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1. **INTRODUCTION**

1.1 **Overview**

1.1.1 Pell Frischmann has been commissioned by East Riding of Yorkshire Council (ERYC) to prepare an Outline Business Case as part of the proposed A164 and Jocks Lodge Junction Improvement Scheme, which is located to the south of Beverley town centre.

1.1.2 This follows a submission by ERYC to the Department for Transport (DfT) in order to progress the scheme to Outline Business Case stage as part of the Large Local Major Transport Scheme Funding announced in 2016. The scheme is to be progressed with funding support under this DfT initiative.

1.2 **Background**

1.2.1 The A164 corridor and Jocks Lodge junction are located in the East Riding of Yorkshire, to the south of Beverley town centre and to the north of Kingston upon Hull. A plan showing the location of both the A164 corridor and Jocks Lodge junction in relation to the surrounding area is provided in Figure 1.1.
1.2.2 The A164 is a major route serving the south of the East Riding of Yorkshire, the west of the City of Hull, and the Principal Town of Beverley. It is also part of the East Riding of Yorkshire Council’s Primary Route Network. The A164 provides a vital link to the national M62 / A63 corridor and the A15 in Lincolnshire and is the most heavily trafficked transport corridor in the East Riding, carrying approximately 30,000 vehicles per day along certain sections.

1.2.3 The A164 Corridor serves an area with a combined population of almost 500,000 people, and is particularly important for providing access to Castle Hill Hospital (a UK Centre of Excellence for Oncology and Haematology Development), Willerby Shopping Park, and Hull University halls of residence which are situated in Cottingham close to the route. The route provides the most direct link to/from the north of the region (North Yorkshire and beyond) for vehicles accessing the International Hull and Humber Ports Complex and Ferry Terminal, Humber Enterprise Zone and the Humber Bridge, serving Lincolnshire and the south Humber Ports.

1.2.4 The A1079 is the primary route between the cities of Hull and York whilst also connecting local settlements including the Principal Town of Beverley and the towns of Pocklington and Market Weighton. The A1079 forms the main strategic corridor for commuters, freight, residents and tourists travelling to and between York and Hull to access employment, education and retail facilities offered in the two cities. The A1079 also forms an important link to the Hull and Humber Ports, with over 18% of port traffic using the route. The A1079 is single carriageway for much of its length although there are sections of dual carriageway such as the section to the south of Beverley around Jocks Lodge. On the approach to Jocks Lodge, the A1079 currently carries around 20,000 vehicles a day.

1.2.5 In order for vehicles to travel between the A164 and A1079 it is necessary to pass through Jocks Lodge junction. The existing junction is formed of a grade separated half-cloverleaf layout with the A1079 passing beneath the A164. The two junctions that connect each of the existing A1079 slip roads with the A164 are currently signal controlled. An aerial view showing the layout of this existing junction in relation to the surrounding area is provided in Figure 1.2.
1.2.6 The single carriageway sections of the A164, and Jocks Lodge Junction itself, have historically formed a pinch point on the local highway network. In 2010 traffic signal control was introduced at the junction to largely address a significant injury collision problem and to help manage queues on the slip roads for vehicles exiting the A1079.

1.2.7 Whilst this arrangement has improved the road safety record, it has not been sufficient to accommodate the significant growth in background traffic, resulting in severe congestion at the junction. Minor changes to the phasing of the traffic signals and road markings have already been implemented, and although this has had some impact, it has not addressed the extent of the problems outlined above.

1.2.8 Following a successful bid to the DfT’s previous Large Local Major Scheme Fund the Council implemented a £10m scheme to improve capacity along the A164 corridor in 2013. This involved improvements to four roundabouts along the route with a new dual carriageway section introduced between Willerby and Cottingham. The Council also completed a new Southern Relief Road for Beverley in 2015, the western end of which terminates just north of the Jocks Lodge junction. The capacity improvements on the A164 and the completion of the Southern Relief Road
means that the remaining single carriageway section of the A164 and Jocks Lodge junction form a bottleneck on the local highway network.

1.2.9 The only solution is therefore to consider a major engineering scheme that completely reconfigures the Jocks Lodge junction layout and addresses the capacity issues on the section of the A164 between Beverley and Cottingham.

1.2.10 On this basis, it is proposed that improvements to the A164 are undertaken between Lincoln Way Roundabout to the north and Castle Hill Roundabout to the south. A map showing the geographical extent of the scheme is provided in Figure 1.3.
As can be seen in Figure 1.3, the single carriageway section on the A164 between Lincoln Way Roundabout and Castle Hill Roundabout represents the remaining...
pinch point on this part of the network following completion of the Beverley Southern Relief Road in 2015 and A164 improvement scheme in 2013.

1.3 Report Structure

1.3.1 The remainder of this document sets out the evidence for the Outline Business Case and is structured as follows:

- Chapter 2: Strategic Case – demonstrating the case for change and strategic fit by determining that investment is needed and identifying how the proposed improvements fit with the Council's aims and objectives and the wider policy context;

- Chapter 3: Economic Case – presenting the traffic modelling and economic assessment and demonstrating the Value for Money of the improvements;

- Chapter 4: Financial Case – presenting the affordability of the improvements and the proposed funding arrangements;

- Chapter 5: Commercial Case – providing evidence on the commercial viability of the improvements and the proposed procurement strategy, risk allocation, and timescales;

- Chapter 6: Management Case – providing evidence that the improvements are deliverable; and demonstrating the project plan, governance structure, risk management, communications and stakeholder management; and,

- Chapter 7: Summary and Conclusions.
2. STRATEGIC CASE

2.1 Introduction

2.1.1 This section sets out the strategic case for the A164 and Jocks Lodge Junction Improvement Scheme to support economic growth and delivery of the Local Plan. The strategic case will consider the following:

- **Business Strategy** – providing the context including the strategic aims and responsibilities of the Council;

- **Problem identified** – presenting the identified problems and need for intervention, including journey time reliability, congestion and road safety;

- **Impacts of not changing** – identifying the impacts of not changing;

- **Internal drivers for change** – identifying what is driving the need for change internally;

- **External drivers for change** – identifying what is driving the need for change from external sources;

- **Objectives** – stating objectives that will address the identified problems;

- **Measures for success** – to determine what constitutes successful delivery;

- **Scope** – explaining what the project will deliver;

- **Constraints** – identification of any constraints to successful delivery;

- **Interdependencies** – internal and external factors affecting successful delivery;

- **Stakeholders** – identifying the main stakeholder groups as well as their contribution to the scheme; and

- **Options** – setting out the proposed options and assessing the impact of these against the scheme objectives and the wider public policy context, including the identification of risks.
2.2 Business Strategy

2.2.1 As part of their Business Strategy, ERYC has produced a Local Plan (2012-2029) and Local Transport Plan (LTP) (2015-2029) setting out the strategic aims and objectives for delivering economic growth in the East Riding. These documents are discussed below, highlighting the links between the aims and objectives within them, and how the A164 and Jocks Lodge Junction Improvement Scheme supports the delivery of new homes and employment development allocated in the Local Plan.

Policy Alignment


2.2.2 The Local Plan is the name for a portfolio of planning documents that together provide the framework for managing development and addressing key planning issues in the East Riding of Yorkshire. As individual documents have been adopted they are used to guide investment decisions and determine planning applications.

2.2.3 The following documents make up the Local Plan:

- Strategy Document (adopted 2015) – sets the overall strategic direction for the Local Plan, providing strategic policies to guide decisions on planning applications.
- Allocations Document (adopted 2015) – allocates sites for development (such as housing, retail, or industry) or protection (such as open space or land for transport schemes).
- Bridlington Town Centre Area Action Plan (AAP) (adopted 2013) – provides specific policies to guide development and contribute to the urban renaissance of Bridlington Town Centre.

2.2.4 The Strategy Document sits at the heart of the Local Plan and includes policies on how growth and development will be managed in the East Riding up to 2029. A key part of the Strategy Document is to set out a collective ‘vision’ for the East Riding and individual ‘place statements’ to highlight how the larger settlements will grow and develop. Further details on those policies that are relevant to the A164 and Jocks Lodge scheme are included below.


2.2.5 Policy S5 in the Local Plan Strategy states that provision will be made for at least 23,800 (net) additional dwellings (1,400 per annum) in the East Riding between 2012 and 2029. Through the allocation of sites in the Allocations Document and the determination of planning applications, the Council will seek to support the distribution of 3,300 new homes in the Principal Town of Beverley and 3,550 dwellings in the Major Haltemprice Settlements of Anlaby, Cottingham, Hessle, Kirk Ella and Willerby to the west of Hull.
The additional trips generated by this new housing development will place additional strain on the A164, which is the key transport and commuter link between Beverley, the Haltemprice Settlements, the strategic road network and the South Humber Bank.


Policy S6 states that the future needs of the East Riding economy will be met through the allocation of at least 235 hectares of employment land on a broad range of sites. This includes 55 hectares assigned for B1 use in predominantly in the Major Haltemprice Settlements and Principal Towns including Beverley and 115 hectares for B8 use along the east-west transport corridors such as the M62 / A63 and the A1079. This employment land development will also add additional trips on to the local highway network.

Policy S8: Connecting people and places - Strategy Document (2012-2029)

Policy S8 explains how places and people should be connected, setting out the parameters on which the Local Plan should be based:

- New development should ensure that people and places are well connected;
- The overall role and function of the Strategic Transport Network will be protected and/or enhanced, having regard to the investment priorities, policies, and proposals within the Local Transport Plan and other related strategies; and
- Transport schemes that improve the overall capacity and coverage of the transport network will be supported. Where appropriate land will be safeguarded for these schemes in the Allocations Document, Bridlington Town Centre Area Action Plan, or a Neighbourhood Development Plan.

The Strategy Document goes on to state that ‘a well-developed and integrated transport system can open up a wealth of opportunities for individuals and businesses, and help address issues of disadvantage, isolation and inequality. National planning policy encourages the provision of viable transport infrastructure necessary to support new development, including large scale facilities necessary to support major generators of travel demand.’

Policy S8 also supports several specific measures such as improvements to the A1079, which are set out in Policies A1-A6, to improve the operation and coverage of the transport network. The most relevant policy to this improvement scheme is Policy A1: Beverley and Central sub area.


The Local Plan Strategy includes six sub area policies, developed to help focus the delivery of sustainable economic development. The Beverley and Central sub area...
has a population of around 162,000, which represents almost half of the East Riding’s total population of 337,696. In total, just under 30,500 people live within Beverley, and 55,000 people live in the Major Haltemprice Settlements of Anlaby, Cottingham, Hessle, Kirk Ella and Willerby. The sub area benefits from a significant concentration of the East Riding’s employment opportunities, and is also subject to high demand for housing. The A164 and A1079 are identified as having an important role for the economy in this sub-area, linking businesses along the routes to the national trunk road network (the A63/M62 corridor), and are key inter-urban and regional links between the cities of Hull and York, the east coast and the strategic road network.

2.2.12 The most recent East Riding Employment Land Monitoring Report (2015/16) identified that 72% of the total allocated land for employment use was within the Beverley and Central sub area.

2.2.13 Several transport schemes to enhance accessibility, widen transport choices and reduce congestion have been identified through various sources including the LTP, the Local Plan Infrastructure Study and in dialogue and assessment with Highways England. These improvements are needed to help deliver the comparatively high level of development within the East Riding. This includes improvements to the A164 and Jocks Lodge Junction in order to help facilitate new development in the local area, and the need for an improvement scheme here is identified within the Local Plan Strategy document.

2.2.14 Section D of Policy A1 Beverley and Central sub-area has identified ‘A1079 improvements’ and ‘A164 Humber Bridge to Beverley improvements’ as supporting transport infrastructure improvement schemes to enhance connectivity within the sub area and with the rest of the East Riding.

2.2.15 Given the above, it is considered that the proposed improvements at the A164 and Jocks Lodge Junction are aligned with the strategic aims, objectives and aspirations of the Local Plan.

Local Plan Infrastructure Study (2014)

2.2.16 The Council’s Infrastructure Study has been prepared in support of the Local Plan – both the Strategy Document and Allocations Document. This Infrastructure Study has identified the various forms of infrastructure required to meet the maximum level of growth planned for within the Local Plan as set out in Policy S5 and S6 above.

2.2.17 Within the Infrastructure Study, junction capacity along stretches of the Council’s local highway network was assessed to establish whether capacity improvements are needed over the plan period. Of the seven A1079 junctions modelled, it was found that four required improving to accommodate projected traffic volumes over the Local Plan period. These were:
• Shiptonthorpe Roundabout – proposed widening of the A1079 east and west of the roundabout to provide two lane entry and exit, indicatively funded through the York, North Yorkshire and East Riding LEP’s Growth Deal;

• Holme Road staggered crossroad junction (Market Weighton) – proposed introduction of a roundabout at the junction. Local Pinch Point funding from the DfT was secured to fund this improvement in 2015;

• Killingwoldgraves Roundabout – capacity improvements including widening of the approaches and exits, delivered through the York, North Yorkshire and East Riding LEP’s Growth Deal in 2017; and

• Dunswell Roundabout – proposed signalisation of the roundabout.

2.2.18 Two A164 junctions were also modelled and found to require improvement to accommodate projected traffic volumes over the Local Plan period. These were:

• Swanland Roundabout – enlargement of the roundabout to include two lane entry/exit in both directions along the A164; and

• Jocks Lodge Junction – Alterations to the junction layout and further dualling of the A164.

2.2.19 Within the recommendations of the Study, it is stated that delivery of highway improvements should be optimised by submitting those improvements most likely to meet external funding criteria, such as unlocking development which creates jobs, within funding bids.

2.2.20 Improvements at the A164 and Jocks Lodge Junction are also included in the Infrastructure Delivery Plan. This states that capacity improvements here are ‘essential’ in the 2018 to 2024 period to facilitate and accommodate allocated development.

2.2.21 Given the above, it is considered that the proposed improvements along the A164 and at Jocks Lodge Junction are aligned with the outcomes of the Infrastructure Study.

Local Transport Plan (2015-2029)

2.2.22 The Council’s current Local Transport Plan (LTP) covers the period 2015 to 2029 and sets out the strategic objectives for transport in the East Riding. This includes a three-year implementation plan which sets out a programme of projects that will be delivered between 2015/16 and 2017/18. A new Implementation Plan covering the three-year period between 2018/19 and 2020/21 is currently being developed, with further Implementation Plans prepared every three years.

2.2.23 The LTP has the following six strategic objectives:
- Improve the maintenance and management of the existing transport network;
- Support sustainable economic growth and regeneration;
- Reduce carbon emissions;
- Improve road safety;
- Support and encourage healthy lifestyles; and
- Improve access to key services.

2.2.24 The above six strategic LTP objectives have been developed to help contribute towards the delivery of the Council’s corporate priorities as set out in the Council’s Business Plan (2016-2021).

2.2.25 The LTP states that the A164 between the Humber Bridge and Beverley is the East Riding’s most heavily trafficked route, carrying approximately 30,000 vehicles a day along some sections. This has created issues with congestion and unreliable journey times, particularly during peak times.

2.2.26 As noted in section one of the LTP Strategy, the A1079 is identified as the primary link road between Hull and York while also connecting local settlements including Beverley, Pocklington and Market Weighton. It is stated that sections of the A1079 are operating near capacity and there are high percentages of HGVs and agricultural vehicles resulting in long and unreliable journey times. In 2016, the section nearest to Jocks Lodge carried approximately 20,000 vehicles per day.

2.2.27 Improvements at the A164 and Jocks Lodge Junction will contribute towards achieving several of the Council’s wider objectives and future aspirations. The proposals will help meet the corporate priorities for ‘maximising our potential’ and ‘valuing our environment’ by developing key transport infrastructure to maintain a reliable and resilient transport network, which has direct economic benefits in terms of increasing productivity through more reliable journey times. The scheme will also minimise traffic congestion, improve access to key services and improve road safety, all of which are objectives within the Council’s LTP.

2.2.28 Given the above, it is considered that the proposed improvements to the A164 and Jocks Lodge Junction are aligned with the strategic aims of the current LTP and the Council’s corporate priorities.

Strategic Economic Plans for Humber / York, North Yorkshire and East Riding

2.2.29 East Riding of Yorkshire Council is a member of two Local Enterprise Partnerships (LEPs) – the Humber LEP and the York, North Yorkshire and East Riding (YNYER) LEP. The Council is a member of two LEPs due to the wide and diverse geography of the East Riding which encompasses four functional economic areas.
2.2.30 The Strategic Economic Plan (SEP) for the Humber LEP covers the period from 2014 to 2020. This document outlines intentions to support investments that will generate more than 13,000 jobs over the next 10 years. For successful growth, long-term spatial planning is essential to be able to plan and shape the future of the area. To increase the rate of house building and benefit businesses, transport congestion needs to be addressed as this is one of the most significant constraints to growth.

2.2.31 Transport networks that are well maintained and have minimal congestion enable businesses to become more competitive and reduce transport costs by moving both people and goods reliably and quickly, leading to sustainable economic growth.

2.2.32 The Humber LEP promoted the A164 and Jocks Lodge Junction Improvement Scheme and are committed to working with statutory partners to continue improving the strategic transport network by addressing road bottlenecks at key sites and along key growth corridors. The A164 and A1079 corridors have both been identified by the Humber LEP as key growth corridors and are crucial to the future development of the region.

2.2.33 The YNYER LEP has also prepared a SEP which recognises that improving transport connections, particularly east-west transport connectivity, is paramount in terms of supporting local economic growth. The SEP focuses on key routes between towns and cities, including the A164 and A1079. The A164 and Jocks Lodge Junction Improvement Scheme will therefore contribute towards achieving the strategic economic priorities set out in both the YNYER LEP and the Humber LEP’s SEPs.

2.2.34 Given the above, it is considered that the A164 and Jocks Lodge Junction Improvement Scheme is aligned with the strategic economic priorities that are set out in both SEP documents.

Summary

2.2.35 In summary, having considered the aims and objectives of various sub-regional and local strategy and policy documents, it is evident that the proposals for the A164 and Jocks Lodge Junction Improvement Scheme are aligned with a common vision that will help to deliver the Business Strategy for the East Riding. The scheme is therefore considered to be an excellent policy fit.

2.3 Problem Identified

Background and Contributory Factors

2.3.1 The existing conditions on the A164 corridor between Lincoln Way Roundabout and Castle Hill Roundabout can be characterised by the following key problems:

- **Poor Journey Times and Reliability** – Substantial queuing and delays at Jocks Lodge Junction are contributing towards long journey times and poor
journey time reliability for vehicles travelling between the A1079 and A164 as well as along the A164 corridor. During the AM and PM network peak hours this results in A164 southbound traffic blocking back through Victoria Road Roundabout onto Lincoln Way Roundabout, which are approximately 500m and 800m from Jocks Lodge Junction respectively. This is also the case for traffic travelling northbound on the A164 from Skidby Roundabout, which is approximately 3km to the south of Jocks Lodge Junction.

- **Congestion** – Constrained link capacity on the A164 has resulted in congestion due to the high volume of traffic on sections of single carriageway with an above average proportion of HGVs.

- **Road Safety Risk** – The extent of queuing on the existing slip roads at Jocks Lodge Junction can often lead to vehicles blocking back onto the A1079 which is subject to national speed limit. The presence of queuing on a national speed limit dual carriageway is considered to pose an increased road safety risk.

### 2.3.2 The contributing factors that have led to the characteristics described above can be summarised as follows:

- High car ownership and usage;
- A high proportion of HGVs and Agricultural Vehicles;
- Significant traffic growth in recent years; and
- Limited route choice for vehicles travelling from York and Beverley to Hull and the Humber Bridge.

### 2.3.3 In order to consider these problems further the following sections will provide additional details and evidence of the existing issues and contributing factors.

**Poor Journey Time Reliability**

### 2.3.4 As summarised above, during the AM and PM network peak hours there is currently substantial queuing and delay for vehicles travelling along the A164 and through Jocks Lodge Junction. Queues on the A164 southbound often extend from the stop line at the southern Jocks Lodge signalised junction, through the northern signalised junction (400m) up to the Victoria Road roundabout (500m) and beyond to Lincoln Way Roundabout (200m). A map to show the extent of the AM peak hour queuing on each approach to Jocks Lodge junction is provided in Figure 2.1 and a selection of photos showing typical examples of queuing along the A164 are provided in Figures 2.2 to 2.4 respectively.
Figure 2.1 – Existing AM Peak Queuing at Jocks Lodge Junction
Figure 2.2 – Example of A164 Southbound Queuing during the AM Peak

Figure 2.3 – Existing Northbound Queuing from Skidby Roundabout to Jocks Lodge
2.3.5 Vehicles exiting the A1079 at the northern signalised junction usually join a queue on the slip road during the network peak hours. This backs up quickly and results in delays for drivers. This queue backing up along the slip road is primarily due to the level of southbound queuing on the A164, which restricts the number of vehicles that can pass through the signals onto the A164 during the green stage.

2.3.6 In addition to southbound queuing, there are also frequent delays for northbound traffic on the A164 approach to the southern signalised junction. At the northern junction queuing traffic waiting to turn right from the A164 onto the A1079 eastbound can often extend back beyond the dedicated right turn lane and therefore blocks ahead traffic travelling towards Beverley.

2.3.7 The underlying causes of queuing and delay through Jocks Lodge can be attributed to recent traffic growth that has increased demand on the surrounding network. These trends are evident from data recorded at permanent Automatic Traffic Counts (ATC) sites that are maintained by ERYC. For example, the recorded data at Site 20, which is located to the south of Jocks Lodge on the A164, confirms that there has been a notable increase from approximately 26,000 to 30,000 vehicles per day between 2013 and 2017. This represents a 15% increase in traffic growth over four years at this location.

2.3.8 In order to understand the extent of the problem, existing journey time information for the A164 has been extracted from traffic master data. This data has been used to determine average journey speeds in the respective AM, PM and average inter-peak periods. These are shown in Figures 2.5 and 2.6 for each direction.
2.3.9 The results in Figure 2.5 show that average speeds on the southbound approach to Jocks Lodge junction are approximately 24 km per hour (15mph) in both the AM and PM peak hours, whereas during the inter peak period this increases slightly to 34 km per hour (21 mph). The speed of vehicles passing through Jocks Lodge Junction is comparable in all periods due to signal timings, however to the south of the junction average speeds begin to increase as the speed limit changes from...
40mph to 50mph, albeit with recorded speeds still notably below this maximum. The speed for vehicles travelling through Skidby Roundabout is reduced in all time periods although this is much less than at Jocks Lodge.

2.3.10 In terms of vehicles travelling northbound, as can be seen in Figure 2.6 speeds recorded on the approach to Skidby Roundabout are considerably lower in the PM peak. This is also the case on the A164 section between Skidby Roundabout and Jocks Lodge, although the AM peak also sees a notable drop in speed when compared to the inter peak period.

2.3.11 In terms of overall journey times, during the worst case PM peak hour northbound vehicles are currently taking 10.5 minutes to travel 5.6 km on this section, which equates to an average speed of approximately 20mph and substantially below the posted speed limits. Similarly, for southbound traffic during the worst case AM peak hour vehicles are taking up to 8 minutes to travel 5.6km which equates to an average speed of 29.5mph, which is also substantially below the posted speed limit.

Congestion

2.3.12 The Council’s Infrastructure Study (2014), which supports the Local Plan, carried out Congestion Reference Flow calculations for major sections of the local highway network. This assessment was based on a traffic growth scenario that incorporated trips from planned new developments. These calculations showed that by the end of the Local Plan Period (2029) the following sections of highway network would be operating at a ‘stress level’ of close to, at, or over 100% (indicating that capacity will be limited in future) and as such would likely warrant consideration in terms of capacity improvements:

- The A164 between the Humber Bridge and Beverley (128% to 165% stress)
- The A614 within Goole (128% stress)
- The A1035 between Beverley and Leven (130% stress)
- All single carriageway sections of the A1079 (125% to 131% stress)
- The A1174 between Hull Bridge Road (Beverley) and Dunswell (96% to 99% stress)

2.3.13 As can be seen above, the A164 between the Humber Bridge and Beverley is predicted to have the greatest stress levels of all routes over the Local Plan period. The single carriageway sections of the A1079 are also expected to be operating substantially above capacity.

2.3.14 Figure 2.7 shows that approximately 53km of the highway network in the East Riding is projected to be operating at close to, at, or over 100% stress, or as an area of congestion without any programmed improvement by 2029.
In addition to the analysis undertaken as part of the 2014 Infrastructure Study projections, consideration has also been given to the existing stress levels on the A164 based on recorded traffic data. The single carriageway section between Jocks Lodge and Skidby Roundabout is estimated to have a theoretical link capacity of 1,590 vehicles per hour in each direction. This estimate is based on guidance contained in TD 79/99 for Urban All Purpose (UAP) 1 category roads that are a single carriageway with a 50mph speed limit and which carry predominantly through traffic with limited accesses.

The recorded 2017 peak volume of traffic on this section of the A164 is approximately 1,400 vehicles per hour in each direction, which equates to 88% capacity. Based on the current trajectory of traffic growth (15% between 2013 and 2017) this clearly demonstrates that the single carriageway sections of the A164 will soon be reaching their theoretical capacity.

In terms of existing trends by vehicle type, it should be noted that the average proportion of HGVs recorded on the A164 in 2016 was 7.7% (two-way), whereas on the A1079 the annual average two-way flow was 7.1%. The Road Traffic Estimates in Great Britain 2016 suggest that at a national level HGV traffic accounted for approximately 4.7% of total traffic on principal rural ‘A’ roads. This therefore suggests that both the A164 and A1079 are currently handling a greater proportion of HGV traffic than comparable roads throughout Great Britain. The higher proportion of HGVs also reinforces the current and projected problems with capacity on those single carriageway sections given recent traffic growth.
Car Ownership

2.3.18 Most residents in the East Riding have access to one or more vehicles (82.4%), which is higher than the Yorkshire and Humber and national averages (72.4% and 74.2% respectively). This reflects the rural nature of the East Riding, higher than average household incomes, low unemployment rates and the relatively high number of local residents that commute to neighbouring local authorities and cities such as Hull, York and Leeds.

2.3.19 The percentage of East Riding residents that have access to a car or van increased over the ten-year period between the 2001 and 2011 census, from 79.8% to 82.4%. This is equivalent to an additional 13,300 households now owning a vehicle, with consequent additional pressure placed on the highway network.

2.3.20 Most people are, and will continue to be, dependent on the private car as their main way of travelling around the East Riding. A key challenge for the A164 and Jocks Lodge Junction Improvement Scheme is to therefore help accommodate the steady increase in traffic volumes whilst complementing the measures set out in the LTP to encourage sustainable non-car travel for shorter journeys. This is particularly important for journeys to work as it is these regular trips that contribute heavily towards peak hour congestion. These challenges can be partly addressed through the provision of improved pedestrian and cycle routes as part of the scheme for non-motorised users. The improvements in journey time reliability along the A164 will also help to make travel by bus a more viable alternative.

Limited Route Choice

2.3.21 The rural nature of the East Riding means that there are only a limited number of routes that provide connections between settlements both within and beyond its boundary. The two primary route options for vehicles travelling between Beverley and Hull are the via A164 and A1079, which, as already noted, are currently subject to congestion and delays and involve passing through Jocks Lodge Junction.

2.3.22 For vehicles travelling between Beverley to either the Humber Bridge or locations to the west of Hull, the only viable route is via the A164. In terms of vehicles travelling between York and Hull, the main routes are via the A19, M62 and A63 to the south (which is a longer and less direct route option) or along the A1079 travelling east to west. However, for vehicles travelling between York and settlements to the west of Hull the most viable route is via the A1079 and A164 through Jocks Lodge Junction.

Road Safety Risks

2.3.23 Despite significant investment in recent years and a marked reduction in the number of people killed or seriously injured on the A164 and A1079 corridors including Jocks Lodge Junction, parts of the A1079 and the A164 corridors continue to have a poor road safety record. There are several road safety issues specific to the East
Riding that require careful consideration and targeted solutions to achieve measurable reductions in the number of people killed or seriously injured (KSI).

2.3.24 Personal Injury Accident (PIA) data for the period from September 2012 to September 2017 for the study area is summarised in Table 2.1 and Table 2.2.

Table 2.1 – Collision data for Jocks Lodge Study Area

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of slight collisions</th>
<th>Number of serious collisions</th>
<th>Number of fatal collisions</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>2013</td>
<td>7</td>
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<td>0</td>
<td>8</td>
</tr>
<tr>
<td>2014</td>
<td>10</td>
<td>1</td>
<td>0</td>
<td>11</td>
</tr>
<tr>
<td>2015</td>
<td>5</td>
<td>0</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>2016</td>
<td>11</td>
<td>1</td>
<td>0</td>
<td>12</td>
</tr>
<tr>
<td>2017</td>
<td>8</td>
<td>1</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td>Total</td>
<td>45</td>
<td>4</td>
<td>0</td>
<td>49</td>
</tr>
</tbody>
</table>

Table 2.2 – Casualty data for Jocks Lodge Study Area

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of slight casualties</th>
<th>Number of serious casualties</th>
<th>Number of fatal casualties</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>8</td>
<td>0</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>2013</td>
<td>9</td>
<td>1</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>2014</td>
<td>11</td>
<td>2</td>
<td>0</td>
<td>13</td>
</tr>
<tr>
<td>2015</td>
<td>7</td>
<td>0</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>2016</td>
<td>14</td>
<td>1</td>
<td>0</td>
<td>15</td>
</tr>
<tr>
<td>2017</td>
<td>17</td>
<td>1</td>
<td>0</td>
<td>18</td>
</tr>
<tr>
<td>Total</td>
<td>66</td>
<td>5</td>
<td>0</td>
<td>71</td>
</tr>
</tbody>
</table>

2.3.25 A total of 49 collisions occurred within the study area resulting in 71 casualties within the 5-year time period between September 2012 and September 2017. This comprises of 45 slight collisions and four serious collisions; no accidents that resulted in a fatality were recorded, although a fatal collision did occur at the Jocks Lodge Junction in 2011. The full annual breakdown of collision clusters at each junction and on the A164 is available in Appendix A, alongside a location map. A map of the overall study area can be found in Figure 2.8.

2.3.26 Since 2013 the number of collisions recorded annually has remained consistently between five and six, having risen from one in 2012. This may be as a direct result of the recent traffic growth since 2013 from 26,000 to 30,000 vehicles per day. With traffic volumes continuing to increase it is likely that the number of collisions will either remain at the same level or will increase.

2.3.27 Fourteen collisions occurred at Jocks Lodge Junction, one of which resulted in serious injuries, whilst the remaining 13 were slight. Eleven of the 13 slight accidents were rear ended shunts on the entrance to or on Jocks Lodge Junction. The collision resulting in serious injuries occurred on the slip road from the A1079 westbound towards Jocks Lodge junction.
2.3.28 Since the signals were installed at Jocks Lodge Junction in 2010 two other accidents have occurred on the slip roads to / from the A1079, one of which was serious. Queueing traffic already backs up along the A1079 slip roads and onto the A1079, and this will only worsen as traffic volumes increase. The A1079 is dual carriageway along this section and is subject to the national speed limit resulting in the potential for increased collisions with heightened severity.
During the study period two collisions were recorded at Victoria Road Roundabout, both of which were slight incidents that occurred at the entrance of the roundabout as a result of a rear-ended shunts.
Two slight collisions occurred at the Dunflat Road / A164 junction within the study period. Both collisions occurred due to vehicles entering the A164 carriageway from Dunflat Road and failing to look properly resulting in colliding with another vehicle travelling along the A164. Over the same period five slight collisions were recorded at Skidby Roundabout and a further five slight collisions were recorded at Castle Hill Roundabout.

Analysis of the collision data shows that Jocks Lodge Junction has a poor road safety record with 15 collisions being recorded over the five year period resulting in 19 casualties. This includes one recorded as serious on the A1079 westbound slip road.

Summary

This section has identified the following key problems and challenges based on existing evidence:

- The substantial level of queuing and delay along the A164 corridor and particularly at Jocks Lodge Junction is having a significant impact on journey times and reliability. Journey time data extracted from traffic master confirms that in the worst case peak hour northbound vehicles are currently taking 10.5 minutes to travel 5.6 km on this section, which equates to an average speed of approximately 20mph. Queues on the A164 southbound often extend from the stop line at the southern Jocks Lodge signalised junction, through the northern signalised junction (400m) up to the Victoria Road roundabout (500m) and beyond to Lincoln Way Roundabout (200m). For northbound traffic, there is also substantial queuing and delays from Jocks Lodge towards Skidby Roundabout.

- The number of vehicles travelling on the A164 has substantially increased in recent years from approximately 26,000 to 30,000 vehicles per day between 2013 and 2017. This represents a 15% increase in traffic growth over four years in this location.

- The recorded 2017 peak volume of traffic on the A164 is approximately 1,400 vehicles per hour between Jocks Lodge Junction and Skidby Roundabout in each direction, which equates to 88% of the existing link capacity. Based on the current trajectory of traffic growth (15% between 2013 and 2017) this clearly demonstrates that the single carriageway sections of the A164 will soon be reaching their theoretical capacity.

- The 2014 Infrastructure Study predicted that 53km of the existing highway network within the East Riding is projected to be operating close to, at or over 100% stress by the end of the local plan period (2029). This includes the A164 between the Humber Bridge and Beverley (128% to 165% stress) and all sections of the A1079.
The average proportion of HGVs recorded on the A164 in 2016 was 7.7% (two-way), whereas on the A1079 the annual average two-way flow was 7.1%. The Road Traffic Estimates in Great Britain 2016 suggest that on a national level HGV traffic accounted for approximately 4.7% of total traffic on principal rural ‘A’ roads. It is therefore clear that the higher proportion of HGVs could reduce the performance of the A164 corridor when compared to similar routes.

82.4% of East Riding residents own one or more vehicles which is higher than the national average (74.2%) and for the Yorkshire and Humber (72.4%). A key challenge is to accommodate the increase in traffic volumes within the A164 and Jocks Lodge Junction Improvement Scheme whilst encouraging sustainable non-car travel for shorter journeys.

The rural nature of the East Riding means that there are only a limited number of routes that provide connections between settlements both within and beyond its boundary. This means that most vehicles travelling along the A164 corridor have limited options available when deciding on the route they should travel.

Although improvements have been made in relation to road safety, parts of the road network still have a poor road safety record. There is also concern that as traffic levels increase there will be further blocking back onto the A1079 at Jocks Lodge, which could lead to an increased road safety risk.

2.4 Impact of not changing

Future Transport Demand

2.4.1 In order to assess the impact of not changing the network, the level of future transport demand has been considered for 2020 and 2029 to cover the Local Plan period. ERYC has a list showing the number of new residential, employment and retail land use sites that are planned to be developed in each settlement area by 2029 and so this data has been utilised as part of this assessment.

2.4.2 The list has been used to generate and distribute traffic from new development that is predicted to utilise the A164 corridor and Jocks Lodge junction (with the exception of those who travel through the junction wholly on the A1079) based on their origin and destination. Google Maps was used to aid routeing for trip distribution. For residential dwellings, origins are taken to be at those locations of development, with destinations derived from the NOMIS Travel to Work data. For employment and retail areas, the destinations are taken to be at those locations of development, with origins derived from the NOMIS Travel to Work data.

2.4.3 By calculating the trip generation and distribution specifically in this way, development traffic on individual movements within the model can be identified, rather than applying a general growth factor to all movements equally. In order to
generate future traffic for 2020, a third of the 2029 development traffic has been assumed.

2.4.4 TEMPRO was used to obtain a factor for future traffic growth using the Alternative Assumptions feature. This was used because trip generations from the ERYC Local Plan have been added separately, so it avoids double-counting of future development traffic. By setting the future background housing and employment growth to zero, the factor that is presented takes into account other influences on growth, such as growth in other authority areas and changes in car ownership and demographics. For goods vehicles, adjustment was made using the National Transport Model (NTM) values. The factors used are shown in Table 2.3.

Table 2.3 – Future Growth Factors

<table>
<thead>
<tr>
<th>Year</th>
<th>Time Period</th>
<th>Light Vehicles (LV)</th>
<th>Heavy Vehicles (HV)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015 - 2020</td>
<td>AM</td>
<td>0.961</td>
<td>1.059</td>
</tr>
<tr>
<td></td>
<td>PM</td>
<td>0.964</td>
<td>1.064</td>
</tr>
<tr>
<td>2015 - 2029</td>
<td>AM</td>
<td>1.007</td>
<td>1.172</td>
</tr>
<tr>
<td></td>
<td>PM</td>
<td>1.106</td>
<td>1.181</td>
</tr>
</tbody>
</table>

2.4.5 Using both the individually-calculated development traffic and the adjusted background growth, future traffic making each movement along the A164 and at Jocks Lodge can be determined in more detail than a simple application of a single growth figure.

Future Levels of Service

2.4.6 In order to consider the future levels of service an assessment of the network has been undertaken using the microsimulation programme SIAS Paramics. The network that has been tested includes Jocks Lodge junction and the Victoria Road Roundabout to the north of Jocks Lodge.

2.4.7 A scaled CAD drawing of the existing network was imported into the Paramics software and the modelled network was based upon this layout. Road and lane-width measurements were taken and input directly into the program and the number of lanes were also modelled.

2.4.8 Zones have been allocated to each entry/exit onto the network, resulting in a total of six zones in the model. These zones are shown in Figure 2.9.
As well as physical aspects of the network, the existing speeds of roads, driver behaviour and approximate signal stages and timings were input into the base models. In order to refine the future signal timings, the models were run and timings were changed throughout the modelled time period so that excessive queueing does not occur on the off-slip roads from the A1079 towards the individual signalised junctions. This is to reflect the prioritisation of vehicles on the off-slip roads over vehicles on the A164 mainline by the signal logic, which has been put in place to try and prevent queueing spilling back onto the A1079 mainline.

From manual classified counts undertaken on 14th May 2015, the peak hour was determined to occur between 07:30 and 08:30 in the AM period and between 16:45
and 17:45 in the PM period. In order to assess vehicles travelling in each time period fairly, a longer modelling time period has been chosen that will encompass each peak hour, so that vehicles travelling at the beginning of the time period encounter other vehicles instead of a clear road network. A total of three hours were modelled for each time period to include for a “warm-up” and a “warm-down” period.

2.4.11 As turning movement proportions can change over time, the traffic counts were split into four 15-minute intervals for the peak hour, with another set of traffic counts for each section of time on either side of the peak hour. This produces more detailed turning movements at junctions during the peak hour time period. There were six “mini time periods” in each three hour AM and PM period.

2.4.12 The traffic counts were compared to traffic flow data provided by two of the permanent ERYC ATCs for the same date. One was located to the south of the Jocks Lodge junction on the A164 (Site 20), and the other was located on the Beverley Southern Relief Road (Site 74) which is known as Minster Way. These ATCs factored the north-bound and the south-bound traffic movements up or down for each of the mini time periods. Over the three hour time periods, there was very little change in the volume of trips in the AM (an increase of ~0.5%), with a 5% increase of trips in the PM after factoring to the ATCs.

2.4.13 The traffic counts can also inform the volume of vehicles being released over the duration of the time period. This means that the proportion of vehicles loaded onto the network per interval can be specified quite precisely.

2.4.14 Five vehicle types were represented within two sets of demand matrices. Car and LGV were in the Light Vehicles (LV) matrices, and OGV1, OGV2, and PSV were in the Heavy Vehicles (HV) matrices. Proportions of each vehicle type were specified within each of the six mini time periods.

2.4.15 The scenarios tested to determine the future levels of service are as follows:

- 2020 Do Minimum (existing layout) AM and PM
- 2029 Do Minimum (existing layout) AM and PM

2.4.16 A diagram showing the ‘Do Minimum’ model is provided in Figure 2.10 and the associated peak hour demand for each scenario is provided in Tables 2.4 to 2.7.
Figure 2.10 – Diagram of Do Minimum Model

Table 2.4 – 2020 AM Peak (07:30 to 09:30)

<table>
<thead>
<tr>
<th>Zone</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0</td>
<td>68</td>
<td>80</td>
<td>17</td>
<td>74</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>55</td>
<td>0</td>
<td>17</td>
<td>81</td>
<td>344</td>
<td>7</td>
</tr>
<tr>
<td>3</td>
<td>9</td>
<td>21</td>
<td>0</td>
<td>75</td>
<td>320</td>
<td>7</td>
</tr>
<tr>
<td>4</td>
<td>13</td>
<td>89</td>
<td>38</td>
<td>0</td>
<td>349</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>67</td>
<td>462</td>
<td>201</td>
<td>266</td>
<td>0</td>
<td>307</td>
</tr>
<tr>
<td>6</td>
<td>3</td>
<td>22</td>
<td>10</td>
<td>0</td>
<td>560</td>
<td>0</td>
</tr>
</tbody>
</table>

Note: Flows between zones 4 and 6 (A1079) are set to 0 as they are not included within the model.
Table 2.5 – 2020 PM Peak (16:45 to 17:45)

<table>
<thead>
<tr>
<th>Zone</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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<td>205</td>
<td>104</td>
<td>18</td>
<td>104</td>
<td>6</td>
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<td>2</td>
<td>163</td>
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<td>18</td>
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<td>4</td>
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<td>0</td>
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<td>0</td>
</tr>
<tr>
<td>5</td>
<td>193</td>
<td>347</td>
<td>389</td>
<td>246</td>
<td>0</td>
<td>435</td>
</tr>
<tr>
<td>6</td>
<td>18</td>
<td>32</td>
<td>36</td>
<td>0</td>
<td>398</td>
<td>0</td>
</tr>
</tbody>
</table>

Note: Flows between zones 4 and 6 (A1079) are set to 0 as they are not included within the model.

Table 2.6 – 2029 AM Peak (07:30 to 09:30)

<table>
<thead>
<tr>
<th>Zone</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0</td>
<td>72</td>
<td>84</td>
<td>16</td>
<td>81</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>57</td>
<td>0</td>
<td>18</td>
<td>86</td>
<td>438</td>
<td>7</td>
</tr>
<tr>
<td>3</td>
<td>10</td>
<td>22</td>
<td>0</td>
<td>93</td>
<td>472</td>
<td>8</td>
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<tr>
<td>4</td>
<td>12</td>
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<td>5</td>
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<td>535</td>
<td>256</td>
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<td>0</td>
<td>403</td>
</tr>
<tr>
<td>6</td>
<td>3</td>
<td>23</td>
<td>11</td>
<td>0</td>
<td>721</td>
<td>0</td>
</tr>
</tbody>
</table>

Note: Flows between zones 4 and 6 (A1079) are set to 0 as they are not included within the model.

Table 2.7 – 2029 PM Peak (16:45 to 17:45)

<table>
<thead>
<tr>
<th>Zone</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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</tr>
<tr>
<td>3</td>
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<td>40</td>
<td>0</td>
<td>75</td>
<td>491</td>
<td>22</td>
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<td>233</td>
<td>493</td>
<td>581</td>
<td>282</td>
<td>0</td>
<td>667</td>
</tr>
<tr>
<td>6</td>
<td>17</td>
<td>37</td>
<td>43</td>
<td>0</td>
<td>575</td>
<td>0</td>
</tr>
</tbody>
</table>

Note: Flows between zones 4 and 6 (A1079) are set to 0 as they are not included within the model.

2.4.17 Microsimulation models attempt to reflect daily variation in traffic conditions through statistical variation of traffic levels and randomisation of interactions. S-Paramics uses random number generators in its simulations. This means that every run will vary slightly. Hence, performing multiple runs and combining the data is statistically more robust than relying on a single run.

2.4.18 ‘The Microsimulation Consultancy Good Practice’ document written by SIAS in 2012 states:

“A single run of the model may produce a random event that increases delays in a certain area of the model, leading to re-routing or increased queues,
delays or journey times. An example would be the simultaneous arrival of a number of HGVs at a junction. The single run is therefore not necessarily representative of typical conditions.”

2.4.19 For this reason, ten runs have been performed for each scenario to allow daily driver variation to be observed. The results of the model presented in this report represent the average values of these ten runs for each scenario and time period. The outputs from these runs were analysed using a combination of the Paramics Data Analysis Tool and Excel spreadsheets.

2.4.20 The journey time results are presented in a series of graphs included in Appendix B based on movements between each zone. These graphs confirm that in 2020 the AM peak journey time between the A164 (N) (Zone 2) and A164 (S) (Zone 5) is already long but remains relatively constant throughout the peak hour with a maximum journey time of approximately 5 minutes over the 1.5km distance. In 2029 this same journey time increases substantially throughout the AM peak hour to a maximum of almost 17 minutes over the 1.5km distance.

2.4.21 The journey times for vehicles travelling in the opposite direction are predicted to increase throughout the AM peak hour in 2020 from 3 minutes to just over 5 minutes. However, by 2029 this same journey is expected to increase substantially to a maximum of approximately 26 minutes. In the PM peak, the change in journey time trends between 2020 and 2029 are similar to those in the AM peak but the overall journey time is greater.

2.4.22 The change in journey times between the A1079 (W) (Zone 6) and A164 (S) (Zone 5) from 2020 to 2029 show less of a variance in journey time than the northbound and southbound movements on the A164. In the AM peak the journey time has a maximum of approximately 5 minutes in 2020 and this reduces to a maximum of approximately 4 minutes in 2029. However, in the PM peak the journey time on this movement increases from around 3 minutes in 2020 to a maximum of approximately 9 minutes in 2029.

Summary

2.4.23 In summary, the assessments that have been undertaken to consider the impact of not changing the network have reinforced the need for intervention based on the existing problems that were described in section 2.3. Without intervention, the network will be constrained and journey times will increase considerably as traffic continues to growth during the Local Plan period up to 2029.

2.5 Internal drivers for change

2.5.1 The key internal drivers for change are to:

- Support growth opportunities; and
Support Growth Opportunities

2.5.2 Improvements at the A164 and Jocks Lodge Junction will contribute towards developing key transport infrastructure to maintain a reliable and resilient transport network, which has direct economic benefits in terms of increasing productivity through more reliable journey times.

2.5.3 The Council’s Local Plan includes provision for an addition 23,800 homes over the plan period (2012-2029) and over 235 hectares of employment land for development. To enable these developments sites to come forward and to unlock the growth and development prospects across the area, existing transport congestion must be addressed. Unreliable and long journey times and the resultant delays are often cited as the biggest constraint to sustainable economic growth.

Reduce Congestion

2.5.4 The Council is the local transport authority with responsibility for managing and maintaining the highway network. The proposed scheme will improve traffic flow along the A164 and at Jocks Lodge Junction, as part of a series of improvements aimed at improving this sub-standard north/south link and the poor journey time reliability that is currently restricting the route’s potential as a key focus for future growth ambitions.

2.6 External drivers for change

2.6.1 The key external driver for change is to facilitate growth through the delivery of development set out in the Local Plan to 2029. The A164 is a major route serving the south of the East Riding of Yorkshire providing a vital link to the M62 / A63 corridor and the A15 in Lincolnshire, and is the most heavily trafficked transport corridor in the East Riding. The A1079 is connected to the A164 at Jocks Lodge Junction, is identified as the primary road link between Hull and York, and also connects local settlements including Beverley, Pocklington and Market Weighton.

2.7 Objectives

2.7.1 The initial high level and strategic objectives that have been adopted for the A164 and Jocks Lodge Junction Improvement Scheme have been highlighted as having a wider impact including additional benefits of supporting planned growth in East Riding of Yorkshire and the sub-regions. These objectives are as follows:

- Improve the maintenance and management of the existing transport network;
- Support sustainable economic growth and regeneration;
• Manage carbon emissions;

• Improve road safety

• Support and encourage healthy lifestyles; and

• Improve access to key services.

2.7.2 In addition to the above strategic objectives and in view of the local conditions the following scheme specific objectives have also been established for the A164 and Jocks Lodge Junction Improvement Scheme:

• To reduce congestion and delays at Jocks Lodge Junction;

• To improve journey time reliability along the A164 corridor between Beverley and the Humber Bridge;

• To provide improved facilities for pedestrians and cyclists through Jocks Lodge Junction;

• To provide safety benefits at the Jocks Lodge Junction and on the A164 and A1079 corridors; and

• To contribute to the Beverley economy, and the economy of the East Riding of Yorkshire.

2.7.3 These objectives will be monitored through a comprehensive evaluation process to assess whether the forecast benefits of the A164 and Jocks Lodge Junction Improvement Scheme have been realised. This will include an assessment of the objectives against the scheme outputs and outcomes to draw out any discrepancies.

2.8 Measures for Success

2.8.1 The link between the A164 and Jocks Lodge Junction Improvement Scheme objectives, inputs, outputs and outcomes will be set out in the Monitoring and Evaluation Plan (MEP), which will be developed should the scheme progress to Full Business Case stage. However, the key outcomes of the proposed scheme are as follows:

• To reduce congestion and delays at Jocks Lodge Junction. This will be measured by manual classified counts and ATCs as well as collecting data on queue lengths at Jocks Lodge Junction;

• To improve journey time reliability along the A164 corridor between Beverley and the Humber Bridge. This will be measured by collecting data from manual classified turning counts and ATCs;
To provide improved facilities for pedestrians and cyclists through Jocks Lodge Junction. This will be measured by collating information provided by before and after surveys;

To provide safety benefits at the Jocks Lodge Junction and on the A164 and A1079 corridors. This will be measured by collating annual collision data; and

To contribute to the Beverley economy, and the economy of the East Riding of Yorkshire. This will be measured by collecting data on employment floor space and housing units in Beverley and the East Riding of Yorkshire.

In measuring the success of the proposed scheme, post opening measurements of the key metrics will be set out in the MEP and compared to the current situation. This is in order to identify the benefits of the proposal and is discussed in more detail in the Management Case.

2.9 Scope

The project will deliver the highway and transport improvements as detailed in the Local Plan and the associated Infrastructure Study. The scope of the project includes the measures listed below:

- Provision of two lanes for vehicles entering and exiting Lincoln Way Roundabout on the A164 Lincoln Way and A164 Minster Way arms;
- Alterations to the existing Victoria Road roundabout in order to provide a free flow left arrangement for vehicles travelling between the A164 Lincoln Way and A164 as well as two lanes for vehicles turning right in the opposite direction;
- Widening of the A164 between Lincoln Way roundabout and Jocks Lodge Junction to provide a two lane single carriageway;
- Replacement of the existing Jocks Lodge signalised junctions and half cloverleaf slip roads in order to provide a standard two bridge roundabout grade separated junction;
- Dualling of the A164 between Victoria Road roundabout and Skidby roundabout;
- Dualling of the A164 between Skidby roundabout and Castle Hill roundabout; and
- Construction of a new structure over the A1079 to provide traffic free routes for pedestrians and cyclists.
2.10 **Constraints**

**Structural Constraints**

2.10.1 Directly above Jocks Lodge Junction are 400kv overhead power cables, which could pose a major risk to the delivery of a scheme and thus cause complications for the improvement options that are proposed. Figure 2.11 shows the location of the powerlines in relation to the A164 and Jocks Lodge junction.

Figure 2.11 - Location of power lines over Jocks Lodge Junction

2.10.2 Underground utilities apparatus of national and regional significance exists within, and in the vicinity of, the proposed improvements. This includes regional and national high pressure gas pipelines with associated easements running east-west underneath the A164 to the south of Jocks Lodge. Initial investigations suggest that the pipelines are at a sufficient depth so as to be unaffected by the proposed scheme. However, this apparatus is considered to be a design constraint for the scheme and the proposed improvements must consider and accommodate these where required.
2.11 Inter-Dependencies

2.11.2 The A164 and Jocks Lodge Junction Improvement Scheme forms part of a wider strategy to improve east-west connectivity along the A1079 corridor. As part of this strategy, improvement works at Killingwoldgraves roundabout were completed in December 2017, with works at Shiptonthorpe roundabout due to commence in Spring 2019.

2.11.3 The Council has recently secured funding through the DfT’s National Productivity Investment Fund for a new roundabout at the existing A164/Great Gutter Lane/Riplingham Road junction, approximately 7.6km/4.7 miles south of Jocks Lodge junction. These works will be delivered in 2019/20, and will be coordinated with early works on the A164 further north and at Jocks Lodge junction.

2.11.4 For the A164 and Jocks Lodge Junction improvements to have their intended overall impact on the network, the improvement work to these additional junctions on the A164 and A1079 will also need to be completed.

2.11.5 Alteration work to utilities equipment often has a significant lead-in time, so this will need to be considered in the project programme. Early engagement with the utility providers affected will be required to ensure a practical composite construction programme can be agreed to minimise cost and disruption.

2.12 Stakeholders

2.12.1 Improvements along the A164 and at Jocks Lodge Junction are identified in the Infrastructure Delivery Plan (2014), which forms part of the Council’s Local Plan. The Local Plan was developed following extensive consultation with residents and stakeholders before being adopted following examination by an independent planning inspector.

2.12.2 The need for an improvement scheme has broad support from the public and the Council receives regular correspondence from local residents requesting improvements at this site and setting out their frustrations with the regular congestion and queues, particularly at the Jocks Lodge Junction. Key stakeholders have also been consulted on the progress of the scheme and the components directly affecting them. A summary of this consultation is provided in Table 2.8 which identifies those consulted with directly in October and November 2017.

2.12.3 As part of the development of the initial bid for feasibility funding, local ward members, MPs and other local stakeholders were approached to determine their support for the proposals. Further discussions with key stakeholders have continued as part of the development of the Outline Business Case. A number of letters in support of a scheme are provided as Appendix C for reference and this includes correspondence from the following:

- Graham Stuart, MP for Beverley and Holderness;
- David Davis, MP for Haltemprice and Howden;
• Humber Local Enterprise Partnership;
• York, North Yorkshire and East Riding Local Enterprise Partnership;
• Federation of Small Businesses;
• Hull and Humber Chamber of Commerce;
• Humberside Police; and
• East Yorkshire Motor Services, who run the majority of bus services in the East Riding and Hull area.

2.12.4 The scheme forms the boundary of two parliamentary constituency areas, with the northern section of Jocks Lodge junction and Victoria Road roundabout falling within Graham Stuart MP’s area, and the southern section within David Davis MP’s area. Following several meetings with Graham Stuart MP and provision of a briefing note for David Davis MP, each has confirmed their full support for the proposed scheme.

2.12.5 In addition to the above, a meeting was held on Monday 4th September 2017 to discuss the various scheme options proposals with local bus operator East Yorkshire Motor Services (EYMS). Initial discussions have also been held with Highways England and Hull City Council who have not raised any concerns with the proposals at this stage.

2.12.6 Feedback has also been received from various agencies including the Environment Agency, Historic England and Humber Archaeology Partnership. These stakeholders have confirmed that there may be an impact as a result of the scheme and additional consideration and assessment may be required as the proposals progress. However, they have no significant concerns with the proposals at this stage.
<table>
<thead>
<tr>
<th>Stakeholder Organisation</th>
<th>Interest</th>
<th>Influence</th>
<th>Management Approach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Portfolio Holders / Ward Councillors</td>
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<tr>
<td>Snaith, Airmyn and Rawcliffe, and Marshland</td>
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<td>Keep informed of scheme, programme, funding sources and benefits</td>
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<td>Town / Parish Councils</td>
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<tr>
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<td>Overall scheme and traffic management arrangements</td>
<td>High</td>
<td>Keep informed of scheme and progression</td>
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<td>Cottingham Parish Council</td>
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<td>Skidby Parish Council</td>
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<td>David Davis MP</td>
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<tr>
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<td>Make aware of the process</td>
<td>Low</td>
<td>Inform of proposed work, and consult on relevant aspects of the design</td>
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<tr>
<td>Stakeholder Organisation</td>
<td>Interest</td>
<td>Influence</td>
<td>Management Approach</td>
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<td>Cycling UK</td>
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<td>British Cycling</td>
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<td>Disability Groups</td>
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<tr>
<td>Disability advisory group, East Riding of Yorkshire Council</td>
<td>Traffic management and accessibility impacts</td>
<td>Low</td>
<td>Inform of proposed work, and consult on relevant aspects of the design</td>
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<td>Emergency Services</td>
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<td>Humberside Police</td>
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<tr>
<td>Humberside Fire and Rescue Service</td>
<td>Traffic management and arrangements throughout construction phase</td>
<td>Medium – High</td>
<td>Keep informed of proposed works and schedule. Take into account feedback on scheme design</td>
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<tr>
<td>Environment Agency</td>
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<tr>
<td>Natural England</td>
<td>Any potential impact on Strategic Road Network (SRN), Drainage, Land and Historical and Heritage areas including scheduled ancient monuments.</td>
<td>Low – Medium</td>
<td>Inform of proposed works, consult on relevant aspects of the design and make aware of process.</td>
</tr>
<tr>
<td>Historic England</td>
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<tr>
<td>Humber Archaeology Partnership</td>
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<tr>
<td>Stakeholder Organisation</td>
<td>Interest</td>
<td>Influence</td>
<td>Management Approach</td>
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<td>Safer Roads Humber</td>
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<td>Highways England</td>
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<td>Federation of Small Businesses</td>
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<tr>
<td>Other</td>
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<tr>
<td>Adjoining Land Owners</td>
<td>Changes to surrounding land and impact on their land and access.</td>
<td>Medium – High</td>
<td>Inform of proposed works, consult on relevant aspects of the design</td>
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<tr>
<td>Local Residents</td>
<td>Traffic management arrangements, changes to parking, bus re-routing both temporary and permeant</td>
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<td>Keep informed of progress, hold public meetings</td>
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<td>Local Businesses</td>
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<tr>
<td>East Yorkshire Motor Services</td>
<td>Impact on services – potential rerouting of services</td>
<td>High</td>
<td>Consult over re-routing of services and scheme design</td>
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<tr>
<td>ERYC Customer Service Centres</td>
<td></td>
<td>Medium – High</td>
<td>Inform of proposed works and consult on relevant aspects of the design</td>
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<tr>
<td>Beverley Renaissance Partnership</td>
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</tbody>
</table>
## Stakeholder Organisation

<table>
<thead>
<tr>
<th>Stakeholder Organisation</th>
<th>Interest</th>
<th>Influence</th>
<th>Management Approach</th>
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</thead>
<tbody>
<tr>
<td>Beverley Civic Society</td>
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<tr>
<td>ERYC Area Engineer</td>
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<td>ERYC Interim Licencing Manager</td>
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<td>ERYC Passenger Transport</td>
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<td>Humber LEP</td>
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<tr>
<td>York, North Yorkshire and East Riding LEP</td>
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<td>Road Haulage Association</td>
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<td>ERYC Road Safety Team</td>
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<td>Public Rights of Way</td>
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</table>

Traffic management arrangements, impact on services and public right of way access
2.12.7 The Council was keen to get views of local residents and interested parties at an early stage to inform the preferred option and scheme design. As such, public exhibition events were held at Beverley Racecourse on Wednesday 8th November 2017, and at Morrisons Beverley on Friday 10th November 2017. These attracted a significant amount of interest, with nearly 500 people attending in total. Those that attended were given a scheme brochure and questionnaire to complete, with the option to fill this in online or send back via freepost if they didn’t want to hand it back at the event. The events were advertised heavily in the local media, and using large electronic signage located on the A164 and A1079 in the week leading up to the events.

2.12.8 For those that were unable to attend the events a dedicated web page has been set up to detail progress on the scheme (www.eastriding.gov.uk/jockslodge). A link to the online survey was also published here in order to collect views and opinions on the proposed scheme options. The results of the consultation process were analysed as part of the option development process which is described in the following section.

2.13 Option Development

Key Components

2.13.1 The development of potential scheme options has been undertaken through a comprehensive appraisal process based on the following key components:

- **Site Visits** – A series of site visits have been completed during different time periods in order to observe the existing network conditions and to identify a long list of potential solutions.

- **Scheme Objectives** – A specific set of scheme objectives have been defined in order to help identify potential options that help with their delivery.

- **Data Collection and Analysis** – A variety of traffic survey data has been collected and analysed using appropriate modelling tools for the existing highway network and potential scheme options.

- **Stakeholder Engagement** – Initial feedback from Stakeholders has been received in order to help understand any existing issues and consider the potential solutions.

- **Public Consultation** – Initial consultation with the public has been undertaken in order to obtain feedback on the need for improvements and a short list of potential scheme options as well as any additional comments.

- **Design Workshop Meetings** – A series of design workshop meetings have been undertaken with project team members in order to develop options based on all of the key components listed above.
The key components listed above were used to firstly develop a long list of potential scheme options which have subsequently been refined to provide a short list of improvements before a preferred option was selected. The details and process for progressing potential scheme options through each stage of the selection process is considered in the remainder of this section.

Long List

Following consideration of the key components a long list of scheme options was produced and appraised as part of the initial option sifting process presented in the Option Assessment Report (OAR) in Appendix D. The long list comprises a total of nine scheme options and these can be summarised as follows:

- **Option 1** – A164 dualling with retention of signal control for A1079 junctions;
- **Option 2** – A164 dualling with new roundabouts connecting the A1079;
- **Option 3** – A164 dualling with retention of signal control for A1079 junctions and a new free flow left off-slip from the A1079 westbound;
- **Option 4** – A164 dualling with an elongated gyratory and a new free flow left off-slip;
- **Option 5** – A164 dualling with completed cloverleaf junction;
- **Option 6** – A164 dualling with new grade separated junction;
  - **Option 6A** – standard grade separated junction;
  - **Option 6B** – standard grade separated junction with free-flow left turns and two-lane entry from A1079;
  - **Option 6C** - standard grade separated junction with free-flow left turns and single lane entry from A1079
- **Option 7** - A164 dualling with grade separated two bridge roundabout;
- **Option 8** – A164 dualling with new A1079 dumbbell roundabouts; and
- **Option 9** - A164 dualling with new A164 dumbbell roundabouts.

These nine options were generated based on dualling of the A164 and a package of improvements at Jocks Lodge Junction as well as changes to other associated junctions along the A164 route between Lincoln Way Roundabout and Castle Hill Roundabout.

However, as part of the option development process it was considered that the extent of dualling on the A164 could form an additional variant to the nine options listed above. The three variants that have been considered are as follows:
• **Option A – Minimum Dualling** – Victoria Road roundabout to approximately 100m south of Jocks Lodge Junction;

• **Option B – Partial Dualling** – Victoria Road roundabout to Skidby roundabout; and

• **Option C – Maximum Dualling** – Victoria Road roundabout to Castle Hill roundabout.

**Short List**

2.13.6 Having produced an initial long list of potential schemes the next stage of the process involved reducing the number of options to provide a short list of proposals. This initial sifting process is presented in the OAR which is provided in Appendix D.

2.13.7 As part of the process to reduce the long list of options a number of key design constraints were identified and then considered against each option within the OAR. These key design constraints are summarised in Table 2.10 for each option.

<table>
<thead>
<tr>
<th>Key Design Constraint</th>
<th>Option 1</th>
<th>Option 2</th>
<th>Option 3</th>
<th>Option 4</th>
<th>Option 5</th>
<th>Option 6</th>
<th>Option 7</th>
<th>Option 8</th>
<th>Option 9</th>
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<tbody>
<tr>
<td>Reduces the existing right turn storage on A164</td>
<td>✗</td>
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<td>Retains or reduces existing slip road capacity</td>
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<td>Retains or reduces the separation distance between junctions on the A164</td>
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<td>Requires 400kv powerlines to be relocated</td>
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<td>✗ ✗</td>
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<tr>
<td><strong>Outcome</strong></td>
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<td>Pass</td>
<td>Fail</td>
<td>Pass</td>
<td>Pass</td>
<td>Fail</td>
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</tbody>
</table>

2.13.8 As can be seen in Table 2.10, Options 1, 2, 3, 4, 6 and 9 did not satisfy the key design constraints and so these were removed following the initial sifting exercise. The remaining scheme options (5, 7 and 8) were therefore included on a short list for a more detailed appraisal within the OAR.

2.13.9 A shortlist of the improvement options was also presented to the public in order to gather feedback on the proposals. As noted in section 2.12, the public consultation process was undertaken using a dedicated website and at two exhibition events. A questionnaire was developed for the public which asked respondents whether they supported improvements to Jocks Lodge Junction, followed by their preference based on the four shortlisted junction options. These four junction options included the three layouts that passed the initial sifting exercise in the OAR alongside the Option 3 design. This additional option was included in order to consult on a lower cost do minimum design. Due to a reduced number of options and for ease of reference, each scheme proposal was allocated a colour on the following basis:
- **Purple (Option 3)** – A164 dualling with free flow left slip from A1079 westbound to A164 southbound;
- **Green (Option 5)** – A164 dualling with completed “Cloverleaf” junction;
- **Red (Option 7)** – A164 dualling with grade separated two bridge roundabout; and
- **Blue (Option 8)** – A164 dualling with new A1079 “Dumbbell” roundabouts

2.13.10 In addition to the above junction options, the questionnaire asked the public whether they supported dualling of the A164 as well as their preference for the three separate dualling variants, summarised as follows:

- **Option A – Minimum Dualling** – Victoria Road Roundabout to approximately 100m south of Jocks Lodge Junction;
- **Option B – Partial Dualling** – Victoria Road Roundabout to Skidby roundabout; and
- **Option C – Maximum Dualling** – Victoria Road Roundabout to Castle Hill roundabout.

2.13.11 The results of this public consultation exercise revealed that improvements to both Jocks Lodge Junction and the A164 received overwhelming support. Over 96% of respondents thought that Jocks Lodge junction required improvement and 94% wanted to see dualling improvements on the A164. The majority of respondents were in favour of either the red (35%) or green (43%) junction options and the vast majority (81%) were also in favour of Option C (maximum dualling). A breakdown of all results is provided in Table 2.9.

Table 2.9 – Public Consultation Results

<table>
<thead>
<tr>
<th>Junction Option</th>
<th>Votes</th>
<th>%</th>
<th>Dualling Option</th>
<th>Votes</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purple</td>
<td>78</td>
<td>11%</td>
<td>A</td>
<td>37</td>
<td>5%</td>
</tr>
<tr>
<td>Red</td>
<td>256</td>
<td>35%</td>
<td>B</td>
<td>55</td>
<td>8%</td>
</tr>
<tr>
<td>Blue</td>
<td>41</td>
<td>6%</td>
<td>C</td>
<td>589</td>
<td>81%</td>
</tr>
<tr>
<td>Green</td>
<td>315</td>
<td>43%</td>
<td>Sub-total</td>
<td>681</td>
<td>94%</td>
</tr>
<tr>
<td>Other</td>
<td>2</td>
<td>2%</td>
<td>No Dualling</td>
<td>43</td>
<td>6%</td>
</tr>
<tr>
<td><strong>Sub-total</strong></td>
<td>708</td>
<td>96%</td>
<td><strong>Total</strong></td>
<td>730</td>
<td>100%</td>
</tr>
<tr>
<td>No Improvements</td>
<td>28</td>
<td>4%</td>
<td><strong>Total</strong></td>
<td>730</td>
<td>100%</td>
</tr>
</tbody>
</table>

2.13.12 As part of the public consultation process feedback was also received on potential changes to the options that were presented and these have been collated in Appendix E. In summary, the public suggested that the designs could be modified to provide improved pedestrian and cycle facilities along the A164 corridor as well as a revised junction layout at the A164 / Dunflat Road priority junction.

2.13.13 An initial improvement option for the Dunflat Road priority junction could involve the provision of a new bridge from Dunflat Road over the A164 in order to remove the need for right turn manoeuvres when exiting from this arm. It is therefore proposed
that these potential modifications are considered further as part of the detailed design process in advance of preparing the Full Business Case.

Preferred Option

2.13.14 Following the public consultation process and initial sifting presented in the OAR the next step in the process was to identify a preferred option based on a more detailed Appraisal Summary Table (AST). The options considered in greater detail were as follows:

- **Green (Option 5)** – A164 dualling with completed “Cloverleaf” junction;
- **Red (Option 7)** – A164 dualling with grade separated two bridge roundabout; and
- **Blue (Option 8)** – A164 dualling with new A1079 “Dumbbell” roundabouts

2.13.15 In order to compare the relative performance of the three potential options that were taken forward from the initial sifting process, the existing Beverley SATURN model was utilised and a TUBA assessment undertaken. The purpose of this assessment was to provide an indicative comparison between options to help identify a preferred option prior to a new and updated SATURN model being prepared to complete further appraisal during Stage 2. The results of this initial assessment in terms of the Benefit Cost Ratio (BCR) were as follows:

- **Green (Option 5)** – 1.464
- **Red (Option 7)** – 1.486
- **Blue (Option 8)** – -0.487

2.13.16 The results above suggest that Red Option would generate the highest BCR although it is noted that the Green Option also has a similar value. The BCR for the Blue Option is a negative value and so given this result and its lower contribution towards delivering the strategic and scheme objectives it is recommended that this option is not progressed.

2.13.17 In terms of the Present Value of Benefits (PVB) these are notably greater with the Red Option (£38 million) than with Green Option (£22 million), although the Red Option has a greater cost.

2.13.18 In addition to the above, the indicative assessment results show that the Green Option would slightly increase journey times for business users, transport providers and commuters across the highway network, whereas the Red Option is predicted to provide journey time benefits for all users. The proposals for the Red Option are most closely aligned to the strategic and scheme objectives, although the Green Option also meets the majority of these aspirations.

2.13.19 However, it should be noted that the risks associated with deliverability of the Green Option are significantly greater than with the Red Option. In particular the Green Option requires a substantial amount of third party land from a high number of different landowners. Issues with obtaining planning permission, CPOs, the
potential for public inquiry and the potential impacts on archaeology and ecology are therefore much higher for this option. The Green Option also has a direct impact on individual properties adjacent to the junction, and maintaining suitable access to these would be challenging.

2.13.20 In summary, based on the initial sifting process and further assessment of the options reported above, the preferred option for refinement and subsequent further appraisal during the Outline Business Case was identified as the Red Option.

2.13.21 In addition to the above options for Jocks Lodge junction, further assessment has been undertaken for the three dualling variants based on the Red Option. The initial assessment presented in the Option Assessment Report (OAR) has been updated following completion of the A164 and Jocks Lodge Junction Improvement Scheme (A164 JL) SATURN model as well as consideration of the scheme accident benefits using COBALT.

2.13.22 The TUBA and COBALT assessments have been undertaken to provide a comparison between options and therefore help identify a preferred option for progression through this Outline Business Case. The results of this assessment in terms of the Benefit Cost Ratio (BCR) are as follows:

- Option A – Minimum Dualling - -0.52
- Option B – Partial Dualling – 5.4
- Option C – Maximum Dualling – 4.63

2.13.23 The results suggest that if Option A, minimum dualling, is implemented then there would be insufficient link capacity on the A164 single carriageway sections to the immediate south of Jocks Lodge. This is because these single carriageway sections are already approaching capacity and following traffic growth this trend is set to continue up to the design year of 2037. The remodelled Jocks Lodge junction will provide a more efficient layout and so traffic is predicted to increase above and beyond the Do Minimum scenario. Given this conclusion it is proposed that Option A, minimum dualling, is not progressed as part of the preferred scheme.

2.13.24 In terms of Options B and C, the results suggest that these would both offer very high Value for Money (VfM), with BCR figures in excess of 4.0. The BCR for Option B – Partial Dualling is higher than Option C – maximum dualling, however the overall Present Value of Benefits (PVB) for Option B is lower by approximately £26.558 million. In terms of the Present Value of Costs (PVC), the maximum dualling scheme is estimated to be £11.516 million higher than the partial dualling scheme and so based on these values the additional dualling is providing a BCR of approximately 2.31, which reflects high VfM. In terms of accidents, the maximum dualling scheme is predicted to generate a PVB of £13.54 million which is approximately £5.98 million greater than the partial dualling scheme (£7.56 million).

2.13.25 The additional costs associated with the maximum dualling scheme can largely be attributed to the need for a new bridge over Eppleworth Road rather than the extent
of additional dualling required. The existing A164 bridge, which passes over Eppleworth Road, is of limited width and the structure means that it cannot be widened to allow for four lanes of traffic. The scheme design allows for a new bridge to be constructed adjacent to the existing structure.

2.13.26 Should the partial dualling scheme be implemented then this would retain the existing pinch point with a relatively short 1.5km section of single carriageway between the dualled A164 sections to the north and south. Based on the results above it is therefore concluded that Option C - maximum dualling should be progressed through the Business Case as part of the preferred scheme. A copy of the preferred scheme option drawings is provided in Appendix F for reference.

2.14 Summary

2.14.1 This chapter has been prepared in order to present the Strategic Case for the A164 and Jocks Lodge Junction Improvement Scheme. An analysis of the Council’s Local Plan (2012-2029) and Local Transport Plan (2015-2029) has demonstrated that the proposed improvements to the A164 corridor reflect the strategic aims and responsibilities of the Council and thus are an excellent policy fit that will help to deliver the Business Strategy. They are also aligned to the wider national and regional aspirations that are presented in the SEPs for the Humber LEP and the York, North Yorkshire and East Riding LEP.

2.14.2 The problems that have been identified through supporting evidence include issues surrounding journey times and reliability, congestion and road safety. Whilst minor modifications have already been implemented these have not fully resolved the existing problems, which have worsened in recent years. On this basis, it is clear that a more significant intervention including additional external funding is required in order to deliver a major improvement scheme. The need for intervention is further strengthened when consideration is given to the impact of not changing the network and its ability to deliver the Local Plan.

2.14.3 The Local Plan Strategy Document sets out the vision for the East Riding to 2029 which includes:

- A housing requirement of 23,800 (net) additional dwellings over the plan period between 2012 and 2029; and
- 235ha of employment land in the area, with 55 hectares assigned for B1 use in the Haltemprice Settlements and Principal Towns and 118 hectares of B8 use along the east-west transport corridors such as the M62 / A63 and the A1079.

2.14.4 The key objectives of the scheme focus on reducing congestion and improving journey times and reliability as well as improvements to road safety on the A164 corridor.
2.14.5 Public consultation on the proposed scheme revealed overwhelming support for improvements to both Jocks Lodge Junction (96%) and dualling of the A164 corridor (94%) with 81% confirming their preference for the maximum dualling scheme.

2.14.6 A long list of options has been generated through various sources including the findings of the LTP, the Local Plan Infrastructure Study, site visits, junction modelling and in dialogue and assessment with stakeholders. A revised short list was subsequently generated through the initial sifting process in the Option Assessment Report (OAR) and a more detailed Appraisal Summary Table (AST) was produced for these options. This process confirmed that the preferred arrangement for Jocks Lodge is the Red Option and that the maximum A164 dualling option should also be progressed within this Outline Business Case.
3. **ECONOMIC CASE**

3.1 **Introduction**

3.1.1 This chapter presents details of the appraisal and Value for Money (VfM) assessment that has been undertaken to demonstrate the strength of the economic case for the A164 and Jocks Lodge Junction Improvement Scheme. The economic impact of the proposed improvements has been assessed in accordance with WebTAG guidance, considering the expected economic, environmental, social and distributional impacts. This includes consideration of the qualitative aspects and quantitative data as well as monetised information.

3.1.2 The scope of the modelling and economic appraisal was agreed with the DfT at the beginning of the appraisal process. An initial Appraisal Specification Report (ASR) was submitted to the DfT in March 2017 and following feedback, modifications to the proposed approach were undertaken and a revised document was issued and agreed in April 2017. A copy of this final ASR document is included as Appendix G for reference.

3.1.3 The technical detail and assumptions behind the appraisal process have been undertaken in line with DfT Transport Appraisal Guidance and are presented in the remainder of this chapter, which includes the following information:

- Options Appraised – presents the options that have been assessed;
- Assumptions – details the assumptions that have used to undertake the value for money assessment;
- Sensitivity and Risk Profile – demonstrates how changes in differing variables affect the BCR;
- Appraisal Summary Table – presents a summary of scheme assessment; and,
- The Value for Money Statement – demonstrates the value of the proposed improvement scheme.

3.2 **Options Appraised**

3.2.1 A full commentary of the options that have been appraised and identification of the preferred scheme taken forward is provided in the Option Assessment Report (OAR), included as Appendix D and summarised in the Strategic Case. This includes details of how the preferred layout for Jocks Lodge junction was selected as well as the extent of dualling along the A164. These options have been appraised in accordance with WebTAG Unit A2.3.
In summary, the preferred option involves the following improvements to the A164 and Jocks Lodge Junction:

- Provision of two lanes for vehicles entering and exiting Lincoln Way roundabout on the A164 Lincoln Way and A164 Minster Way arms;
- Alterations to the existing Victoria Road roundabout in order to provide a free flow left arrangement for vehicles travelling from the A164 Lincoln Way onto the A164 southbound, as well as two lanes for vehicles turning right from the A164 on to the A164 Lincoln Way;
- Widening of the A164 between Lincoln Way roundabout and Jocks Lodge Junction to provide a two lane single carriageway;
- Replacement of the existing Jocks Lodge signalised junctions and half clover leaf slip roads in order to provide a standard two bridge roundabout grade separated junction;
- Dualling of the A164 between Victoria Road roundabout and Skidby roundabout;
- Dualling of the A164 between Skidby roundabout and Castle Hill roundabout, including construction of the new bridge; and
- Construction of a new structure over the A1079 to provide a traffic free route for pedestrians, cyclists and equestrian users.

A copy of the preferred scheme option drawings are provided in Appendix F for reference.

3.3 Assumptions

Transport Model

Overview

One of the main tools that has been used to appraise the economic impact of the preferred option is the A164 and Jocks Lodge Junction Improvement Scheme (A164 JLI) SATURN model. A full description of the methodology that has been adopted to build and validate the 2016 base year model is provided in the Local Model Validation Report (LMVR) in Appendix H.

The SATURN model has been developed to appraise differences between forecasts in the ‘Do Minimum’ and ‘Do Something’ scenarios. The ‘Do Minimum’ scenario reflects the modelled network comprising of existing transport projects that are either underway or planned and forms the baseline scenario against which the proposed scheme is assessed in the ‘Do Something’ scenario.
In terms of the network structure, the scheme SATURN model was developed using two existing models that covered the extent of the study area. These models are as follows:

- The ‘Beverley Integrated Transport Plan’ (BITP) SATURN model developed to assess integrated highway and development proposals for Beverley; and
- The A63 Castle Street Improvement (A63 CSI) PCF Stage 3 SATURN model developed for the appraisal of a proposed major improvement scheme sponsored by Highways England.

Demand segmentation was split according to five User Classes (UCs) comprising three car UCs (representing commuting trips, trips on employers’ business/work trips, and other purpose trips) and two further UCs for light goods vehicles (LGVs) and heavy goods vehicles (HGVs). These user class representations are summarised in Table 3.1.

Table 3.1 – User Class Representation

<table>
<thead>
<tr>
<th>User Class</th>
<th>Vehicle Type</th>
<th>Journey Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Car</td>
<td>Commuting (to/from work)</td>
</tr>
<tr>
<td>2</td>
<td>Car</td>
<td>Employers’ Business (work related)</td>
</tr>
<tr>
<td>3</td>
<td>Car</td>
<td>Other</td>
</tr>
<tr>
<td>4</td>
<td>Light Goods Vehicles</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Heavy Goods Vehicles</td>
<td></td>
</tr>
</tbody>
</table>

Matrix development involved substitution of movements in the A63 CSI model trip matrices with matrices derived from roadside interview surveys intercepted at a cordon around Beverley and conducted in June 2017.

In addition to roadside interviews, the A164 JLI SATURN model was also prepared using a combination of Automatic Traffic Counts, Manual Classified Counts and TrafficMaster Data. A full description of the data used to prepare the A164 JLI SATURN model is provided in the Traffic Data Collection Report within Appendix H.

Appraisal Period

In line with WebTAG guidance, the impact of the improvements has been assessed over a 60-year appraisal period between 2022 and 2082. This appraisal period reflects the programmed scheme opening year of 2022 capturing the planned period of scheme development and implementation.

The transport model provides estimates for two forecast years: the opening year (2022) and the design year (2037). The results of the model have been interpolated and extrapolated to cover the whole appraisal period of 60 years and this is to
ensure a conservative approach to the calculation of scheme benefits. It has been assumed there will be no growth in traffic flows after the design year 2037 and this reflects a standard approach.

**Annualisation**

3.3.9 The economic appraisal has been undertaken using TUBA software, which follows the WebTAG approach and makes use of values from the latest WebTAG data book. The TUBA programme calculates benefits for each year of the 60-year appraisal period and as such annualisation factors are required to project one-hour peak model information to a whole year. The annualisation factors that have been applied are based on the following peak hours:

- AM peak between 0800-0900
- PM peak between 1700-1800

3.3.10 A factor of 253 is applied to all matrices to ensure the assessment takes account of the number of working days in a year.

**Assessment Area**

3.3.11 The A164 and Jocks Lodge Junction Improvement Scheme extends along the A164 corridor from Lincoln Way roundabout in the north, through Jocks Lodge Junction to Castle Hill Roundabout in the south. The impact of the scheme is seen on the A164, through Jocks Lodge Junction and onto the adjoining A1079 slip roads. However, travel time and vehicle operating cost benefits, along with indirect taxation and greenhouse gas emissions in TUBA, have been calculated for the whole model network.

**3.4 Sensitivity and Risk Profile**

3.4.1 The estimated scheme costs have been derived from a robust costing exercise as outlined in the Financial Case, which includes allowance for risk and optimism bias in accordance with DfT guidance, over and above the detailed costs developed.

3.4.2 However, to ensure a robust assessment, the following sensitivity tests have also been carried out as part of the economic appraisal of the scheme:

- High growth assumptions; and
- Low growth assumptions.

3.4.3 As defined in WebTAG Unit M4, the core scenario is based on the most unbiased and realistic set of assumptions that forms the central case for appraising the scheme. The core scenario has been defined by including all Local Plan site allocations deemed to be ‘near certain’ and ‘more than likely’ in the uncertainty log.
using standard WebTAG M4 definitions. In line with guidance, the core scenario demand was constrained to NTEM growth levels. A full description of the future year growth assumptions for the core, high and low growth scenarios is provided in a separate Forecasting Report in Appendix I as well as the accompanying Economic Appraisal Report.

### 3.5 Appraisal Summary Table

3.5.1 The Appraisal Summary Table (AST) presents evidence from the analysis that is undertaken to inform the Economic Case for the proposed A164 and Jocks Lodge Junction Improvement Scheme. Applying the principles of the HM Treasury Green Book, the AST has been designed to record all impacts based on the following categories:

- Economic;
- Environmental;
- Social; and
- Public Accounts.

3.5.2 A copy of the A164 and Jocks Lodge Junction Improvement Scheme AST is included in Appendix J for reference which also includes the supporting Transport Economic Efficiency (TEE) table, Analysis of Monetised Costs and Benefits (AMCB) and Public Accounts (PA) tables for the core scenario. All monetary values quoted are 2010 prices discounted to a 2010 base year.

**Economic Impacts**

Business Users and Transport Providers

3.5.3 The impact to business users and transport providers has been measured by the application of TUBA and COBALT software.

3.5.4 TUBA (Transport User Benefits Appraisal) is the DfT approved industry-standard software used to derive travel time and vehicle operating costs (VOC). A copy of the TUBA outputs for the core, high and low growth scenarios is provided in Appendix K for reference and these have been checked for warning messages.

3.5.5 Accident benefits are assessed using the DIT’s COBALT programme, which is consistent with WebTAG recommendations. COBALT assessment is undertaken separately for roads/links and junctions. A copy of the COBALT outputs is provided in Appendix L.

3.5.6 The monetised journey time benefits for business users from TUBA are given in Table 3.2.
Table 3.2 – Business User Benefits Calculated from TUBA

<table>
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<tr>
<th>Benefit</th>
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</thead>
<tbody>
<tr>
<td>Travel Time</td>
<td>£84,584</td>
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<tr>
<td>Vehicle Operating Costs</td>
<td>£5,831</td>
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<tr>
<td>User Charges</td>
<td>£0</td>
</tr>
<tr>
<td>During Construction and Maintenance</td>
<td>£0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>£90,415</strong></td>
</tr>
</tbody>
</table>

**Environmental Impacts**

**Noise**

3.5.7 The likely effects on noise once the scheme is in place relate predominantly to changes in noise from vehicles travelling along affected roads in the study area. The potential noise impacts associated with the preferred improvement scheme have been assessed using the WebTAG Guidance (Unit A3.2 Noise Impacts, DfT, December 2015 as updated in July 2017). The calculation of traffic noise follows the methodology set out in the Design Manual for Roads and Bridges (DMRB), Volume 11, Section 3, Part 7, Noise (DMRB 11.3.7, HD213/11) for a detailed assessment and the calculation procedure detailed within Department of Transport (Welsh Office) Technical Memorandum Calculation of Road Traffic Noise (CRTN), 1988.

3.5.8 The results of the assessment are provided in a report in Appendix M which also includes the accompanying WebTAG worksheet. A summary of the noise impacts is provided below:

- **Opening Year (2022)** - 1146 properties experience an increase in noise, 113 properties experience a decrease in noise and 157 experience no change. No properties experience a noise level of greater than 80dB $L_{A_{10,18hr}}$ in either the with or without scheme scenario. 9 properties experience noise levels above 68dB $L_{A_{10,18hr}}$ in the without scheme scenario. 11 properties experience noise levels above 68dB $L_{A_{10,18hr}}$ in the with scheme scenario.

- **Future Year (2037)** - 1259 properties experience an increase in noise, 81 properties experience a decrease in noise and 76 experience no change. No properties experience a noise level of greater than 80dB $L_{A_{10,18hr}}$ in either the with or without scheme scenario. 9 properties experience noise levels above 68dB $L_{A_{10,18hr}}$ in the without scheme scenario. 12 properties experience noise levels above 68dB $L_{A_{10,18hr}}$ in the with scheme scenario.

3.5.9 The majority of properties in the study area experience an increase in noise due to road traffic. Increases are predominantly due to the increase in vehicle flows, with contributions from increased traffic speed along some links.
3.5.10 Based on the assessments that have been undertaken the total value of change in noise is detrimental at £273k.

Air Quality

3.5.11 The likely effects on air quality once the scheme is in place relate predominantly to changes in traffic emissions from vehicles travelling along affected roads in the study area. The standard Air Quality worksheet from WebTAG Unit A3 has been used to calculate the impact of the scheme on local air quality, regional air quality and the economic valuation of air pollution for the life of the scheme. The results of the assessment are provided in a report in Appendix N which also includes the accompanying WebTAG worksheet.

3.5.12 To assess the impacts of changes in traffic flow on ambient concentrations of air quality pollutants, a proportionate WebTAG compliant appraisal has been undertaken that accounts for changes in emissions of oxides of nitrogen (NOx) and fine particles (PM$_{10}$).

3.5.13 The traffic data has been screened using the Design Manual for Roads and Bridges (DMRB) scoping criteria for local air quality assessment. In so doing, traffic model links with minor changes in conditions that are likely to only have a negligible impact on air quality are scoped out of the appraisal except those that contribute to air quality impacts at the roundabout junctions. These and the remaining links are referred to as the ‘affected road network’ (ARN). This appraisal is based on the traffic data for the ARN only.

3.5.14 The results of the assessment confirm that scheme is anticipated to lead to an overall improvement in air quality mainly due to the diversion of traffic from minor roads through more populated areas.

3.5.15 There are predicted exceedences of the annual mean air quality objectives at 14 receptor locations within the ARN for nitrogen dioxide (NO$_2$) but the impact of the scheme at these receptors is assessed as ‘imperceptible for the opening year and ‘small adverse’ for the future year.

3.5.16 The total value of change in air quality is detrimental at £140k (£208k for changes in NO$_x$ emissions but a benefit of £68k for changes in PM$_{10}$).

3.5.17 Overall, it is concluded that the impact of the scheme on local air quality is ‘neutral’ and is assessed as ‘not significant’.

Greenhouse Gases

3.5.18 Changes in greenhouse gas emissions from vehicles depend on changes in flows, speeds and distance travelled. This is calculated in TUBA and presented as a monetised value for the 60-year appraisal period. The greenhouse gas assessment shows a benefit of £1.315m over the 60-year appraisal period. This is due to the
reduction in distance travelled following implementation of the A164 and Jocks Lodge Junction Improvement scheme. This value is added to the AMCB and used to calculate the final PVB and BCR of the scheme.

3.5.19 Based on this assessment, the overall impact on Greenhouse Gases is assessed as being **Slight Beneficial**.

### Landscape

3.5.20 With regards to the surrounding landscape, the extent of the improvement scheme study area is characterised by gently undulating, or low lying flat topography that is traversed by a combination of linear elements including highways and overhead electricity distribution/transmission lines, as well as watercourses and ditches.

3.5.21 Development has created a defined southern edge to the town of Beverley adjacent to the existing A164 and Jocks Lodge Junction with the road corridor of the recently completed Beverley Southern Relief Road, now known as Minster Way, forming a new development boundary; hence infill residential development is beginning. Beyond the urban edge, open countryside extends across the undulating topography; land rises gently to the west and north-west towards the Yorkshire Wolds whilst to the south and east the land flattens into the hinterland of the River Hull.

3.5.22 The agricultural landscape contains medium to large scale, irregular shaped fields with boundaries defined by hedgerows. More recent field divisions are noticeably geometric in layout and evenly sized. Within this landscape, woodland blocks are infrequent, and mature trees alongside highway boundaries make a contribution to the extent of trees within the locality. Large, mature trees within fields and formal lines/blocks of trees hint at remnant parkland from larger estates that once existed in the area.

3.5.23 The A164 around Jocks Lodge has well established boundaries with few residential properties, almost exclusively to the northern boundary, alongside the route. The highway boundaries briefly open as the road crosses the A1079, offering an extensive vista to the south, but are once more contained by mature vegetation as the highway rises to the south-west. The highway cuts across the undulating topography with short sections of cutting/embankment, rising towards a highpoint close to Skidby; the windmill is a visual reference. From Skidby the land falls to the south towards Castle Hill. Sections of the A164 feature wide verges creating an open road corridor. The highway boundary is generally well vegetated with semi-mature/mature trees that offer visual containment and features that contribute to local landscape character.

3.5.24 South of the A1079 the A164 is situated within an area designated as an ‘Important Landscape Area’ (East Riding Local Plan 2012-2029). The ‘Important Landscape Area’ locations and policy aims are outlined in Policy ENV2 of the Local Plan. Such areas include the Yorkshire Wolds and form an extensive part of the East Riding, a
continuous band of land from the north-east of the authority area between Bridlington and Scarborough south towards the Humber. This policy recognises the high quality landscape that exists, seeking to protect the existing character and landscape resource. It is noted that development proposals should, “…..be sensitively integrated into the existing landscape, demonstrate an understanding of the intrinsic qualities of the landscape setting and, where possible, seek to make the most of opportunities to protect and enhance landscape characteristics and features” and, “…..protect and enhance existing landscape character as described in the East Riding Landscape Character Assessment”.

3.5.25 There are a number of local Public Rights of Way (PRoW) that terminate to the boundaries of the existing A164. Footpath WALKF04 lies west of Victoria Road crossing the A1079 via an overbridge; footpath ROWLF12 lies east of the A164 (terminates at the highway) opposite Dunflat Road; footpath SKIDF16 also lies east of the A164 to the northern boundary of Skidby Lakes Golf Course (also terminates at the A164; footpath SKIDF19 straddles the A164 to the east of Wilson Hill Farm towards Wood Hill Way; SKIDF06 Lies west of the A164 and heads westwards from Skidby windmill. Views towards the A164 are likely from the majority, if not all.

3.5.26 The proposed A164 and Jocks Lodge junction improvement would extend beyond the existing highway boundary, resulting in the loss of boundary vegetation and minor encroachment into adjacent fields to the east of and south of Victoria Road roundabout and along the eastern edge of the A164 up to the existing half clover leaf junction. A new grade separated junction with east/west slip roads would also result in the loss of vegetation and field edges together with re-modelled earthworks. There would however, be removal of the present slip road ‘loops’ to the south and north where existing highway could be reinstated to agricultural land and opportunities created for the establishment of woodland blocks.

3.5.27 The proposed dual carriageway extending south to Castle Hill roundabout is likely to require removal of mature vegetation to the highway boundary over an extensive distance. In the short to medium term, views will be opened to the highway; although it is noted that there are relatively few sensitive visual receptors. Mitigation planting could replace lost vegetation but would take some time to mature. This option is considered to result in a slight adverse landscape effect.

3.5.28 A Landscape Assessment has been carried out and is provided in Appendix O.

Townscape

3.5.29 The proposed improvements to the A164 and Jocks Lodge are located within the rural/urban fringe of Beverley with the extent of the proposed dualling within the open countryside to the south of the town. The existing Victoria Road roundabout and western edge of the A164 adjacent to Victoria Road lie at the edge of the settlement boundary defined by the East Riding Local Plan (2012-2029).
The commercial/retail development at Wingfield Way, off the A164, that forms the immediate urban edge is set within extensive car parking and contain little townscape value. There are more extensive residential suburbs beyond this development but the context of the proposed highway improvement scheme is landscape hence Townscape has been scoped out of this appraisal.

Historic Environment

Based on current knowledge, some 45 heritage assets lie within or adjacent to the existing A164 corridor between the Castle Hill and the Lincoln Way roundabouts. These include two designated assets: a Sanctuary Cross to south of Jocks Lodge (Scheduled Monument) and Castle Hill tower at Castle Hill roundabout (Grade II Listed Building), but the majority of assets are not designated. Only a small number of assets are likely to be directly affected by the scheme, but there is a direct impact on the Scheduled Monument and there will be increased visual impacts on other surviving elements of the built heritage. There is also some potential for as yet unknown below-ground archaeological remains in the area of the Jocks Lodge junction improvements and within the land required for the dualling proposals.

Additional more detailed Cultural Heritage assessment work will be carried out as part of the detailed design process so that the resource base can be fully understood or evaluated. It is possible that one of the three Cultural Heritage sub-topics (Historic Landscapes) can be scoped-out following a Scoping Report (as recommended by the Appraisal Specification Report (April 2017)), but further work on Archaeological Remains and Historic Buildings, in the form of Simple or Detailed Assessments (as defined by DMRB) is likely to be required. This work may identify further assets, while the importance and significance of existing assets may be changed (either up or down). Further assessment work will also be undertaken to consider indirect construction impacts, such as those resulting from site compounds, landscape mitigation works, drainage, service diversions etc.

Based on current knowledge, the majority of impacts result from widening and dualling of the A164, rather than specific improvements at Jocks Lodge junction. Adverse effects of the scheme should be able to be mitigated through mitigation and sympathetic design, and it is important that Historic Environment issues are considered as scheme development progresses. The Sanctuary Cross Scheduled Monument may require to be relocated, as it has already been for a previous scheme. Depending on the results of the above further assessment work, an appropriate level of archaeological investigation will be undertaken prior to and/or during scheme implementation. Prior consultation would also be undertaken with the local archaeological curators and conservation officers to formulate and agree effective mitigation strategies.

Based on current knowledge, the scheme will have a minor adverse effect, primarily due to the direct impact on the Scheduled Monument which could be relocated and increased visual intrusion on surviving elements of built heritage.
A Historic Environment Assessment has been carried out and is provided in Appendix P.

**Biodiversity**

3.5.36 The study area consists of arable fields, semi-natural grassland, improved grassland, semi-natural woodland, species-poor hedgerows with drainage ditches, adjacent ponds, and the A164. Areas of broadleaf woodland are present alongside the A164, the A1079 slip roads, and at Bentley Moor Wood to the west of Spring Mount and Rose Villa. Tree species present include Young Ash and Oak, Sycamore, Wild Cherry, Scots Pine and White Willow. A Bramble understorey is also present within these areas.

3.5.37 Tree preservation orders (TPOs) have been identified at two locations adjacent to the Site boundary, firstly alongside the Morrisons Supermarket at the northern end of the A164 at Beverley, and secondly alongside Castle Hill Hospital at Cottingham. Written consent must be obtained from ERYC if any works impacting on these trees is required.

3.5.38 Most of the surrounding land along the A164 is made up of arable fields. At the time of the ecology walkover survey most of these had been recently ploughed, with some identified as hay meadows. Field margins generally consisted of approximately 1-2m strips of improved grassland including cocksfoot, perennial ryegrass, thistle, nettles, and dock. Intact species poor hawthorn hedgerows are present as a boundary between individual arable fields and along the A164. Hedgerows are dominated by hawthorn with some short lengths of elder and blackthorn. These habitats are important for breeding and foraging birds, and may be used by commuting bats. Road verges along the A164 are characterised by improved grassland and ephemeral species.

3.5.39 Drainage ditches are present running either adjacent to or underneath hedgerows. At the time of the walkover survey these ditches were dry with no signs of burrows for species such as water voles. There are culverted under roads at several locations which are considered unsuitable for water voles or otters during the summer months, although they may provide temporary winter habitats. Two highway lagoons were identified along the A164 consisting of a large drain and overflow attenuation pond. Both drains were full at the time of survey with scrub, with ephemeral vegetation present around the perimeters.

3.5.40 Bird activity was recorded during the survey and there is the potential for nesting birds to be present within the study area and adjacent land. Trees, woodland, and shrub vegetation provide the ideal habitat for nesting birds.

3.5.41 Suitable habitats for both foraging and roosting bats has been identified within the study area and adjacent landscape. Hedgerows provide commuting routes between the fields and along the A164, as well as suitable foraging habitats. Farmhouse buildings are suitable for roosting bats with slate/tiled roof structures, gutters, lead
flashing around the chimney, and soffit boxes. There are few mature trees identified along the A164; however, trees were identified with broken branches which could provide a suitable roosting habitat for bats. Large ivy-covered trees were identified within adjacent fields beyond the immediate site. Common pipistrelles were recorded within the desk study, and previous surveys further south along the A164 at Swanland Roundabout identified the presence of small numbers of common pipistrelles.

3.5.42 No Great Crested Newts (GCN) were identified during the walkover survey, however it should be noted that the survey was carried out outside the breeding season when newts would be expected to be found in ponds. No newts were identified during the desk study, although connecting habitats between ponds have also been identified for commuting GCN. Suitable hibernation habitats have also been identified in hedgerow embankments within fields and along the A164. The suitability for GCN is considered to be average to low and therefore the presence of GCN cannot be ruled out without further survey work.

3.5.43 No reptiles were identified during the walkover survey. Suitable habitats were identified within field margins and areas of scrub along the entirety of the study area and adjoining landscape. Suitable hibernation habitats are present within the roadside embankments, and hedgerow embankments where these are not part of a drainage ditch. Pell Frischmann completed reptile presence/absence surveys in 2010 along sections of the A164 at Swanland, Willerby, Skidby, and Hessle (ref Pell Frischmann W50577/VAAs/R09 July 2010). No reptiles were identified during any of these surveys and it is considered unlikely that reptiles are present within the study area in the present day. Only one recording for a grass snake was returned during the desk study from an unknown date. Therefore, no further surveys are required at this stage.

3.5.44 No badgers or setts were identified during the walkover survey, although suitable habitats were identified. Most of the fields and hay meadows had recently been ploughed making identifying badger runs difficult, however gaps in the hedgerow and under fences indicate the possible presence of badgers. It should also be noted that, local landowners have advised that they have seen signs of badgers within the fields close to the A164 and Jocks Lodge Junction.

3.5.45 Following implementation of the scheme, sections of hedgerow, arable fields, improved grassland, broadleaf woodland and attenuation ponds will be impacted. Breeding birds and bats will likely be impacted, with further surveys required for bats and GCN. A precautionary approach should be taken in relation to badgers, breeding birds, and reptiles. This option has the potential to lead to a slight adverse impact if works to the TPO areas are not avoided.

3.5.46 The impact assessment will be completed once final design plans and further species surveys are available. Presence/absence surveys are required in respect of the following species:
- Bats (Very high biodiversity value); and
- Great Crested Newts (Very high biodiversity value).

3.5.47 For the sake of this assessment a precautionary approach has been taken in respect of bats and GCN, and it has been assumed that they are present within the ecological zone of influence of the Scheme. Provisional mitigation measures have been outlined which will fully protect these species. These measures will be amended or scoped out on completion of these surveys and following receipt of detailed design plans.

3.5.48 A biodiversity assessment has been carried out and is provided in Appendix Q.

Water Environment

3.5.49 The study area is within the catchment of the River Hull and Beverley and Barmston Drain. The lie of the land is generally flat with dry valleys to the west which channel surface water flows into the residential areas east of the A164. The A164 in the study area is generally at a higher level to surrounding land and is therefore not located within areas of medium or high fluvial and surface water flood risk. There are some particular areas which have higher flood risk than the rest of the A164 and these are detailed below.

3.5.50 The study area is underlain by the East Riding Chalk Aquifer. This water resource is classed as having Poor Chemical and Quantitative Status, achieving the 2015 aim. There is a Groundwater Nitrate Vulnerable Zone for the aquifer at the site and wider area. Most of the study area lies within the Outer Source Protection Zone.

3.5.51 The site crosses two sub-catchments in the Water Framework Directive classification. High Hunsley to Woodmansey tributary to Beverley Beck has achieved its aim of Good Overall, Ecological and Chemical Status by 2016. The watercourse running south of Bentley is a tributary to the Beverley and Barmston Drain. This watercourse has been classed as Moderate Overall and Ecological status with the aim of reaching Good status by 2027. The chemical status of this watercourse has met the 2015 target of Good status. The wider area falls within a surface water Nitrate Vulnerable Zone for the River Hull from Arram Beck to the Humber.

3.5.52 The proposed junction improvement and upgrade to dual carriageway from Victoria Road roundabout to Castle Hill roundabout site boundary is near six watercourses, of which three are classed as Environment Agency Main River.

3.5.53 The flood risk mapping shows that small areas of the site lie within Flood Zones 2 or 3 where the nearby watercourse is culverted beneath the highway. Therefore, there is low fluvial flood risk to the majority of the site. There are several areas with Low to High surface water flood risk along the existing highway, predominantly on Victoria Road, the A1079 at the junction with the A164, north of Bentley and at
Eppleworth Road. A flood alleviation scheme has been designed to reduce the surface water flooding along Eppleworth Road.

3.5.54 The A164 between Eppleworth and Skidby is within the Inner Source Protection Zone (SPZ). There is a large groundwater abstraction point in the centre of this SPZ, abstracting 32,850,000m$^3$ annually.

3.5.55 The WebTAG worksheet for Water Environment has identified that with suitable mitigation this option is considered to result in a Neutral effect.

3.5.56 As part of the appraisal process it is necessary to liaise with the following stakeholders:

- Environment Agency;
- Lead Local Flood Authority (ERYC); and
- Yorkshire Water

3.5.57 In terms of the key environmental concerns, these are summarised in Table 3.3 below:

Table 3.3 – Key Environmental Concerns

<table>
<thead>
<tr>
<th>Risk</th>
<th>Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased impermeable area can lead to more surface water flooding</td>
<td>Sustainable drainage systems, creating surface water storage and limiting discharge</td>
</tr>
<tr>
<td>Construction works within the floodplain</td>
<td>Ensuring that compensatory storage is created and watercourses are not obstructed during construction.</td>
</tr>
<tr>
<td>Increased level of pollutants draining into water courses</td>
<td>Sustainable drainage systems designed to treat the water. Limiting discharge for dilution.</td>
</tr>
<tr>
<td>Change in discharge quantity and chemistry can change aquatic habitat impacting biodiversity</td>
<td>Limit discharge and allow treatment in sustainable drainage designs.</td>
</tr>
<tr>
<td>Change to morphology of watercourses in redesign of junction</td>
<td>Ensuring the watercourse is not restricted of WFD degraded. Detailed WFD assessment of proposed works may be required here if design involves significant change to watercourse.</td>
</tr>
<tr>
<td>Vulnerable aquifer</td>
<td>Avoid penetration to the aquifer in construction and use of clay liners in construction. Design discharge to surface water bodies instead of groundwater.</td>
</tr>
</tbody>
</table>
A Water Environment Assessment has been carried out and is provided in Appendix R.

Social Impacts

Overview

In line with the Appraisal Specification Report, a WebTAG appraisal of the potential social and distributional impacts has been completed to support this Outline Business Case. Baseline assessment for all topics have been completed to inform this appraisal within the Social and Distributional Impact Assessment in Appendix S.

Commuting and Other Users

The impact to commuting and other users is measured using TUBA software, in the same way that the impact to business users and transport providers was calculated. The monetised journey time benefits for business users calculated by TUBA are provided in Table 3.4.

Table 3.4 – Commuting and Other Users TUBA results

<table>
<thead>
<tr>
<th>Benefit</th>
<th>Results ('000's, 2010 prices discounted to 2010)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Travel Time</td>
<td>£110,119</td>
</tr>
<tr>
<td>Vehicle Operating Costs</td>
<td>£3,597</td>
</tr>
<tr>
<td>User Charges</td>
<td>£0</td>
</tr>
<tr>
<td>During Construction and Maintenance</td>
<td>£0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>£113,716</strong></td>
</tr>
</tbody>
</table>

Physical Activity

In terms of physical activity, all existing Non-Motorised User (NMU) provision along the A164 will be maintained and enhancements will be undertaken as part of the redeveloped layout at Jocks Lodge junction. A new off-road route will be provided in order for pedestrians and cyclists to have a separate traffic free route to the west of Jocks Lodge Junction via a dedicated bridge over the A1079. This will have a positive impact on the physical fitness of people and safety. As such this scheme has been assessed as having a Slight beneficial impact.

Journey Quality

This section appraises the scheme’s impact on journey quality for all users based on three aspects – traveller care, traveller views, and traveller stress.
3.5.64 In terms of **traveller care** the scheme will provide adequate lighting for vehicles and NMUs and maintain the cleanliness of NMU routes. Other additional information and facilities are not incorporated as part of this scheme and therefore the impact has been assessed as **Neutral**.

3.5.65 In terms of **Travellers' views**, no natural or artificial barriers are proposed which may block views of the surrounding countryside or townscape. Therefore, this impact has been assessed as **Neutral**.

3.5.66 In relation to **travellers' stress**, the scheme proposals include provision of a new dedicated traffic free pedestrian and cycle route across the A1079 to the west of the A164 at Jocks Lodge Junction. On this basis, it is considered that the scheme will slightly improve the journey experience of pedestrians and cyclists. Similarly, drivers will also benefit from reduced stress as a result of reduced queuing and delay along the A164 and at Jocks Lodge junction.

3.5.67 **Fear of potential accidents** has been assessed as having a **Neutral impact** as the changes made to the A164 and Jocks Lodge Junction Improvement Scheme will comply with all DMRB standards providing adequate safety measures.

3.5.68 The overall assessment on journey quality has been assessed as a **slight beneficial impact**.

**Safety Benefits**

3.5.69 The implementation of the A164 and Jocks Lodge Junction Improvement Scheme may impact on the risk of collisions occurring, and on the number and severity of casualties.

3.5.70 An assessment of the impact that the scheme has on collisions has been undertaken in accordance with WebTAG Unit 3.5.4, using the DfT’s COBALT (Cost and Benefit to Accidents – Light Touch) Spreadsheet tool. COBALT assesses the safety impacts of road schemes, based on a comparison of accidents by severity and associated costs across an identified network in the DM and DS scenarios. Using details of link and junction characteristics, their relevant average accident rates and associated costs, and forecast traffic volumes by link and junction, COBALT predicts the amount of accidents saved (or not saved) and the associated monetary benefit (or dis-benefit) over a 60-year appraisal period between the DM and DS scenarios. The basis of the assessment is consistent with WebTAG, and therefore the monetised impacts can be considered additional to the TUBA impacts presented elsewhere in this Economic Case.

3.5.71 Table 3.5 provides a summary of the COBALT assessment for the A164 and Jocks Lodge Junction Improvement scheme. The full COBALT output is included in Appendix L.
### Table 3.5 – Summary of COBALT Assessment Results

<table>
<thead>
<tr>
<th></th>
<th>Benefits over a 60-year Appraisal Period</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slight Casualties Saved</td>
<td>232.1</td>
</tr>
<tr>
<td>Serious Casualties Saved</td>
<td>46.2</td>
</tr>
<tr>
<td>Fatal Casualties Saved</td>
<td>6.3</td>
</tr>
<tr>
<td>Total Casualties Saved</td>
<td>284.6</td>
</tr>
<tr>
<td>NPV Accident Benefits ('000s, 2010 costs discounted to 2010)</td>
<td>£13,539</td>
</tr>
</tbody>
</table>

3.5.72 The COBALT assessment suggests that the A164 and Jocks Lodge Junction improvement scheme will result in a reduction of 179 collisions over the 60-year assessment period, resulting in a benefit of £13.539 million.

3.5.73 Therefore, the scheme is expected to have result in beneficial impact in terms of accidents.

### Security

3.5.74 The implementation of transport schemes may impact on the level of security for road users, public transport passengers and freight. Whilst security is not identified as a problem which is driving the intervention, the design of the A164 and Jocks Lodge Junction Improvement scheme has included proper consideration of reducing security risk. The overall impact on security has therefore been assessed as Neutral.

### Access to Services

3.5.75 The A164 and Jocks Lodge Junction Improvement scheme does not propose to make any changes to the public transport network and maintains the pedestrian and cycle network through construction of a dedicated off-road route to the west of the A164 at Jocks Lodge Junction. As such the scheme will at worst lead to a "at least no worse off" situation for these modes.

### Severance

3.5.76 The A164 and Jocks Lodge Junction Improvement scheme will maintain all existing NMU routes along the A164 corridor and provide a new bridge for pedestrians and cyclists to the west of Jocks Lodge Junction. Where the scheme design proposes uncontrolled NMU crossings these will involve negotiating no more than two lanes of traffic. The scheme does not sever or significantly divert the existing routes used by pedestrians, equestrians or cyclists; nor is there a reduction to the standard and quality of the routes which might result in a reduction in use. As such the overall impact on severance has been assessed as Neutral.
Affordability

3.5.77 The A164 and Jocks Lodge Junction Improvement scheme does not propose to make any changes to address affordability, with no proposed change to public transport fares or travel costs for no or low car ownership groups.

3.5.78 It is assessed that the scheme will at worst lead to an "at least no worse off" situation. As such the overall impact on affordability has been assessed as Neutral.

Public Accounts

Cost to the broad Transport Budget

3.5.79 In terms of the broad transport budget, full details of the scheme costs are provided in the Financial Case which is included in section 4 of this Outline Business Case. These scheme costs are based on Q4 2017 rates contained in the SPON’S 2018 handbook and the spending profile forms an input into TUBA. Within TUBA these costs are converted to 2010 prices and discounted to 2010.

3.5.80 The scheme investment cost at 2010 prices and discounted to 2010 is £46.676m. A full breakdown of the spend profile is given in Appendix T.

3.5.81 The cost to the broad transport budget is the sum of the impact on local and central government funding under the following categories:

- Revenue;
- Operating costs;
- Investment costs;
- Developer and other contributions; and
- Grant / subsidy payments.

3.5.82 The development and delivery of the A164 and Jocks Lodge Junction Improvement scheme is to be funded by ERYC and the DfT. Ongoing operating costs are to be met from the Council’s revenue budgets. There is no revenue generated, and no developer contributions or grants / subsidies. As such the cost to the broad transport budget is summarised in Table 3.6 below.
Table 3.6 - Cost to broad transport budget (£000s, 2010 prices)

<table>
<thead>
<tr>
<th>Local Government Funding</th>
<th>Benefits Amount (£000's)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue</td>
<td>£0</td>
</tr>
<tr>
<td>Operating Costs</td>
<td>£0</td>
</tr>
<tr>
<td>Investment Costs</td>
<td>£46,676</td>
</tr>
<tr>
<td>Developer and Other Contributions</td>
<td>£0</td>
</tr>
<tr>
<td>Grant/Subsidy Payments</td>
<td>£0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>£46,676</strong></td>
</tr>
</tbody>
</table>

Indirect Tax Revenue

3.5.83 TUBA calculates indirect tax revenues based upon the difference in distance travelled and thus fuel consumed between the Do-minimum and Do-something scenarios. For the A164 and Jocks Lodge Junction Improvement scheme the indirect tax revenue calculated within the TUBA is £2,665m. This is a cost to central government caused by more direct routing due to the scheme, resulting in less fuel being consumed. The improved journey times on the A164 corridor will attract greater use, particularly by those currently using alternative longer routes on the surrounding highway network.

3.6 Value for Money Statement

Overview

3.6.1 A Value for Money (VfM) assessment has been undertaken for the A164 and Jocks Lodge Junction Improvement Scheme. Monetised values have been included for travel time, Vehicle Operating Costs (VOC), safety, construction and maintenance, greenhouse gases and indirect taxation.

3.6.2 DfT guidance recommends that the initial VfM category is identified based upon the BCR of the scheme, using monetised impacts as detailed above. The thresholds that are used to determine the VfM are as follows:

- Poor VfM if BCR is below 1.0;
- Medium VfM if the BCR is between 1.5 and 2;
- High VfM if the BCR is between 2.0 and 4.0; and
- Very High VfM if the BCR is greater than 4.0.

3.6.3 The BCR represents the amount of benefits of the scheme being bought for every £1.00 of cost and is calculated by dividing the PVB by the PVC.
3.6.4 A full breakdown of the scheme costs is provided in the Financial Case which is included as Chapter 4 within this Outline Business Case. The cost of the scheme and the spending profile is input into TUBA and the costs are then deflated and discounted to form the Present Value of Costs (PVC) of the scheme.

3.6.5 The final value of PVB and BCR for the core scenario is shown in Table 3.7 below.

Table 3.7 – Core Scenario - Scheme Benefits, Costs and BCR (£000s)

<table>
<thead>
<tr>
<th>Benefit Category</th>
<th>Benefit (£000's)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consumer Users (Commute)</td>
<td>£60,322</td>
</tr>
<tr>
<td>Consumer Users (Other)</td>
<td>£53,394</td>
</tr>
<tr>
<td>Business Users and Providers</td>
<td>£90,415</td>
</tr>
<tr>
<td>Indirect Tax Revenue</td>
<td>£2,665</td>
</tr>
<tr>
<td>Greenhouse Gases</td>
<td>£1,315</td>
</tr>
<tr>
<td>Noise</td>
<td>£273</td>
</tr>
<tr>
<td>Air Quality</td>
<td>£140</td>
</tr>
<tr>
<td>Accidents</td>
<td>£13,539</td>
</tr>
<tr>
<td>Present Value of Benefits</td>
<td>£21,5907</td>
</tr>
<tr>
<td>Present Value of Costs</td>
<td>£46,676</td>
</tr>
<tr>
<td>Net Present Value</td>
<td>£169,231</td>
</tr>
<tr>
<td>Benefit to Cost Ratio</td>
<td>4.63</td>
</tr>
</tbody>
</table>

3.6.6 The BCR of the scheme is **4.63** which indicates that the scheme offers **Very High Value for Money**. The Net Present Value (NPV) of the scheme is **£169,231m**. The majority of the benefits generated by the scheme are associated with travel time savings for business and non-business road users. Improvements to greenhouse gas emissions and safety also provide a small contribution to the total monetised benefits of the scheme.

3.6.7 In addition to the core scenario, Table 3.8 summarises the forecast impact on the initial BCR of the high and low growth sensitivity tests.

Table 3.8 – Low and High Scenario - Scheme Benefits, Costs and BCR (£000s)

<table>
<thead>
<tr>
<th>Benefit Category</th>
<th>Low Benefit (£000's)</th>
<th>High Benefit (£000's)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Present Value of Benefits</td>
<td>£184,237</td>
<td>£307,225</td>
</tr>
<tr>
<td>Present Value of Costs</td>
<td>£46,676</td>
<td>£46,676</td>
</tr>
<tr>
<td>'Initial' Net Present Value</td>
<td>£137,561</td>
<td>£260,549</td>
</tr>
<tr>
<td>Initial Benefit to Cost Ratio</td>
<td>3.95</td>
<td>6.58</td>
</tr>
</tbody>
</table>

3.6.8 This shows that the initial BCR (i.e. excluding accidents, noise and air quality impacts) is forecast to range between 3.95 in the Low Growth and 6.58 in the High Growth scenarios. The BCR in the Low Growth Scenario falls in the High VfM
category, which highlights the robustness of the value of the scheme. For reference, copies of the TEE, AMCB and PA tables are provided in Appendix J.

3.7 Summary

3.7.1 This section has presented the Economic Case for the proposed A164 and Jocks Lodge Junction Improvement Scheme, which has a predicted BCR of 4.63. The majority of the scheme benefits are forecast to be delivered through improved journey times on the highway network and in particular along the A164 corridor. Other impacts which have contributed to the BCR include benefits to safety, greenhouse gas emissions and non-motorised user benefits, as well as small dis-benefits to noise and air quality.

3.7.2 In addition to the monetised benefits, the proposed scheme would provide benefits in terms of reliability, landscape, townscape, biodiversity, physical activity, journey quality, security, access to services, severance, and option values.

3.7.3 Overall the Economic Case has shown that the proposed A164 and Jocks Lodge Junction Improvement Scheme represents very high value for money, as well as resulting in beneficial environmental and social impacts.
4. FINANCIAL CASE

4.1 Introduction

Overview

4.1.1 This section sets out the Financial Case for the A164 and Jocks Lodge Junction Improvement Scheme based on the preferred scheme option. This includes considering the affordability of the proposal, its funding arrangements and technical accounting issues as well as the impact of the scheme on both DfT and ERYC budgets and accounts. In order to consider these issues in more detail the remainder of the Financial Case will comprise the following:

- **Introduction**: an outline of the approach undertaken to assess affordability, including details of the key assumptions and exclusions
- **Costs**: details of the expected whole costs, occurrence of costs, breakdown and profile of costs, and risk allowance; and
- **Budgets / Funding Cover**: analysis of the budget/funding cover for the project, including other funding sources.

4.1.2 The costs presented in the remainder of this section have been reviewed and verified within an independent surveyor report to accompany the Outline Business Case. A copy of this report is included as Appendix U for reference.

Key Assumptions

4.1.3 As part of the process to accurately appraise the preferred option, the costs associated with the A164 and Jocks Lodge Junction Improvement Scheme have been identified and assessed based on the scheme drawings. These cost estimates have been calculated using rates contained in the SPON’S Civil Engineering Highway Works Price Book 2018, which is based on Q4 2017 prices. A cost plan showing each element of the scheme cost is included in Appendix T for reference.

4.1.4 Items within the cost estimate are based upon measured quantities taken from the scheme drawings and rates and prices are inclusive of the main contractor’s overheads and profit. The rates and prices for all elements listed are also exclusive of VAT.

Preliminaries

4.1.5 In terms of preliminaries, these costs have been estimated based on 15% of the sum assumed for the construction works sub-total. This has been split into two elements; General Preliminaries and Traffic Management costs. The figure for General Preliminaries covers contractor preliminaries works, such as temporary accommodation, site storage, and traffic safety and management.
4.1.6 The Traffic Management figure has been separately identified due to the nature of the proposed works. During construction, it is envisaged that there will be notable elements of the works that will need to be undertaken out of normal working hours on evenings and at weekends and as such these works will attract a cost premium. An additional 5% allowance has therefore been included to reflect these additional construction costs.

Preparation and Supervision

4.1.7 With regards to preparation and supervision costs, these have been estimated based on design and project management accounting for 10% of the construction sub-total with 5% included for site supervision.

Statutory Undertakers

4.1.8 The estimate for utility diversions, wherever possible and available, has been based on budget estimates provided by Statutory Undertakers that are affected by the scheme proposals. If these estimates were not available an additional allowance based on the construction costs has been made. In terms of the overall total costs for statutory undertaker diversions, this equates to 5% of the construction works sub-total.

Land Acquisition

4.1.9 In terms of land acquisition, based on experience from two recently completed major highway schemes in the vicinity of the A164 and Jocks Lodge, an allowance of £20,000 per acre has been estimated.

Quantified Risk

4.1.10 In order to adjust the base cost and account for risks associated with the cost of the scheme, a Quantified Risk Assessment (QRA) has been produced in accordance with the following four step process prescribed by the DfT:

- Risk identification;
- Assess the impacts of risk to determine possible outcomes;
- Estimate the likelihood of the possible outcomes occurring and mitigation; and
- Deriving the probability distribution and expected value of the costs of the scheme.

4.1.11 The first three steps have been incorporated into the overall process by developing a Risk Register which has then been run through a Monte Carlo Assessment. In preparing the Risk Register an independent Risk Workshop was held in July 2017 and a copy of this document is included as Appendix V for reference.
4.1.12 The Monte Carlo Assessment produces a mean risk value using the Quantified Risk Register.

Inflation

4.1.13 In terms of inflation, this has been applied based on information contained in the ‘All-in Tender Price Indices’ from the Building Costs Information Service (BCIS) by the Royal Institution of Chartered Surveyors (RICS). The figures that have been extracted and used in order to determine the final outturn cost are provided in Table 4.1 below:

Table 4.1 – Inflation Figures for Construction Costs and Economics

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction Cost Inflation</td>
<td>3</td>
<td>5.5</td>
<td>5.75</td>
<td>5.5</td>
<td>5.5</td>
</tr>
<tr>
<td>Cumulative Real Increase in Construction Costs</td>
<td>1.040</td>
<td>1.095</td>
<td>1.153</td>
<td>1.208</td>
<td>1.263</td>
</tr>
</tbody>
</table>

Optimism Bias

4.1.14 Whilst optimism bias is not included within the outturn cost it is subsequently applied to the final figure in order to consider the schemes’ Value for Money (VfM). As detailed in WebTAG A1.2, based on preparation of an Outline Business Case at Stage 2 an additional 15% has therefore been used in the presentation of the scheme economics to calculate the VfM benefits.

4.2 Costs

Construction Costs

4.2.1 Having provided details of the key assumptions, the purpose of this next section is to present the estimated construction costs based on Q4 2017 prices from SPON’S 2018, excluding preparation, supervision, land and risk. These estimated costs are shown in Table 4.2.
Table 4.2 – Construction Cost Q4 2017 – Excl. Preparation, Supervision, Land, Risk

<table>
<thead>
<tr>
<th>Construction Roadworks</th>
<th>£ Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural Single Lane Link</td>
<td>£819,000</td>
</tr>
<tr>
<td>Rural Two Lane Link</td>
<td>£9,622,750</td>
</tr>
<tr>
<td>Rural Three Lane Link</td>
<td>£1,339,250</td>
</tr>
<tr>
<td>Widening by Approximately One Lane</td>
<td>£500,000</td>
</tr>
<tr>
<td>Reinforced Concrete Bridge PCC Beams</td>
<td>£5,965,500</td>
</tr>
<tr>
<td>Paved Areas</td>
<td>£177,500</td>
</tr>
<tr>
<td>Cycle Bridge</td>
<td>£3,273,750</td>
</tr>
<tr>
<td>3m Cycleway</td>
<td>£564,300</td>
</tr>
<tr>
<td>Road Bridge</td>
<td>£2,182,500</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>£24,444,550</strong></td>
</tr>
</tbody>
</table>

Other Costs

4.2.2 In addition to the construction costs an estimate of those other costs associated with the improvement scheme are presented in Table 4.3.

Table 4.3 – Other Costs

<table>
<thead>
<tr>
<th>Other Costs</th>
<th>£ Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preliminaries @ 15%</td>
<td>£3,666,683</td>
</tr>
<tr>
<td>Traffic Management – Night and Weekend costs @ 5%</td>
<td>£1,222,228</td>
</tr>
<tr>
<td>Statutory Undertakers @ 5%</td>
<td>£1,466,673</td>
</tr>
<tr>
<td>Land Costs – 4 acres @ £20,000 per acre</td>
<td>£150,000</td>
</tr>
<tr>
<td>Design and Project Management Fees @ 10%</td>
<td>£2,933,346</td>
</tr>
<tr>
<td>Supervision Fees @ 5%</td>
<td>£1,466,673</td>
</tr>
<tr>
<td>Sub-total</td>
<td>£10,905,603</td>
</tr>
<tr>
<td>Construction Works Total (Table 4.2)</td>
<td>£24,444,550</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>£35,350,153</strong></td>
</tr>
</tbody>
</table>

Quantified Risk Costs

4.2.3 The mean result of the Monte Carlo Analysis for the post-mitigation situation has been used to make an allowance of risk to the overall scheme costs. The mean is the value in the middle of the range of results obtained from the Monte Carlo Analysis and is estimated at £8,076,670 for the scheme. It is this value which has been included in the estimates for risk and to derive the risk adjusted costs. A summary of the risk adjusted costs is presented in Table 4.4.
Table 4.4 – Risk Adjusted Costs

<table>
<thead>
<tr>
<th>Risk Adjusted Costs</th>
<th>£ Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction Works Total (Table 4.2)</td>
<td>£24,444,550</td>
</tr>
<tr>
<td>Other Costs (Table 4.3)</td>
<td>£10,905,603</td>
</tr>
<tr>
<td>Sub-total</td>
<td>£35,350,153</td>
</tr>
<tr>
<td>Risk (Mean)</td>
<td>£8,076,670</td>
</tr>
<tr>
<td>Total</td>
<td>£43,426,823</td>
</tr>
</tbody>
</table>

Outturn Costs

4.2.4 In order to estimate the project outturn costs, it has firstly been necessary to consider the spend profile of each cost item throughout the project delivery period based on current SPONS 2018 prices. These Q4 2017 costs are provided in Table 4.5.
Table 4.5 – Scheme Cost Profile at Q4 2017 prices from SPONS 2018

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Design &amp; Project Management</td>
<td>£1,466,673</td>
<td>£1,466,673</td>
<td>£0</td>
<td>£0</td>
<td>£0</td>
<td>£2,933,346</td>
</tr>
<tr>
<td>Land Assembly Costs</td>
<td>£75,000</td>
<td>£75,000</td>
<td>£0</td>
<td>£0</td>
<td>0</td>
<td>£150,000</td>
</tr>
<tr>
<td>Construction Costs</td>
<td>£0</td>
<td>£0</td>
<td>£10,164,044</td>
<td>£15,400,067</td>
<td>£5,236,023</td>
<td>£30,800,133</td>
</tr>
<tr>
<td>Project Development - Supervision</td>
<td>£0</td>
<td>£376,068</td>
<td>£564,104</td>
<td>£526,501</td>
<td>£0</td>
<td>£1,466,673</td>
</tr>
<tr>
<td>Risk Sum</td>
<td>£2,019,168</td>
<td>£2,019,168</td>
<td>£2,019,168</td>
<td>£2,019,168</td>
<td>£0</td>
<td>£8,076,670</td>
</tr>
<tr>
<td>Scheme Cost</td>
<td>£3,560,841</td>
<td>£3,936,909</td>
<td>£12,747,316</td>
<td>£17,945,734</td>
<td>£5,236,023</td>
<td>£43,426,822</td>
</tr>
</tbody>
</table>
In order to account for inflation, the costs identified in Table 4.5 have been factored against the rates identified in Table 4.1 and these revised outturn values are provided in Table 4.6.

Table 4.6 – Outturn Cost Profile

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Design &amp; Project Management</td>
<td>£1,525,339</td>
<td>1,606,007</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>3,131,347</td>
</tr>
<tr>
<td>Land Assembly Costs</td>
<td>£78,000</td>
<td>82,125</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>16,0125</td>
</tr>
<tr>
<td>Construction Costs</td>
<td>£0</td>
<td>0</td>
<td>11,714,061</td>
<td>18,595,580</td>
<td>6,610,479</td>
<td>36,920119</td>
</tr>
<tr>
<td>Project Development - Supervision</td>
<td>£0</td>
<td>411,795</td>
<td>650,129</td>
<td>635,750</td>
<td>0</td>
<td>1,697,674</td>
</tr>
<tr>
<td>Risk Sum</td>
<td>£2,099,934</td>
<td>2,210,988</td>
<td>2,327,091</td>
<td>2,438,148</td>
<td>0</td>
<td>9,076,158</td>
</tr>
<tr>
<td><strong>Scheme Cost</strong></td>
<td><strong>£3,703,274</strong></td>
<td><strong>4,310,915</strong></td>
<td><strong>14,691,281</strong></td>
<td><strong>21669475</strong></td>
<td><strong>6,610,479</strong></td>
<td><strong>50,985,423</strong></td>
</tr>
</tbody>
</table>
4.3 Budgets / Funding Cover

Funding Profile

4.3.1 The funding profile has been developed based on the current outline scheme programme for input to the economic appraisal process and is presented in Table 4.7.

Table 4.7 – Cash Flow and Funding Profile

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ERYC Contribution (20%)</td>
<td>£740,655</td>
<td>£862,183</td>
<td>£2,938,256</td>
<td>£4,333,895</td>
<td>£1,322,096</td>
<td>£10,197,085</td>
</tr>
<tr>
<td>DfT Contribution (80%)</td>
<td>£2,962,619</td>
<td>£3,448,732</td>
<td>£11,753,024</td>
<td>£17,335,580</td>
<td>£5,288,383</td>
<td>£40,788,339</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>£3,703,274</strong></td>
<td><strong>£4,310,915</strong></td>
<td><strong>£14,691,281</strong></td>
<td><strong>£21,669,475</strong></td>
<td><strong>£6,610,479</strong></td>
<td><strong>£50,985,423</strong></td>
</tr>
</tbody>
</table>

4.3.2 Following a successful capital bid for internal discretionary funding, an East Riding of Yorkshire Council contribution of 20% has been secured as a proportion of the total scheme cost. This has been approved by the Council's Capital Board. This funding is not time constrained and can be profiled to suit the requirements of the scheme and other funders.

4.3.3 Both the LEPs, of which the Council is a member, have suggested that they may be willing to make a small financial contribution towards the overall scheme cost. This is reflected in their letters of support for the scheme, attached as Appendix C. It is understood that Local Growth Funding is considered to be a form of Central Government funding, and as such any financial contribution from the LEPs will reduce the DfT contribution accordingly. Further discussions on funding amounts and profiles will continue in 2018, and will be confirmed if the A164 and Jocks Lodge Junction Improvement Scheme progresses to construction.
Optimism Bias

4.3.4 The economic appraisal has been undertaken using an Optimism Bias value of 15% based on WebTAG A1.2 for a Stage 2 Outline Business Case. Table 4.8 therefore present the total project outturn costs with the additional Optimism Bias uplift at 15% respectively.

Table 4.8 – Scheme Costs input into Economic Assessment

<table>
<thead>
<tr>
<th>Scheme Costs</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Outturn Scheme Cost</td>
<td>£50,985,423</td>
</tr>
<tr>
<td>Optimism Bias (15%)</td>
<td>£7,647,814</td>
</tr>
<tr>
<td><strong>Total Scheme Cost with Optimism Bias</strong></td>
<td><strong>£58,633,237</strong></td>
</tr>
</tbody>
</table>
5. COMMERCIAL CASE

5.1 Introduction

5.1.1 This section sets out the commercial viability of the A164 and Jock's Lodge Junction Improvement Scheme. It includes the elements specified in WebTAG guidance on developing a commercial case as listed below:

- Output based specification;
- Procurement strategy;
- Sourcing options;
- Payment mechanisms;
- Pricing framework and charging mechanisms;
- Risk allocation and transfer;
- Contract length; and
- Contract management.

5.2 Output Based Specification

5.2.1 The Council will use a team of experienced engineers to develop the scheme and associated specifications, being mindful of the strategic objectives of the scheme and any funding and programme constraints. The strategic objectives are set out in more detail in the strategic case, but in broad terms relate to reducing congestion and delays at the junction, improving journey times and reliability along the A164 corridor, improving road safety in the area and supporting the future economic viability of Beverley and the surrounding area.

5.2.2 The commercial case is based on strategic objectives and outcomes against which alternative procurement options are assessed. These are to:

- Achieve cost certainty, or certainty that the scheme can be delivered within the available funding constraints;
- Minimise further preparation costs;
- Obtain contractor experience and input into the programme to ensure the implementation is achievable; and,
- Obtain contractor input to risk management, including mitigation measures, to allow early identification of opportunities to reduce the risk.

5.3 Procurement Strategy

5.3.1 The key objectives that the preferred procurement strategy must deliver are to:

- Deliver the scheme within the available funding;
- Ensure that appropriate quality is delivered;
- Deliver the scheme on time;
- Reduce risks to a level that is As Low as Reasonably Practicable; and,
- Provide contractor input into the design, risk assessment and delivery programme.

5.3.2 The Council operates a Framework process for contractor selection and tendering under the YORCivils2 Yorkshire-wide Framework. The Framework commenced in August 2017 and will run for four years with the option to extend for a further two years. All tendering and appointments for the Framework are carried out in accordance with EU procurement legislation.

5.3.3 The Framework Agreement is one of two Frameworks covering the Yorkshire and Humber Region (split geographically, one for East and North Yorkshire and one for South and West Yorkshire). These were established to provide all public bodies in the area with access to quality construction related services at competitive prices under the heading of YORhub. Through avoidance of stand-alone full Official Journal of the European Union (OJEU) processes and enhanced purchasing power, the use of this type of construction framework can result in savings of up to 20% when compared with traditional procurement methods. ERYC acts as a YORhub contracting authority for the north and east sub-region.

5.3.4 For a contractor or consultant to be considered for the Framework they were assessed in their economic, financial and technical capability. They were also required to be registered with professional trade bodies where relevant.

5.3.5 Expressions of interest were advertised by a Pre-Qualification Questionnaire (PQQ) with a minimum of 35 and a maximum of 120 tenderers invited to tender for appointment to the Framework with the Most Economically Advantageous Tenders (MEAT) invited to accept the appointment.

5.3.6 All works leading to the establishment of the Framework were advertised in the OJEU. This was split down into six lots as listed below:

- Lot 1: Civil engineering works below £0.5 million; estimated potential workload £7 million per annum;
- Lot 2: Civil engineering works between £0.5 million and £4 million; estimated potential workload £42 million per annum;
- Lot 3: Civil engineering works between £4 million and £10 million; estimated potential workload £67 million per annum;
- Lot 4: Civil engineering works over £10 million; estimated potential workload £77 million per annum;
- Lot 5: Surfacing works; estimated potential workload £48 million per annum; and
- Lot 6: Coastal works; potential workload £82 million per annum.
5.3.7 The Framework promotes the use of small and local contractors, either working independently or as subcontractors, which can offer a more responsive and cost effective solution in a specific area.

5.3.8 The A164 and Jocks Lodge scheme will be delivered through Lot 4 of the YORCivils2 Framework (civil engineering works over £10 million). The following contractors are on Lot 4 of the framework:

- Balfour Beatty Group Limited;
- BAM Nuttall Ltd;
- Carillion Construction Limited;
- Colas SIAC Ltd;
- Galliford Try Infrastructure Ltd;
- Interserve Construction Ltd;
- John Sisk and Son (Holdings) Ltd; and
- Morgan Sindall Construction and Infrastructure Ltd.

**Tendering**

5.3.9 The Council issues tenders and contracts using the NEC form of contract with approved NEC tender templates. The Framework Agreement provides for awarding Contracts using one of the processes below:

- The NEC3 Engineering and Construction Contract (April 2013);
- The NEC3 Engineering and Construction Short Contract (April 2013);
- The NEC3 Professional Services Contract (April 2013); and
- The NEC3 Term Service Contract (April 2013).

5.3.10 All tenders are controlled and recorded via the YORtender electronic portal. Tendering is carried out in line with European Directives and the Council’s own protocols which are mutually compatible. Selection of tenders is either by rotation or mini competition. It is intended that for this project a mini-competition will used to select a preferred contractor.

5.3.11 Consideration will be given to each element of the works and which NEC contract option is most appropriate. This may include Option A – priced contract with activity schedule or Option C – target contract with activity schedule.

5.3.12 The Employments Skills Plan (ESP) is a standard inclusion in any East Riding tender and construction contract. It sets down the minimum requirement that the tenderer is expected to meet in regards to:

- School / college / University site visits and workshops;
- University research;
- Work experience for those aged 18+;
• Entry or level 1 qualifications;
• Existing apprentices;
• Apprentice projects initiated;
• Project Initiated Higher Level Skills;
• National Vocational Qualifications;
• Short courses and CPD;
• Investors in People;
• Construction Skills Certificate Scheme (CSCS) cards; and
• Progression into employment.

5.3.13 The NEC tender template sets out the minimum ESP requirement with the tenderer completing the document to show what they expect to use or provide. If this meets or exceeds the requirements, the tenderer will be awarded the full marks.

5.3.14 Once construction is underway, the Contractor is monitored monthly to ensure the ESP requirements are being met.

Tendering Assessment

5.3.15 Prior to the issue of the tenders, a quality assessment criterion is agreed and recorded. All Framework contractors have previously been assessed prior to acceptance on to the Framework. However, more specific assessments can be carried out such as:

• Programme;
• Spend profile;
• Risk assessment and mitigation;
• Method statement(s);
• Construction Phase H&S Plan;
• CVs of site and design staff; and,
• Employment Skills Plan.

5.3.16 These points are weighted and the method of assessment clearly set out in the ‘Instructions for Tendering’ section of the tender documents. The process is also registered with the Council’s Chief Executive prior to tendering so that amendments to the process cannot be made without due notice to all parties.

5.3.17 Upon receipt the tenders are assessed by the Project Manager for completeness and acceptability and to ensure there have been no amendments or omissions. If shown to be an acceptable tender then the two areas of assessment, price and quality, are separated and passed to different officers. Tenders can either be assessed on price only, or on price and quality.

5.3.18 Price only assessments are a straightforward financial assessment. Tenders are first checked for mathematical accuracy with any errors reported to the tenderer with the option to correct or withdraw. Rates, prices and adjustments (i.e.
percentage on-costs) are then checked against the agreed prices in the Framework Agreement. Finally, the overall price is assessed with any options priced to determine a like for like comparison of all tenders.

5.3.19 The quality assessment will compare the tender submission with the requirements set out in the tender. Points are awarded in categories by each officer carrying out the assessment. Once complete, a meeting is held with all quality assessors to discuss and compare their results. Following discussions, an agreed score for each category for each tenderer is recorded. The scores are individually weighted and totalled to achieve a quality score for that tender.

5.3.20 Once the scores are agreed and recorded, these are passed back to the Project Manager to be combined with the price scores and a final weighting is applied to determine the overall final score for each tender.

5.3.21 Weighting is carried out to apply importance and criticality to items and to balance the price and quality score. As all tenderers have already passed certain essential criteria to be accepted onto the Framework, it is assumed that the suitability and quality of each contractor is already of a good standard. Therefore, a typical weighting for price/quality could be 80/20 or 70/30 with price being the higher importance. However, regardless of price, a tender must pass the minimum quality standard to be deemed acceptable.

Contract Award

5.3.22 Once a tender has been assessed, a Tender Report is prepared by the Project Manager with a recommendation made to award a tender or reject all tenders. This report shows the reasoning behind the recommendation, the scores and the evaluation that was carried out. This report is then submitted to the Project Board for approval before being passed to the relevant designated officer or The Cabinet for final approval.

5.3.23 Once approved, the tenderers are informed of the preferred tenderer and a ‘standstill period’ period is then usually entered into to allow for any objections or challenges. While there is no requirement to have a standstill period prior to award of contracts let under framework, the Council generally takes this approach where timescales permit, especially for major projects such as this.

5.4 Sourcing Options

5.4.1 To deliver the scheme, it is proposed to use the YORCivils2 Framework. By using the Framework Agreement to tender for the A164 and Jock’s Lodge Improvements, the Council has the confidence that the service received will be of a high standard. Existing working relationships with the successful parties further supports the confidence the Council has in the efficient delivery of the scheme.
5.5 Payment Mechanisms

5.5.1 Once construction work starts, monthly invoices are submitted for payment. In the week prior to the formal submission of an invoice, a meeting is held between the Contractor’s Quantity Surveyor and the Project Manager plus additional staff as required. This meeting reviews the amount and type of works completed, any additional works (e.g. compensation events) and the future programme and payments to update the spend profile. Following the meeting an application for payment is made by the Contractor. This is assessed and agreed, pending any amendments, by the Project Manager and certified for payment. Payments are made without delay, thus maximising cash flow for all firms.

5.6 Pricing Framework and Charging Mechanisms

5.6.1 The form of contract, works information and tender specification sets out the pricing framework and charging mechanisms. Consideration will be given to each element of the works and which NEC contract option is most appropriate such as Option A – priced contract with activity schedule or Option C – target contract with activity schedule.

5.7 Risk Allocation and Transfer

5.7.1 Risks fall into two broad categories, Health and Safety Risk and Project Risk. Both have the ability to adversely affect a project, but it is the second, Project Risk, that is likely to have the most impact on finances and project delivery.

5.7.2 The Council manages risk in line with Treasury guidelines from 2001 entitled "Management of Risk – A Strategic Overview", which became known as the “Orange Book” with supplementary guidance from the “Green Book”.

5.7.3 Risk registers (qualitative and quantitative) are produced via risk register workshops to identify and quantify risk and determine the best way to treat the risk. Mitigation measures are put in place where appropriate to reduce the likelihood of a risk occurring and / or reduce the impact if they do occur. Through the risk register process, the Council identifies the broad cost of the risks involved and uses this to derive the contingency required to deliver the project and incorporates this into the scheme budget, amending this as the project develops.

5.7.4 Risk registers are live documents which are updated as the project progresses. The most recent risk register was produced in August 2017, and is included in Appendix V.

5.7.5 Where appropriate, risk is transferred to the contractor via the tender or contract thus giving better financial predictability and stability for the Council.

5.7.6 The pricing for most works, until complete, are based on estimates. Experience has shown that estimating within projects is optimistic in its cost. Using the guidelines in the Orange and Green Books, a level of Optimism Bias has been calculated and
incorporated into estimates. As with risk, this will reduce as the project progresses but will not reach zero until the works are complete. The process followed, and resulting Optimism Bias values used, are presented in the Financial and Economic Cases.

5.8 Contract Length
5.8.1 Based on previous projects of a similar nature, known site restrictions and availability of construction teams the estimated length of construction works is currently 24 months although this may change as the scheme develops further and detailed discussions take place with the supply chain.

5.9 Contract Management
5.9.1 The management of the Framework as well as tender and contract issues are managed by the Construction Housing Category Management Group and:

- The Scheme Project Manager on a day to day basis reporting to the Project Board via Highlight Reports and regular meetings;
- The Project Board reporting to the Major Infrastructure Programme Board; and,
- The Major Infrastructure Programme Board reporting to the Capital Board.

5.9.2 The award of tenders and financial control is governed by the Council’s Contract Procedure Rules which are embedded in the Council’s Constitution with the day to day contract management undertaken by the Project Manager reporting as above.

5.9.3 Project and contract management is carried out in accordance with best practice standards based on EU procurement rules, Government Commerce and the principles of PRINCE2.

5.9.4 The site will technically belong to the Contractor (Construction) who will manage the day to day works and access for working staff, visitors and public. However, the Project Management team will have a permanent site presence including:

- NEC Project Manager, to administer the construction contract and agree the short term programme of works (approximately 1 month in advance of the works), reporting to the scheme Project Manager;
- Construction Assistant, to provide technical backup to the Project Manager and carry out basic day to day management of individual work areas;
- NEC Site Supervisor, to supervise the quality and workmanship of the construction works;
- Ecological Clerk of Works, to provide a watching brief for ecological works. This role would be full time in the early stages and intermittent once work is
“out of the ground” and away from any ecologically important/sensitive areas; and,

- Specialist Consultant, required on an ad hoc basis to provide specialist back up and advice for specific tasks such as structures construction or other operations requiring specialist advice.

5.9.5 Off-site the Project Management team would consist of:

- Scheme Project Manager, who has overall control of the project and will monitor and record/report on all aspects of the work including progress, finance, programme and controlling the NEC contract. Reports to the Project Board and liaison with the client, contractor, site staff and all stakeholders.
- Construction Assistant, providing technical backup to the Project Manager, control and record keeping. Specific management/responsibility of work packages;
- Senior Project Manager (Finance), supervision of the budget, reporting to the Project Manager, Project Board and Major Infrastructure Programme Board; and,
- Quantity Surveyor, supervision of day to day finances including payments, orders and invoices, reporting to Scheme Project Manager.

5.9.6 The Scheme Project Manager will attend the monthly progress meetings on site chaired by the NEC Project Manager and attended by the Principal Contractor, Principal Designer and others required to provide input into the site progress report.

5.9.7 The Scheme Project Manager will report monthly progress to the Project Board and provide monthly scheme highlight reports to the Major Infrastructure Project Board, who in turn will report to the Capital Board. More information on project reporting structures is included within the Management Case.

5.10 Summary

5.10.1 The Council will use experienced consultants and in-house staff to develop the output based specifications. The key objectives of the scheme delivery are to deliver a scheme on time, of a high quality, on budget and reduce the risks as far as is reasonably practical.

5.10.2 Contractors will be procured through the existing YORcivil2 Framework Agreement. The Council will issue tenders and contracts using the NEC form of contract with approved templates via the YORe tender portal. The tenders will be assessed for price and quality with a weighting to be determined, with price being the higher importance.
5.10.3 The main construction works will be carried out using Lot 4 of the YORcivil2 Framework as the cost will be over £10 million.

5.10.4 A scheme risk register has been produced, identifying and quantifying risks and determining the way the risk will be managed. Mitigation measures are in place to reduce the likelihood of the risk occurring or reduce the impact. The risk register contains information on mitigation measures and risk owners, and is updated periodically.

5.10.5 The estimated length of construction works is currently 24 months. Allowances will be made for loss of time during the winter months and programmed delivery of individual works. The management of the Framework and Tender / Contract issue is managed by the Construction Housing Category Management Group and the Scheme Project Manager. Project and contract management will be carried out in accordance with best standards practice and the principles of PRINCE2.
6. MANAGEMENT CASE

6.1 Introduction

6.1.1 This chapter presents the Management Case for the A164 and Jock’s Lodge Junction Improvement scheme, assessing whether the proposed improvements are deliverable. It sets out the project planning, governance structure, risk management, communications and stakeholder management, benefits realisation and assurance procedures set out by the Council to deliver the proposed improvements.

6.1.2 Details are provided on the tasks and timescales for completion of the scheme and identification and control of associated risks. This case sets out the tasks to ensure the benefits presented in the economic case will be realised, including steps identified to assess and evaluate the success of the project.

6.2 Evidence of Similar Projects

6.2.1 The Council has extensive recent relevant experience of delivering major highway and transport infrastructure improvement schemes. This includes:

- Beverley Integrated Transport Plan, £22m: included construction of a new southern relief road, upgrading of Grovehill Roundabout, and associated highway and junction improvements. The project opened on time and on budget in March 2015.

- A164 Humber Bridge to Beverley route improvement scheme, £12m: included a new section of dual carriageway and capacity improvements to four roundabouts along this key corridor. Opened on time and to budget in 2013.

- Bridlington Integrated Transport Plan (phase 2), £13m: highway widening, new one way system, realigning Beck Hill including a new bridge, new Railway Station Plaza. Currently on site, due to be completed late 2018.

- Bridlington Integrated Transport Plan (phase 1), £7m: included a new park and ride and junction improvements, completed in 2011.

6.2.2 The Council has also delivered a large number of smaller infrastructure improvement schemes in recent years including a £3.3m maintenance scheme at Newland Bridge, two £1.5m junction improvement schemes funded through the DfT’s local pinch point fund, a £16.7m programme of enhanced ‘A’ road maintenance funded through the York, North Yorkshire and East Riding LEP’s local growth deal and a £15.7m street lighting upgrade programme part-funded through the DfT’s Challenge Fund.
6.2.3 The Council is also currently managing the delivery of a number of major flood alleviation schemes including the £20m Cottingham and Orchard Park scheme and the £21m Anlaby and East Ella scheme.

6.2.4 As a result of this extensive experience the Council has developed key management processes to ensure schemes can be delivered on time and to budget. The principles of PRINCE2 are incorporated into the Civil Engineering Services Quality Management System used to deliver the Council's capital programme of major infrastructure projects.

6.3 Programme / Project Dependencies
6.3.1 The Strategic Case sets out the key constraints and inter-dependencies of the A164 and Jock’s Lodge Junction Improvement scheme.

6.4 Governance, Organisational Structure and Roles
6.4.1 The works are to be managed by experienced officers, all qualified in their relevant field with a minimum of five years’ experience.

6.4.2 The delivery team includes a scheme Project Manager a construction NEC Project Manager and additional specialist technical staff, both internal and external, who support the project, including:
- Construction Assistants;
- NEC Site Supervisor;
- Ecological Clerk of Works,
- Assessment and Supervision – already involved and engaged in the process;
- Additional support staff (financial, administration, legal, asset and technical); and
- External Consultants to provide site support to manage contract change and provide the specialist services as required.

Governance Structure

6.4.3 The Council has a dedicated resource to deliver its major projects using PRINCE2 project management at both the programme and individual project level. Value management/engineering, together with PRINCE2 Project Management, supports the authority’s ISO 9001:2015 Quality Management System. The Council’s structure for delivering major highway and transportation projects is in line with OGC and PRINCE2 methodologies.

6.4.4 The Council has a proven track record in delivering transport improvements in the local community, whilst providing careful stewardship of the Local Transport Plan
and major scheme funding and continuous monitoring of programme delivery against targets. The management structure for the delivery of the scheme will also be responsible for the monitoring of the scheme both during and post construction.

6.4.5 Details of the Governance, Organisational Structure and Roles are shown on the Organisational Structure Chart attached in Appendix W, and more detail on this is included below.

The Project Manager and Project Team

6.4.6 The Project Manager and Technical Client for the scheme is Principal Engineer Paul Suret. Paul and the team will manage the delivery of the project and meet formally, regularly, working together to deliver the required outputs. The Project Manager chairs the Project Board and will report to the Council’s Major Infrastructure Programme Board (further details of which are included below).

6.4.7 Paul has over 35 years’ experience in delivering Local Government infrastructure projects and has spent the last 20 years in his role as a project manager at the East Riding of Yorkshire Council. He has project managed numerous civil engineering and highway improvement schemes including traffic reconfiguration schemes, major maintenance projects, flood defence projects, and major transport improvement schemes including the £22m Beverley Integrated Transport Plan scheme in line with PRINCE2 and OGC project management methodology. Paul is extremely experienced in all elements of project development and delivery including budget control, programming, quality management, risk management, procurement and construction.

6.4.8 Paul will be working with an experienced team of civil engineers who will each manage discrete work packages within the overall scheme. These engineers include Malcolm Smith (Principal Engineer), Mike Medcalf (Senior Engineer) and Steve Crosby (Senior Engineer). The project team will be supported by other internal resources from a range of teams including ERYC’s Legal, Finance Audit, and Valuation and Estates teams, and input from specialist consultants procured through the relevant YORconsult framework as and when required.

6.4.9 Paul, as Project Manager, will have day-to-day control over the delivery of the A164 and Jocks Lodge scheme. Paul and the various work package managers can authorise changes to the scheme up to the following tolerances:

6.4.10 Project Manager:
- Programme change – up to and including 1 month delay or acceleration to the overall project.
• Budget change – up to a £30,000 increase or decrease in the overall project budget.
• Business Case Objectives change – cannot authorise change.

Work Package Manager:
• Programme change – up to and including 1 week delay or acceleration to their particular work package.
• Budget change – up to a £2,000 increase or decrease to the particular work package.
• Business Case Objectives change – cannot authorise change.

6.4.12 The Project Team will provide the Project Manager with the following information as part of the project assurance process:

Table 6.1 – Project Assurance Process

<table>
<thead>
<tr>
<th>Information Required</th>
<th>Information Provider</th>
<th>Frequency of communication</th>
<th>Method of Communication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highlight Reports</td>
<td>Delivery Project Manager</td>
<td>Monthly</td>
<td>Meeting</td>
</tr>
<tr>
<td>Project Progress Reports</td>
<td>Works Package Managers</td>
<td>Ad hoc</td>
<td>Meeting/Email</td>
</tr>
<tr>
<td>Team meetings</td>
<td>Project/ Work package Manager</td>
<td>Weekly</td>
<td>Meeting</td>
</tr>
<tr>
<td>Issues and Risks</td>
<td>Project Team Risk Manager</td>
<td>Weekly</td>
<td>Meeting</td>
</tr>
</tbody>
</table>

Project Assurance / Steering Group (“Project Board”)

6.4.13 The Project Board for the A164 and Jock’s Lodge Junction Improvement scheme has the responsibility for the overall direction, management and success of the project. However, the Project Board entrusts the Project Manager with the day-to-day management of the scheme. The Project Manager will keep the Project Board informed of the progress of the scheme. The Project Board is ultimately responsible for the delivery of works against time, budget, quality and outcome indicators and ensuring the programme of works outcomes remain in line with the overall strategic objectives of the organisation.

6.4.14 The Project Board meets monthly and is chaired by the Project Board Executive, Richard Lewis, Civil Engineering Services Manager. Other attendees include specialist officers with expertise in procurement, health and safety/CDM, legal, environmental issues, finance, audit, planning and quality control. If the scheme cost, scope, or delivery extends beyond the tolerances that can be authorised by the work package managers or the Project Manager, it is referred to the Project
Board for a decision. The Project Board Executive can authorise changes up to the following tolerances:

- Programme change – up to and including 3 months delay or acceleration to the overall project.
- Budget change – up to a £100,000 increase for any one change event and a maximum of £1,000,000 of cumulative change events, unlimited decrease.
- Business Case Objectives change – cannot authorise change.

6.4.15 The Project Board Executive reports to and is responsible to the Major Infrastructure Programme Board.

Major Infrastructure Programme Board

6.4.16 The Senior Responsible Owner (SRO) for the scheme is Alan Menzies, Director of Planning and Economic Regeneration at ERYC. Alan has worked in local government for 42 years, and has been at ERYC since its inception in 1996. His current work areas include planning and development management, building control, rural policy and strategy, sustainable development, tourism, economic development, regeneration, inward investment, business support, press office and corporate marketing. Alan was appointed to the ERYC Deputy Chief Executive role in April 2017.

6.4.17 Alan has been SRO for a number of similar major transport schemes including the Beverley Integrated Transport Plan and the A164 Humber Bridge to Beverley scheme. Alan chairs the Council’s Major Infrastructure Programme Board and Capital Board, and has responsibility for the overall programme and coordination of works being undertaken by the Council across a range of portfolios.

6.4.18 The responsibility of the Major Infrastructure Programme Board is to oversee the delivery of several major projects underway at any one time. The Major Infrastructure Programme Board (MIPB) comprises Directors, Heads of Service and Group Managers covering Engineering, Asset Strategy and Finance.

6.4.19 The scheme Project Manager will prepare a monthly highlight report for submission and discussion at the MIPB. This provides a general update on progress and highlights any current or potential issues that may affect the scheme. The Project Manager will also provide supplementary information to the MIPB as required, summarised as follows:
Table 6.2 – Project Manager Information

<table>
<thead>
<tr>
<th>Information Required</th>
<th>Information Provider</th>
<th>Frequency of communication</th>
<th>Method of Communication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highlight Reports, Risk and Issues Financial Report</td>
<td>Project Manager</td>
<td>Monthly/Ad hoc</td>
<td>Report/Meeting</td>
</tr>
<tr>
<td>Presentation to MIPB</td>
<td>Project Manager</td>
<td>As requested</td>
<td>Meeting</td>
</tr>
<tr>
<td>Key Milestones</td>
<td>Project Manager</td>
<td>Monthly</td>
<td>Meeting/Email</td>
</tr>
</tbody>
</table>

6.4.20 If any changes to the scheme exceed the tolerances that can be approved by the Project Board, it is referred to the MIPB for a decision. The MIPB can authorise changes up to the following thresholds:
- Programme change – unlimited.
- Budget change – up to EU Works limit.
- Business Case Objectives change – can authorise change.

6.4.21 The MIPB is responsible for approving the project mandate and remit, and delegating the management of projects to relevant Project Boards. The aim of the board is to monitor the delivery of the programme of works underway within the Council, to ensure works are coordinated and to make sure decision making processes are in place and the Project Boards and teams have the required expertise and are empowered to deliver their respective projects.

Capital Board

6.4.22 The Capital Board has corporate control of all the Council’s capital projects allowing for overall corporate coordination of major works and ensuring the most appropriate approach for delivery of schemes. This board is staffed by Directors and Heads of Service covering Engineering, Asset Strategy, Finance and Legal. If a decision on changes to a scheme cannot be authorised by MIPB it is referred upwards to Capital Board for a final decision. Capital Board can authorise unlimited changes to budget, programme or objectives, subject to discussion with any relevant external funders or partners.

6.5 Programme / Project Plan

6.5.1 A full project programme has been produced in order to identify the key milestones and tasks that will be undertaken throughout the life of the project, including their duration and interaction with other stages. The project programme is included in Appendix X.
6.5.2 Key milestones for the scheme are as follows:
- Submit Outline Business Case: December 2017
- DfT Approval to Progress to Full Business Case: May 2018
- Planning Approval: February 2019
- Publication of scheme orders and CPOs: April 2019
- Detailed Design Complete: May 2019
- Construction Tender Appraisal and Approval: January 2020
- Submit Final Full Business Case to DfT: May 2020
- Project is granted full approval: July 2020
- Work starts: July 2020
- Scheme completed: July 2022

6.5.3 For ease of reference a more detailed description of key milestones is provided below.

Outline Business Case

6.5.4 Preparation of the Outline Business Case commenced in January 2017 for submission to the DfT in December 2017. It is understood that approval of the Outline Business Case and Programme Entry will be determined in late spring 2018.

Preliminary Design

6.5.5 As can be seen in the Project Programme, preparation of the preliminary design for the scheme began in February 2017, with the draft preliminary design being completed in October 2017. As well as preparing the preliminary design, key stakeholder engagement was undertaken alongside public consultation where valuable feedback was gathered regarding the scheme.

Pre-Scheme Data Collection

6.5.6 Following determination of the Outline Business Case it will be necessary to plan for the pre-scheme data collection to be completed within the two year period ending in May 2020. Collation of the data collected will start in April 2020 and is to be completed within 30 days. This will complement data collected to date including RSIs, ATCs and manual traffic and turning counts collected from sites within and around the scheme area in 2017.
Detailed Design

6.5.7 Preparation of the detailed design for the scheme will start in April 2018 and continue over a 12 month period ending in May 2019. As well as preparing the detailed design drawings this stage will also include ongoing discussions with stakeholders between April and October 2018. The programme includes provision for early engagement with the DfT once a decision on the scheme funding has been announced (currently assumed to be May 2018).

Planning Statutory Orders and Consents

6.5.8 Development of planning statutory orders and consents will begin in May 2018 and be completed over a two year period, ending in May 2020. During this period the planning application will be prepared between May and November 2018 with determination programmed for February 2019. Following this, the publication of scheme orders will be undertaken in April 2019. If a public inquiry is required then it is estimated that this will take place over a 12 month period between April 2019 and April 2020. Following the completion of any public inquiry, confirmation of all statutory orders and consents will be finalised in April 2020.

6.5.9 It is hoped that all land required and associated scheme orders can be finalised without the need for a public inquiry. ERYC has an excellent track record in terms of progressing schemes without the need for an inquiry, and has, as yet, never been called in to inquiry as part of the delivery of a major infrastructure scheme. However, given the scale of the A164 and Jocks Lodge scheme, an allowance for a public inquiry has been included within the project programme.

Procurement

6.5.10 Full details on the proposed procurement strategy for this scheme are included in Section 5.3.

6.4.12 Full Business Case

6.5.11 Preparation of the Full Business Case for the scheme will start in January 2020 and be completed over a six month period, ending in June 2020. This will include the preparation of the scheme Monitoring and Evaluation Plan (MEP) between January and March 2020.

6.4.13 Construction Period

6.5.12 The construction period will begin in July 2020 and be completed over a 24 month period, ending in July 2022. The scheme will then be open to the public in July 2022.
6.4.14 Post Scheme Data Collection

6.5.13 Post scheme data collection will cover a five year time period. The initial one year post completion collection will start in June 2023 and continue for one month until July 2023. A final five year post completion data collection will commence in June 2027 for one month until July 2027. The results of these will be presented in post scheme opening M+E reports, to be submitted to the DfT and published online.

6.6 Assurance and Approvals Plan

6.6.1 Details for the Assurance and Approvals are included in Section 6.4 of this Management Case. The governance structure to support the scheme development and delivery is included as Appendix W.

6.7 Communications and Stakeholder Management

6.7.1 Communication and consultation details are set out in the Communication Management Strategy, included as Appendix Y and summarised below.

Communications to Date

- Initial briefing of Ward Members and MPs in 2016, prior to submission of initial bid for feasibility funding.
- Ongoing liaison with Ward Members and MPs throughout OBC development in 2017.
- Formal briefing of Ward Members and key stakeholders November 2017 and initial public consultation including exhibitions, brochures and a questionnaire.
- The majority of respondents were supportive of the proposed scheme. Strong MP, Ward Member and LEP support.

Future Communications

- The Council will continue to utilise the local media, the Council’s website and social media to publicise the schemes progress.
- Prior to the start of works a Communications Plan will be developed.
- The Communications Plan will focus on key messages in the following areas:
  - Overall objectives of the Project;
  - Funding arrangements;
  - Timescale of the project;
  - Detail of planned works, including locations and probable periods of disruption; and
  - Outcomes of the project.
Appointent of a dedicated communications officer to liaise with all stakeholders, providing a point of contact and ensuring they are fully informed of developments.

6.7.2 Upon completion of the scheme the benefits will be monitored via the M+E process.

6.8 Programme / Project Reporting
6.8.1 As set out above, the Project Manager and the team will manage the delivery of the project and will work together daily to deliver the project. The Project Manager has day to day control over the delivery of the proposed scheme. The Project Manager will manage the Project Team and report to the Project Board.

6.8.2 The Project Manager will keep the Project Board informed of the progress of the scheme, producing monthly highlight reports. Once construction has commenced, the Project Manager will report scheme costs against forecast spend every month to the Project Board.

6.8.3 The Project Board Executive is responsible to the Major Infrastructure Programme Board, and in turn the Major Infrastructure Programme Board reports to and is responsible to the Capital Board.

6.9 Key Issues for Implementation
6.9.1 All issues likely to affect delivery and implementation are dealt with through the risk register which will be updated by the project team periodically.

6.10 Contract Management
6.10.1 The management of the Framework and Tender / Contract issue is managed by the Construction Housing Category Management Group and:

- The Project Manager on a day to day basis reporting to the Project Board via Highlight Reports and regular meetings;
- The Project Board reporting to the Major Infrastructure Programme Board; and
- The Major Infrastructure Programme Board reporting to the Capital Board.

6.10.2 The award of tenders and financial control is governed by the Council’s Contract Procedure Rules which is included in the Constitution. The award of tenders and management of contracts is undertaken by the Project Manager reporting as above.
Project and contract management is carried out in accordance with best practice standards based on EU procurement rules, Government Commerce and the principles of PRINCE2.

6.11 Risk Management Strategy
6.11.1 Risk registers (qualitative and quantitative) are produced via Risk Workshops to identify and quantify risk and determine the best way to manage the risk. Mitigation measures are put in place where appropriate to reduce the likelihood of a risk occurring and/or reduce the impact if they do occur.

6.11.2 Risk registers are live documents which are updated as the project progresses. The most recent risk register produced was in August 2017. This will be updated periodically. A Risk Management Strategy has been produced to manage risk throughout the scheme delivery and a copy is included in Appendix Z.

6.11.3 Where appropriate, risk is transferred to the contractor via the tender/contract thus giving better financial predictability and stability. The latest version of the Risk Register can be found in Appendix V.

6.12 Benefits Realisation Plan

Purpose, Objectives and Scope
6.12.1 The Benefits Realisation Plan for the A164 and Jock’s Lodge Junction Improvement Scheme outlines the arrangements in place to assure this scheme delivers its intended outcomes whilst minimising the cost and time required.

6.12.2 The objective of the Benefits Realisation Plan is to manage benefits realisation throughout project lifespan

6.12.3 The scope is restricted to the objectives and benefits for the A164 and Jock’s Lodge Junction Improvement Scheme which are summarised in the Strategic Case.

6.12.4 This Benefits Realisation Plan has been derived from and is linked to all of the documents included in the OBC for the A164 Jocks Lodge Junction Improvement Scheme.

Quality Criteria and Assurance
6.12.5 The Benefits Realisation Plan aims to manage and deliver the objectives and benefits identified in this OBC for the A164 and Jock’s Lodge Junction Improvement Scheme by:

- Defining strategic objectives;
- Identifying benefits;
- Valuing and appraising benefits;
- Ensuring delivery of benefits; and
- Monitor/reviewing benefits performance.

6.12.6 Benefits Realisation will be assured using the governance, project management and project assurance resources detailed in section 6.4 and in the project management structure included in Appendix W.

6.12.7 The definition of objectives, consideration of dis-benefits and management of the realisation of benefits for the A164 Jocks Lodge Junction Improvement scheme are incorporated into the remainder of this OBC submission.

6.12.8 The review (gateway) stage, documentation submitted and tools and techniques used are shown in the table below:

<table>
<thead>
<tr>
<th>Gateway</th>
<th>Referring Document</th>
<th>Tools Techniques Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>Definition of Objectives</td>
<td>OBC - Strategic Case</td>
<td>Business User Benefits Calculated from TUBA Commuting and Other Users TUBA results</td>
</tr>
<tr>
<td>Benefits Identification</td>
<td>OBC - Strategic Case</td>
<td>COBALT Assessment Results</td>
</tr>
</tbody>
</table>
| Valuation and Appraisal  | Appraisal Strategy Report  
Option Appraisal Assessment Report  
OBC - Economic Case  
OBC - Financial Case | Surveys Investigations  
TUBA Analysis – BCR Cost Estimates  
Risk Analysis |
| Delivery                 | OBC – Commercial Case  
OBC - Management Case | Procurement Strategy  
Communications Plan  
Risk Management Strategy |

**Operational Review**

6.12.15 Monitoring and strategic assessment will be carried out at the review stages, using the documents and tools techniques summarised in the table below.

<table>
<thead>
<tr>
<th>Gateway</th>
<th>Referring Document</th>
<th>Tools Techniques Used</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
6.13 Monitoring and Evaluation
6.13.1 The DfT has advised that a full M+E plan is not required at OBC stage. A full M+E plan will provide details of the proposed post scheme data collection, analysis and monitoring, and is currently under development. This will be included with the Full Business Case submission.

6.14 Contingency Plan
6.14.1 A contingency plan is in place in the event of any unforeseen circumstances. Flexibility in the project plan has been included to allow for delays in delivery of scheme components directly impacting on future components.

6.14.2 Any potential delays and issues are documented in the risk register, with measures and actions documented. Full consideration has been given to the management of any unforeseen circumstances that may delay construction with costs and timescale impacts documented.

6.15 Options
6.15.1 The key roles in the management of this project have been identified. The processes and procedures by which this project is managed will be in accordance with the principles of PRINCE2 project management, and will be managed by Council employees who comprise qualified civil engineers, PRINCE2 Practitioners and members of Association of Project Managers.

6.15.2 This approach is consistent with the process adopted for other successfully delivered and completed Council major infrastructure projects.

6.16 Summary
6.16.1 Over the past few years the Council has successfully completed the construction of the Bridlington Integrated Transport Plan (phases 1 and 2), the A164 Humber Bridge to Beverley Route Improvement Scheme and the Beverley Integrated Transport Plan along with numerous other multi-million pound infrastructure projects, all delivered on time and on budget, with the risks managed accordingly.
6.16.2 The project is being delivered by a team of highly experienced officers with specialist qualifications in their respective fields. A Project Manager will oversee the delivery of the project, working daily with the project team. The Project Manager will be responsible for reporting scheme progress against timescales and costs to the Project Board, who report progress upwards to the Major Infrastructure Programme Board and Capital Board as and when required.

6.16.3 A series of public consultation events on the proposed scheme took place in November 2017. Feedback from this, and from discussions with local MPs, Ward Members and the LEPs, show strong support for the proposals. Consultation on this scheme will continue as the scheme develops, as set out in the Communications Plan included as Appendix W.

6.16.4 The management of the Framework and Tender / Contract issue is managed by the Construction Housing Category Management Group and the Project Manager. Project and contract management will be carried out in accordance with best practice and the principles of PRINCE2.

6.16.5 A risk register has been produced to identify and quantify risk and determine the best way to manage the risk. Mitigation measures have been specified to reduce the likelihood of the risk occurring or reduce the impact and documented in the risk register. Where appropriate, risk is transferred to the contractor via the tender or contract thus giving better financial predictability and stability.

6.16.6 To complement data already collected in 2017, further data will be collated prior to construction to establish a baseline against which the scheme will be evaluated. The Monitoring and Evaluation Plan will provide details of the proposed post scheme data collection, analysis and monitoring proposed.