	+1	+1
Option 5 – New low level pedestrian/cycle bridge	+2	+1	+2	+2	+1	+1	-3	+1	+1	0	+2	+1	+1	+1
Option 6 – New high level pedestrian/cycle bridge	+2	+1	+2	+2	+1	+1	+1	-1	+1	-1	+1	+1	+1	+1
Option 7 – New road bridge	+3	+3	+3	+3	-2	+1	+2	-3	+2	-3	+3	+2	+2	+2
Option 8 – New Bypass	-2	+2	-2	0	-2	-2	+1	-3	-2	-3	+1	-2	+1	0

Capabilities on project:

Transportation

Table 6.5 – Appraisal Outcome

Option	Recommended for Further Assessment
Do-Minimum	✓
Option 1 – Widen existing carriageway within constraints of existing deck width	✓
Option 2 – Widen existing footway with signal controlled vehicular crossing	✗
Option 3 – Extend bridge deck	✓
Option 4 – Suspend Cantilevered Footway from the Existing Bridge	✓
Option 5 – New low level pedestrian/cycle bridge	✗
Option 6 – New high level pedestrian/cycle bridge	✓
Option 7 – New road bridge	✓
Option 8 – New Bypass	✗

On the basis of the appraisal, it is recommended that the following options are retained by Aberdeenshire Council for further assessment:

Do-Minimum (as a basis in which to compare other options)
Option 1 – Widen existing carriageway within constraints of existing deck width
Option 3 – Extend bridge deck
Option 4 – Suspend Cantilevered Footway from the Existing Bridge
Option 6 – New high level pedestrian/cycle bridge
Option 7 – New road bridge

Option Costing

Capabilities on project:

Transportation

7 Option Costing

7.1 Introduction

In this section, cost estimates are provided for the various Banff Bridge study options. The actual cost of civil engineering projects are very difficult to predict accurately given the numerous variable influences, including supply and demand of materials and fuel, availability of local skilled labour, global financial pressures and industry enthusiasm for the project. Consequently, the estimates provided herein should be viewed as approximate and subject to change.

The total cost of taking a construction project from conception to decommissioning can be approximately divided into the following parts:

- Costs prior to Contract Award.
- Contract Costs.
- Maintenance Costs.
- Decommissioning Costs.

Decommissioning costs are outside the scope of this report, considering the 120-year design life of the structures, and the scope of the current commission. Section 7.2 summarises estimated total costs for each of the options. Further details of the mechanics of the costs estimation process is provided in Table 2, in Appendix C of the supporting appendices document. Total costs are given for up to completion of contract and for up to the end of the 120-year design life.

The costs presented below are the costs to contract completion. Costs inclusive of optimism bias are outlined in Chapter 8.

7.2 Option Costing

The total costs summaries for each option are provided in Table 7.1, below.

Table 7.1 – Options Costs Estimations to Contract Completion

Option	Cost to Contract Completion
Option 1 – Widen existing carriageway within constraints of existing deck width	£310,000
Option 2 – Widen existing footway with signal controlled vehicular crossing	£90,000
Option 3 – Extend bridge deck	£3.4m
Option 4 – Suspend Cantilevered Footway from the Existing Bridge	£500,000
Option 5 – New low level pedestrian/cycle bridge	£810,000
Option 6 – New high level pedestrian/cycle bridge	£2.9m
Option 7 – New road bridge	£4.9m
Option 8 – New Bypass	£26.7m

Table 7.1 includes pre-contract costs, contract costs and maintenance costs, but does not include costs for land purchase costs, compensation costs or disruption to traffic, which should be separately allowed for by

Capabilities on project:

Transportation

Aberdeenshire Council. The costs, based at 2016 prices, form part of Appendix C of the supporting appendices document.

Risk Analysis

Capabilities on project:

Transportation

8 Risk Analysis

8.1 Introduction

As part of the initial appraisal update, it was confirmed by Aberdeenshire Council that an option risk assessment and sensitivity analysis (to include short and longer term bridge closure impact) should be undertaken.

8.2 Risk Analysis

The STAG guidance states that: "Risk management is a structured approach to identifying, assessing and controlling risks that emerge during the course of the option lifecycle."²³

Table 8.1 provides a summary of the anticipated risks associated with the four options that have been recommended for selection (for further assessment).

Table 8.1 – Option Risks

Option	Policy Risk	Risk on Delivering	Risk on Operating	Risks on Demand and Revenue
Do-Minimum (as a basis in which to compare other options)	Low risk – changes to policy/legislation could occur but not imminent	No risk	Medium Risk - Residual Asset Value risk due to uncertainty of resilience of the existing structure	Low/High Risk - Will incur ongoing ad-hoc maintenance costs and potentially more major costs if the structure was compromised
Option 1 – Widen existing carriageway within constraints of existing deck width	Low risk – changes to policy/legislation could occur but not imminent	Medium Risk - Planning risk (A-listed structure but no fundamental change to form of the bridge)	High Risk of short term disruption (closure). Low risk thereafter subject to adequate strengthening.	Medium risk – Design Risk in that there are unknowns to address regarding the existing structure, but demand at low growth levels
Option 3 – Extend bridge deck	Low risk – changes to policy/legislation could occur but not imminent	High Risk - Planning risk (A-listed structure)	High Risk of short term disruption (closure). Low risk thereafter subject to adequate strengthening.	Medium risk – Design Risks in that there are unknowns to address regarding the existing structure, but demand expected at low growth levels

²³ <http://www.transport.gov.scot/report/j358676-13.htm#s1322>

Capabilities on project:

Transportation

Option	Policy Risk	Risk on Delivering	Risk on Operating	Risks on Demand and Revenue
Option 4 – Suspend Cantilevered Footway from the Existing Bridge	Low risk – changes to policy/legislation could occur but not imminent	High Risk - Planning risk (A-listed structure)	Medium Risk of Short term disruption (one-way working). Low risk thereafter. Medium Risk - Residual Asset Value risk due to uncertainty of resilience of the existing structure	Medium risk – Design Risk in that there are unknowns to address regarding the existing structure, but demand at low growth levels
Option 6 – New high level pedestrian/cycle bridge	Low risk – changes to policy/legislation could occur but not imminent	Medium Risk - Planning risk (A-listed structure nearby)	Medium risk that bad weather could prevent use of footbridge. Medium Risk - Residual Asset Value risk due to uncertainty of resilience of the existing structure	Low risk of change to pedestrian movements. They may increase but footway capacity not expected to be an issue.
Option 7 – New road bridge	Low risk – changes to policy/legislation could occur but not imminent	Medium Risk - Planning risk (A-listed structure nearby)	Low Risk – a new asset. Low Risk - Residual Asset Value of existing structure less of an issue	Low risk of change to vehicular movements with low growth.

To mitigate some of the risks shown further appraisal is recommended under 1:200 flood conditions, and further consultation with bodies associated with planning.

Capabilities on project:

Transportation

8.3 Sensitivity Testing

The STAG guidance states that: “There is a demonstrated, systematic tendency for project appraisers to be overly optimistic... To redress this tendency, practitioners should make explicit adjustments for this bias when appraising projects. These will take the form of increasing estimates of the costs and decreasing and delaying the receipt of estimated benefits.”

STAG requires that fixed links (bridges and tunnels) have an optimism bias ranging from 6%-66% depending on the stage of the project design. Initially a figure of 15% was used in the cost assessments applied to the Contract Value and a sensitivity test of 66% applied to Contract Value has also been investigated giving a range of costs associated with each option.

Table 8.2 below considers the costs of the options emerging from the initial appraisal, inclusive of optimism bias.

Table 8.2 – Sensitivity Test

Option	Initial Cost Estimate (15% OB)	Sensitivity test (66% OB)
Option 1 – Widen existing carriageway within constraints of existing deck width	£310,000	£430,000
Option 3 – Extend bridge deck	£3.4m	£4.9m
Option 4 – Suspend Cantilevered Footway from the Existing Bridge	£500,000	£640,000
Option 6 – New high level pedestrian/cycle bridge	£2.9m	£4.0m
Option 7 – New road bridge	£4.9m	£6.8m

It should be noted that there are some uncertainties in costs given there are a number of unknowns at this early stage of option development.

8.4 Construction Disruption

Options 1, 3 and 4, and to a lesser extent Option 6 would have disruption costs due to construction on the existing bridge for a period of time, requiring traffic light control or full diversion scenarios.

8.5 Strengthening Foundations of Existing of Banff Bridge

In the event that these options also warrant the strengthening of the existing bridge to greater levels of resilience, then costs would also rise by over £1m each, subject to further investigations of strengthening requirements.

Key Outcomes

Capabilities on project:

Transportation

9 Key Outcomes

9.1 Introduction

This study was commissioned by Aberdeenshire Council to examine the economic impact of the current Banff Bridge as a route for trips between Peterhead, Fraserburgh and Inverness. This work follows on from a STAG Part 1 study undertaken in 2008.

This updated initial appraisal has examined the economic impact of Banff Bridge in light of concerns about the safety of the bridge for local access for all traffic between Banff and Macduff and the impact temporary restrictions or closure due to maintenance works or road traffic accidents may have in economic terms.

Consultations have been undertaken with key stakeholders, including interviews with local businesses and online surveys with the Banff and Macduff community. In addition to this, consideration of traffic and active travel demand in the study area supported the identification and development of options for the transport link between Banff and Macduff.

9.2 EALI – Key Outcomes

All options considered as part of the Banff Bridge Initial Appraisal Update have the potential to generate impact in terms of economic activity and location impacts (EALI). EALI analysis aims to describe the impacts of transport investment on the economy using measures of income or employment.

With the exception of the Do-Minimum, which would typically retain the status quo (sustaining the current impacts of Banff Bridge in terms of economic activity), the remaining options would all have varying degrees of impacts on economic activity, and on the Banff-Macduff locale.

The majority of the options considered in the study would have varying levels of beneficial impact on economic activity, by promoting more efficient movement of traffic and in so doing supporting access to employment and promoting income to the local area and to a lesser extent supporting the region. Some options have potential to promote active tourism in the local areas of the bridge, and the majority of options provide a minor although not critical role to supporting wider businesses along the A98 corridor and between Peterhead, Fraserburgh and Inverness.

However, two options in particular – Option 2 (signal controlled crossing) and Option 8 (New bypass) would have negative impacts on economic activity. Option 2 would restrict movement between Banff and Macduff due to traffic signal operation, with Option 8 taking regionally strategic traffic away from the existing bridge, resulting in local businesses potentially losing passing trade.

9.3 Overall Outcomes

A total of eight options were appraised in accordance with Scottish Transport Appraisal Guidance against Transport Planning Objectives, STAG criteria (Environment, Safety, Economy, Integration and Accessibility and Social Inclusion) and implementability (Technical, Operational, Affordability and Public Acceptability).

The following options are **not** recommended for further consideration.

Table 9.1 – Options Not Recommended for Further Assessment

Option	Rationale for Rejection
Option 2 – Widen existing footway with signal controlled vehicular crossing	Option contravenes elements of the TPOs for this study, and has negative impacts against several STAG and implementability criteria (particularly public acceptability).
Option 5 – New low level pedestrian/cycle bridge	Option has negative impacts against several STAG and implementability criteria (particularly operational feasibility).

Capabilities on project:

Transportation

Option	Rationale for Rejection
Option 8 – New Bypass	Option contravenes elements of the TPOs for this study, and has negative impacts against several STAG and implementability criteria (particularly in terms of affordability).

Five options (and a Do-Minimum baseline in which to compare them) have emerged from this initial appraisal update, and are recommended for further consideration by Aberdeenshire Council.

Table 9.2 – Options Recommended for Further Assessment

Option	Rationale for Selection
Do-Minimum	Provides a basis in which to compare other options.
Option 1 – Widen existing carriageway within constraints of existing deck width	Each of these options has the potential to deliver several of the TPOs for this study, and complement a number of elements of the STAG and implementability criteria.
Option 3 – Extend bridge deck	
Option 4 – Suspend Cantilevered Footway from the Existing Bridge	
Option 6 – New high level pedestrian/cycle bridge	
Option 7 – New road bridge	

It is recommended that further appraisal work is undertaken on the above options in order to determine the strongest performing option of those remaining.