



Contents **Page No.**

Executive Summary

Tables **iii**

Figures **vi**

Glossary of Abbreviations and Defined Terms..... **viii**

1 Introduction **10**

1.1 Purpose of this document 10

1.2 Structure of the document 10

2 Strategic Case **12**

2.1 Introduction 12

2.2 Summary of the Strategic Case 14

2.3 The Greater Norwich Region 19

2.4 The Need for Investment – Overall Summary26

2.5 The Need for Investment – Detailed Analysis35

2.6 Our Vision and Objectives79

2.7 Developing the ‘Transforming Norwich’ programme82

2.8 The ‘Transforming Norwich’ Programme93

2.9 Strategic Fit 109

2.10 Strategic Benefits and Impacts 120

2.11 The Impact of Not Changing 125

2.12 Summary of the Strategic Case 127

3 Economic Case **128**

3.1 Introduction 128

3.2 Scheme overview 128

3.3 Scheme objectives 129

3.4 Approach to Economic Appraisal 129

3.5 Transport guidance 129

3.6 Options assessed 133

3.7 Transport modelling 135

3.8 Bus Modelling Methodology 138

3.9 Walking and cycling methodology 155

3.10 Secondary mode shift (sensitivity test) 156

3.11 Results of transport appraisal 157



| | | |
|----------|------------------------------------------------------------------------|------------|
| 3.12 | Results of appraisal of public transport improvements..... | 158 |
| 3.13 | Results of appraisal of walking and cycling measures | 161 |
| 4 | Financial Case..... | 178 |
| 4.1 | Introduction | 178 |
| 4.2 | Costs | 179 |
| 4.3 | Budgets/ Funding Cover | 182 |
| 4.4 | Summary of Programme Funding..... | 182 |
| 5 | Commercial Case..... | 183 |
| 5.1 | Introduction – market viability | 183 |
| 5.2 | Output-based specification | 185 |
| 5.3 | Procurement Strategy | 185 |
| 6 | Management Case | 188 |
| 6.1 | Introduction | 188 |
| 6.2 | Evidence of Similar Projects | 188 |
| 6.3 | Programme – Medium Case..... | 191 |
| 6.4 | Governance and Assurance, Organisational Structure & Roles | 193 |
| 6.5 | Assurance & Approvals Plan | 201 |
| 6.6 | Communications and Stakeholder Management..... | 202 |
| 6.7 | Key Issues for Implementation | 206 |
| 6.8 | Contract Management | 208 |
| 6.9 | Risk Management Strategy | 208 |
| 6.10 | Benefits Realisation Plan..... | 211 |
| 6.11 | Overview of objectives..... | 211 |
| 6.12 | Monitoring and Evaluation | 214 |
| 6.13 | Contingency Planning..... | 216 |
| | Annex 1 - Norwich Bus Charter | 217 |
| | Annex 2 - Bus services from (through) Norwich city centre | 218 |
| | Annex 3 – Schemes that were sifted out | 221 |
| | Annex 4 – Schemes in our proposed funding packages | 240 |
| | Annex 5 – Letters of Support..... | 269 |
| | Annex 6 - Medium Case Delivery Schedule..... | 270 |
| | Annex 7 – Outline Benefits Realisation Plan..... | 271 |
| | Annex 8 – Transforming Norwich Cultural Assets Map..... | 272 |
| | Annex 9 – Feedback from SOBC | 273 |
| | Annex 10 – DfT Checklist | 274 |



Tables

| | |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| Table 1: Distance travelled to work (2011) | 41 |
| Table 2: Modal split of programme area against regional and national average (2011) | 42 |
| Table 3: Year-on-year change in cycling at all automatic and manual cycle count locations combined since the first Cycling City Ambition Grant interventions were completed in 2014..... | 47 |
| Table 4: Rail services to and from Norwich train station..... | 56 |
| Table 5: Car ownership levels by local authority (2011) | 60 |
| Table 6: Unemployment (2011) | 65 |
| Table 7: Transport emissions from local authority districts within our programme entry..... | 68 |
| Table 8: Future Mobility Measures..... | 77 |
| Table 9: Objectives and evidence..... | 80 |
| Table 10: Transforming Norwich programme - investment types..... | 87 |
| Table 11: Key national, regional and local policies..... | 109 |
| Table 12: Guiding principles associated to the emerging Transport for Norwich Strategy..... | 113 |
| Table 13: Delivery themes associated to the emerging Transport for Norwich Strategy | 114 |
| Table 14: Red/Amber/Green assessment of the 'Transforming Norwich' programme fit against policy and policy contribution to investment types | 115 |
| Table 15: Level 1 benefits (£000s. 2010 prices discounted to 2010) | 122 |
| Table 16: Level 2 benefits..... | 123 |
| Table 17: Categories of intervention considered in the 'Transforming Norwich' programme | 134 |
| Table 18: Approach to traffic modelling and economic appraisal | 134 |
| Table 19: Model Time Periods | 140 |
| Table 20: Assumptions used in consolidating fares..... | 142 |
| Table 21: Norfolk bus passenger types (assumed) | 142 |
| Table 22: Weighted average prices for zone travel in 2019 values, 2019 prices | 142 |
| Table 23: Travel time factors for years 2023 and 2038 | 143 |
| Table 24: NTEM Background Growth of Bus Passengers..... | 144 |
| Table 25: Cross Valley Link Background Growth of Bus Passengers | 144 |
| Table 26: Growth in Fares in pounds and seconds. 2019 prices..... | 145 |
| Table 27: Cross Valley Link journey time reduction (relative to the Do-Minimum)..... | 146 |
| Table 28: Time savings per scheme for 2023 and 2038 (seconds per passenger)..... | 147 |
| Table 29: Bus frequency improvements | 149 |
| Table 30: GJT Bus Elasticity..... | 151 |
| Table 31: Scheme file parameter assumptions..... | 152 |
| Table 32: Input matrix type and units..... | 152 |



| | |
|-----------------------------------------------------------------------------------------------------------------------------------|-----|
| Table 33: Total boardings by period | 152 |
| Table 34: Annualisation Factors | 152 |
| Table 35: Bus diversion factor for Cars (Metropolitan with no light rail) | 153 |
| Table 36: Car and Vehicle occupancies by time period (average car) | 153 |
| Table 37: Highway user benefits (£000s, present values discounted to 2010, in 2010 prices)..... | 157 |
| Table 38: Base, DM, DS bus trips..... | 158 |
| Table 39: TUBA results (£000, 2010 prices)..... | 159 |
| Table 40: Bus benefits uplifted with non-First passengers (£000, 2010 prices) | 159 |
| Table 41: Bus benefits with non-First passengers and Airport corridor schemes (£000, 2010 prices) | 159 |
| Table 42: Number of TUBA warnings | 160 |
| Table 43: Reduction in car trips and car-km | 160 |
| Table 44: Marginal benefits (£000s, 2010 prices)..... | 160 |
| Table 45: Overview of the BCRs of the corridors | 161 |
| Table 46: Overview of the Total BCRs..... | 161 |
| Table 47: Modal shift overview | 161 |
| Table 48: Total modal shift for the Low Cost Scenario | 162 |
| Table 49: Overview of costs and benefits for the Lion Wood scheme in the medium scenario | 162 |
| Table 50: Overview of costs and benefits for the Medium scenario | 163 |
| Table 51: Overview of the BCRs..... | 163 |
| Table 52: Total modal shift for the High Cost Scenario | 163 |
| Table 53: Bus benefits results capturing secondary mode shift (£000, 2010 prices) | 165 |
| Table 54: Level 2 benefits | 167 |
| Table 55: Summary of additional workers within a 30-minute travel time of the city centre by corridor | 168 |
| Table 56: Total Net Jobs and GVA arising from strategic growth locations | 172 |
| Table 57: Capital base costs by programme (£000s, 2019 prices) | 173 |
| Table 58: Project present value costs (£000s, 2010 market prices, discounted to 2010) | 174 |
| Table 59: AMCB - Level 1 benefits established monetised impacts for each scenario (£000s. 2010 prices discounted to 2010)..... | 175 |
| Table 60: Department for Transport VfM Categories..... | 176 |
| Table 61: Programme Cost..... | 179 |
| Table 62: Scheme costs by corridor: | 179 |
| Table 63: Spend Profile..... | 181 |
| Table 64: Programme funding | 182 |
| Table 65: Examples of similar projects delivered by NCC..... | 190 |
| Table 66: Project Board Team members and roles | 196 |



| | |
|----------------------------------------------------------|------------|
| <i>Table 67: Delivery Team members and roles</i> | <i>198</i> |
| <i>Table 68: Risk Register.....</i> | <i>210</i> |
| <i>Table 69: Example Benefits Realisation Plan</i> | <i>213</i> |



Figures

| | |
|----------------------------------------------------------------------------------------------------------------------|----|
| Figure 1: Transforming Norwich..... | 11 |
| Figure 2: Logic Map | 13 |
| Figure 3: Norwich location..... | 20 |
| Figure 4: Transforming Norwich Programme Area | 21 |
| Figure 5: Bus Congestion Generated Vehicle Delay - Heatmap of Dereham Road..... | 37 |
| Figure 6: Bus Congestion Generated Vehicle Delay - Heatmap of City Centre | 38 |
| Figure 7: City centre - Longwater Junction | 39 |
| Figure 8: Estimated travel times on Dereham Road between Longwater Junction and Barn Road (Westbound)..... | 40 |
| Figure 9: Estimated travel times on Dereham Road between Longwater Junction and Barn Road (Eastbound)..... | 40 |
| Figure 10: Pedestrian Activity by day..... | 43 |
| Figure 11: Norwich walking network | 44 |
| Figure 12: Pedestrian Casualties | 45 |
| Figure 13: Norwich Cycle Network..... | 48 |
| Figure 14: Cyclist casualties | 49 |
| Figure 15: Bus services from and through Norwich city centre | 52 |
| Figure 16: Percentage of buses on time for Norwich 2017 and 2018 | 53 |
| Figure 17: Park & Ride services and frequencies..... | 54 |
| Figure 18: 60-minute public transport accessibility to Norwich city centre | 58 |
| Figure 19: 60-minute public transport accessibility to Norwich Research Park..... | 58 |
| Figure 20: 60-minute public transport accessibility to Broadland Business Park | 59 |
| Figure 21: 60-minute public transport accessibility to Airport Industrial Estate | 59 |
| Figure 22: Car occupancy of inbound flows between 07:00 and 10:00..... | 61 |
| Figure 23: Regional Gross Value Added per Head (Income Approach) Growth 2009/10-2015/16..... | 62 |
| Figure 24: Employment centres & education..... | 64 |
| Figure 25: Index of Multiple Deprivation | 66 |
| Figure 26: Estimated resident population in Broadland, Norwich and South Norfolk..... | 69 |
| Figure 27: Age structure of local authorities in the programme area against national average (2017) 70 | |
| Figure 28: Shows the existing and planned homes within the programme area | 73 |
| Figure 29: Central Norwich Air Quality Management Area..... | 75 |
| Figure 30: How the Transforming Norwich objectives align with the Transforming Cities Fund programme objectives..... | 81 |
| Figure 31: The Investment Sifting and Evaluation Tool (INSET) Process..... | 82 |
| Figure 32: Possible future scenarios for Norwich | 90 |



| | |
|--------------------------------------------------------------------------------------------------|-----|
| Figure 33: Transforming the Network | 95 |
| Figure 34: Norwich Walking Network..... | 98 |
| Figure 35: Cycle Network Public Map 2028..... | 99 |
| Figure 36: Potential brand identity for the mobility hubs | 100 |
| Figure 37: Mobility Hub Concept Diagram..... | 101 |
| Figure 38: Mobility Hub Locations..... | 102 |
| Figure 39: Drainage overview | 108 |
| Figure 40: Wider Economic Impacts | 131 |
| Figure 41: Overview of bus modelling methodology..... | 139 |
| Figure 42: Zone system of First Bus Network around Norwich | 141 |
| Figure 43: Map of Journey Time savings applied to the bus stop pairs for the 2023 AM peak hour.. | 148 |
| Figure 44: Average wait time saving per bus stop..... | 149 |
| Figure 45: Secondary mode shift methodology | 157 |
| Figure 46: Secondary mode shift results | 165 |
| Figure 47: Governance diagram | 195 |
| Figure 48: Transforming Cities Fund Organogram..... | 200 |
| Figure 49: The ROAMEF Cycle | 215 |



Glossary of Abbreviations and Defined Terms

| | |
|-------|-----------------------------------------|
| AMAT | Active Mode Appraisal Toolkit |
| AQMA | Air Quality Management Area |
| ASR | Appraisal Specification Report |
| BCR | Benefit Cost Ratio |
| BBP | Broadland Business Park |
| CCAG | Cycle City Ambition Grant |
| DfT | Department for Transport |
| DM | Do Minimum |
| DS | Do Something |
| EHA | Eastern Highways Alliance |
| EoI | Expression of Interest |
| EV | Electric Vehicle |
| FBC | Full Business Case |
| GNLP | Greater Norwich Local Plan |
| GNR | Greater Norwich Region |
| GVA | Gross Value Added |
| IAA | International Aviation Academy |
| IMD | Index of Multiple Deprivation |
| INSET | Investment Sifting and Evaluation Tool |
| JCS | Joint Core Strategy |
| LEP | New Anglia Local Enterprise Partnership |
| LIS | Local Industrial Strategy |
| LVU | Land Value Uplift |
| MaaS | Mobility as a Service |
| NATS | Norwich Area Transportation Strategy |
| NCC | Norfolk County Council |
| NNUH | Norfolk & Norwich University Hospital |



| | |
|------|----------------------------------|
| NPA | Norwich Policy Area |
| NRP | Norwich Research Park |
| NUA | Norwich University of the Arts |
| OBC | Outline Business Case |
| P&R | Park & Ride |
| PTDM | Public Transport Data Management |
| RAG | Red/Amber/Green (assessment) |
| SOBC | Strategic Outline Business Case |
| FMZ | Future Mobility Zone |
| TCF | Transforming Cities Fund |
| TfN | Transport for Norwich |
| UEA | University of East Anglia |
| UTMC | Urban Traffic Management Control |
| WEI | Wider Economic Impacts |



1 Introduction

1.1 Purpose of this document

- 1.1.1 This document forms the Strategic Outline Business Case (SOBC) for the 'Transforming Norwich' programme of investment under the Transforming Cities Fund (TCF). The document has been prepared in line with all relevant guidance issued by the Department for Transport (DfT) and includes the five cases of Strategic, Economic, Financial, Commercial and Management.
- 1.1.2 We have worked with the Department for Transport (DfT) on the co-development of this SOBC since the short-listing of cities was announced and have found this approach to be beneficial and worthwhile. A draft SOBC was submitted to DfT in June 2019 and feedback was provided - Annex 9 provides information on how this feedback has been noted and incorporated in our final submission.
- 1.1.3 This is a programme level SOBC submission regarding three different programmes of measures, with funding brought together from the DfT, local government sources, plus significant contributions from the private sector. The three different programmes of low, medium and high funding have overall values of £83.96m, £99.59m and £167.84m respectively.

1.2 Structure of the document

- 1.2.1 As a programme level SOBC submission, the structure and contents of the document are as follows:
- Chapter 2 – Strategic Case: outlining the challenges and opportunities for transport in Norwich, as well as option generation and defining the low, medium and high funding options
 - Chapter 3 – Economic Case: demonstrating the economic benefits of the low, medium and high funding options
 - Chapter 4 – Financial Case: providing an overview of the cost allocations for the programme
 - Chapter 5 – Commercial Case: outlines the proposed procurement opportunities for delivery of the programme; and
 - Chapter 6 – Management Case: sets out the proposed programme governance arrangements, risk management, and monitoring and evaluation approach
- 1.2.2 Annexes are provided at the end of this document, providing background information to support this application. In addition, Appendices of supporting reports are provided. An overview plan of our SOBC submission can be found in Figure 1.