

Levelling up Central Kempston

Active Travel Projects Technical Note

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Quality information

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1. Introduction

Background

- 1.1 In June 2021 Bedford Borough Council (BBC) commissioned AECOM to assist their submission for the Levelling Up Fund (LuF), *Levelling up Central Kempston*. The LuF was announced in the 2020 Spending Review to support communities and 'level up' left behind regions within the UK.
- 1.2 BBC is bidding for LuF funding for two complementary projects that form one package: Active Travel and Regeneration. The projects consist of the following elements:
 - **Active Travel**
 - Upgrades to Kempston Mill Bridge
 - Upgrades to Back Channel Bridge
 - Cycle path improvements along core stretch of the B531 (Bedford Road)
 - Footpath improvements along core stretch of the B531 (Bedford Road)
 - Improved lighting along core stretch of the B531 (Bedford Road)
 - Improved lighting and resurfacing for cyclists along Kempston Riverside Path
 - Cycle parking: Secure cycling parking at the Saxon Centre and improved facilities at Halsey Road shops
 - General public realm improvements at the Saxon Centre
 - E-bike charging hub at St John's Car Park
 - **Regeneration**
 - Refurbishment of the Saxon Centre Office Block
 - General public realm improvements at the Saxon Centre
 - Support for the delivery of a Kempston Health Hub at the site of the Kempston Police Station (acquiring land and demolition)
- 1.3 All Active Travel interventions are monetisable within the Active Mode Appraisal Toolkit (AMAT), aside from the E-bike charging hub where there is no facility to monetise its impacts at this stage. The E-bike charging hub has been assessed qualitatively in the bid application form.

Report Purpose

- 1.4 This technical note covers the methodology and sensitivity tests used to monetise the costs and benefits of the Active Travel Projects. The outputs presented in this report inform the BBC LuF Bid. The report is structured as follows:
 - Section 2: Walking and Cycling Demand
 - Section 3: Economic Appraisal
 - Section 4: Issues and Caveats

2. Walking and Cycling Demand

Introduction

2.1 Figure 2.1 below shows the location of the interventions included as part of the Active Travel Project within Kempston.

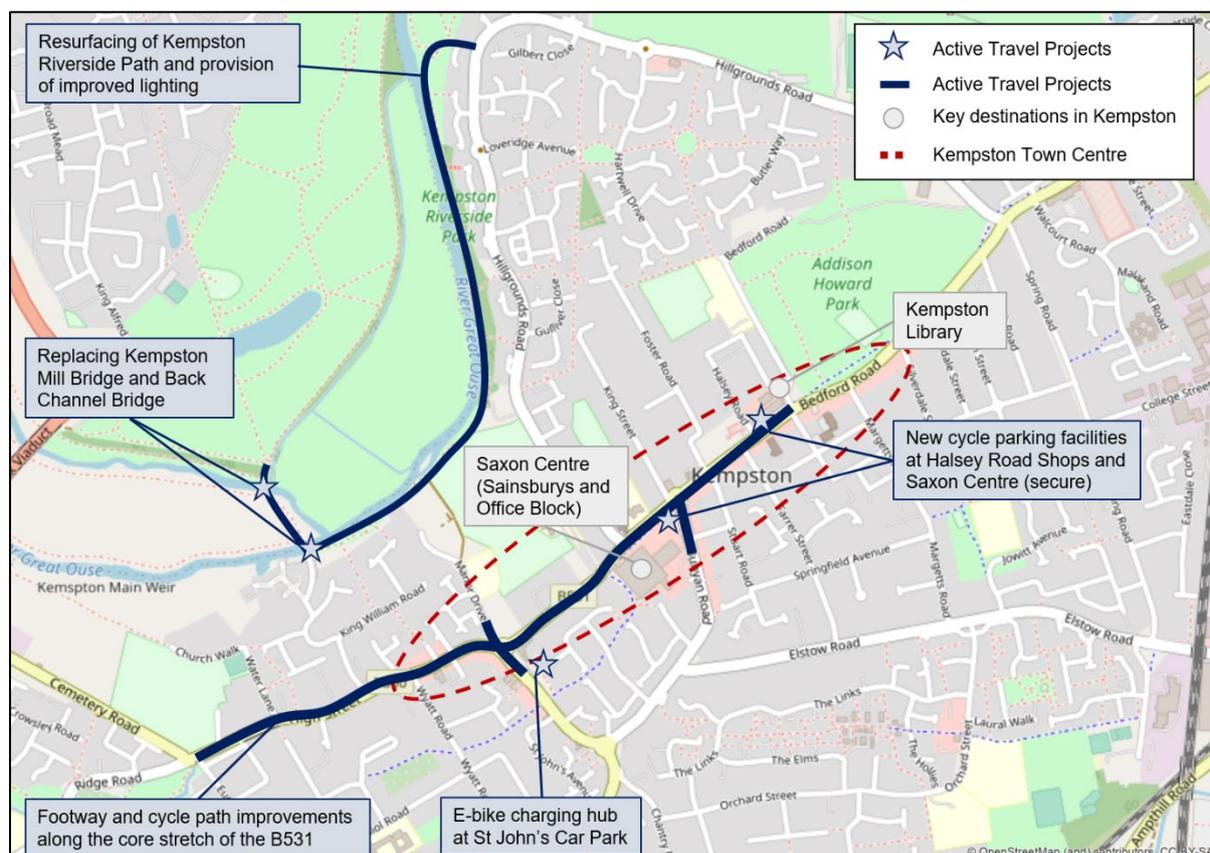


Figure 2.1 Active Travel Projects

2.2 The monetised costs and benefits of the walking and cycling interventions are largely based on:

- **Walking and cycling infrastructure improvement costs:** this includes capital and maintenance costs and is discussed further in Section 3.
- **Impact on cycling demand:** Do Minimum (DM) demand has been calculated by using the Propensity to Cycle Tool (PCT) and the National Travel Survey (NTS). Do Something (DS) core demand has been calculated by applying a post intervention uplift to the DM demand¹ for each cycling intervention based on the ‘Government Target (Near Market)’ Scenario (doubling cycling mode share *nationally* by 2025, but with variation locally) in the PCT.
 - The DfT active mode appraisal toolkit has been used to monetise costs and benefits of the change in cycling demand on the proposed cycling interventions.
- **Impact on walking demand:** DM demand has been calculated by assessing the total network demand in the town compared to demand on the proposed walking routes based on the Census 2011 and the NTS. DS demand is assumed to be the same as the DM (see Section 3 for details).
 - The DfT AMAT has been used to monetise costs and benefits from aspects of improved journey quality on the proposed walking interventions.

¹ Baseline cycling demand on each cycling route was taken from the PCT and uplifted to the appraisal period base year based on NTS (ratio of commuting and non-commuting).

- 2.3 Two additional DS scenarios have been developed for each of the proposed cycling routes:
- Cycling demand has been uplifted in the DS based on the Sustrans Infrastructure Impact Tool² (low growth)
 - Cycling demand has been uplifted in the DS based on the ‘Go Dutch’ scenario in the PCT (high growth).
- 2.4 As such, results from three DS demand scenarios have been developed for each of the proposed cycling routes:
- Sustrans Infrastructure Impact Tool (‘Sustrans’);
 - ‘Government Target (Near Market)’; and
 - ‘Go Dutch’.
- 2.5 The monetised costs and benefits of the walking and cycling routes have been assessed for two appraisal periods:
- 10 year appraisal period and
 - 20 year appraisal period, both based on AMAT guidance³.

Walking Demand

- 2.6 The step-by-step process which has been followed to calculate walking demand in the DM is discussed below; no change in pedestrian demand in the DS is assumed:
- **Step 1:** Census 2011 data on population by Middle Layer Super Output Area (MSOA) and LSOA was compiled for the BBC LuF study area⁴.
 - **Step 2:** The Census 2011 data on journey to work by MSOA was compiled for the study area⁵.
 - **Step 3:** The journey to work data by MSOA (Step 2) was converted to LSOA based population proportion between MSOA and LSOA (Step 1).
 - **Step 4:** Ratio between non-commuting walking and commuting walking of ‘1:12’ was calculated based on the NTS⁶.
 - **Step 5:** Ratio between non-commuting and commuting walking trips (Step 4) was applied to the journey to work (commuting) walking trips (Step 3), to calculate total number of walking trips by LSOA in 2011.
 - **Step 6:** Proportion of total network as compared to proposed walking interventions (defined in kilometres) by LSOA was calculated.
 - **Step 7:** Proportion of LSOA walking interventions compared to total network (Step 6) was applied to the walking trips by LSOA in 2011.
 - **Step 8:** Walking route demand was growthed from 2011 to 2023 based on NTEM growth factors for Bedford
 - As AMAT includes an annual growth factor for trips no additional growth factor was applied for future year demand.

² Sustrans Infrastructure Impact Tool. <https://www.sustrans.org.uk/our-blog/research/all-themes/all/active-travel-toolkit-making-the-economic-case-for-active-travel/>

³ AMAT User Guide
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/888754/amat-user-guidance.pdf

⁴ Census 2011. <https://www.ons.gov.uk/census/2011census>

⁵ Census 2011. <https://www.nomisweb.co.uk/census/2011/qs701ew>

⁶ NTS. <https://www.gov.uk/government/statistical-data-sets/nts03-modal-comparisons#mode-by-purpose;>
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/821603/nts-2018-notes-and-definitions.pdf

Cycling Demand

- 2.7 Overall, to assess the cycling demand the Propensity to Cycle Tool (PCT) and Sustrans' Infrastructure Impact Tool were used.

PCT and Sustrans Infrastructure Impact Tool

- 2.8 The national PCT is a freely-available online resource that has been designed to help with the strategic planning of cycling networks. It shows the existing travel pattern and movement details of cycle trips by LSOA and MSOA based on Census (2011) journey to work data. The PCT allows users to examine where cycling flows travel within the local network, and which parts of the route network might be the busiest. It provides numerical and graphical outputs, including estimated increases in numbers of cyclists in an area, along straight 'desire' lines and along routes, but for commuter (journey to work) trips only.
- 2.9 The PCT also predicts potential future cycling trips under different potential future growth scenarios, such as the 'Government Target' and the 'Go Dutch' options. The 'Go Dutch' scenario provides a simulation of what cycling levels by route would look like if the study area had the same infrastructure and cycling culture as the Netherlands. It is emphasised that 'high quality infrastructure' and 'bike culture' feed each other.
- 2.10 However, the PCT has limitations as it is derived from commuting trip data from the 2011 Census only and does not take into account new developments, non-commuting trips and excludes cycle-rail trips where cycling is not the main mode. However, it is a useful tool, when combined with local knowledge, to help inform route planning.
- 2.11 The Sustrans Infrastructure Impact Tool forms part of their Active Travel Toolbox. This tool contains a large evidence base dataset for cycle schemes. Based on the type of cycling infrastructure improvement intervention, the toolkit estimates a demand increase in pre-intervention cycling trips.
- 2.12 There are four types of intervention categories, however the only category pertinent to the Active Travel schemes in Kempston is "Cycle and pedestrian tracks" which is described as "segregated cycling infrastructure which is separated from road traffic". This category encompasses the majority of the cycling interventions and suggests a 72% uplift in demand as a result of implementation.
- 2.13 PCT data have been used to estimate cycling demand in the DM scenario on the proposed Bedford LuF cycling interventions, along with NTS data to include non-commuting trips.
- 2.14 Uplifts in cycling demand from the DM to the DS core scenario are based on the PCT 'Government Target' scenario. This economic assessment also includes the Sustrans Infrastructure Impact Tool⁷ (low growth) and the PCT 'Go Dutch' demand scenario (high growth) as DS sensitivity tests, on the assumption that implementing the Levelling up Central Kempston Active Travel schemes would go some way to achieving these demand uplifts.

DM Cycling Demand: step-by-step process

- 2.15 The step-by-step process which has been followed to calculate cycling demand in the DM scenario is discussed below:
- **DM Step 1:** Journey to work cycling trips (Census 2011) for the route of each of the cycling interventions was compiled from the PCT⁸.
 - **DM Step 2:** Ratio between commuting and non-commuting cycling of '1:2' was calculated based on the NTS.

⁷ This uses evidence (case studies) to estimate the increase in demand from the DM due to infrastructure improvements implemented

⁸ Where the exact route was not available, a proxy was used.

- **DM Step 3:** Ratio between commuting and non-commuting cycling trips (Step 2) was applied to the journey to work (commuting) cycling trips (Step 1), to calculate total number of cycling trips by each cycling intervention in 2011.
- **DM Step 4:** Cycling route demand was growthed from 2011 to 2023 based on NTEM growth factors for Bedford
 - As AMAT includes an annual growth factor for trips no additional growth factor was applied for future year demand.

DS Cycling Demand: step-by-step process

2.16 The step-by-step process which has been followed to calculate cycling demand in the DS is discussed below:

- **DS Step 1:** Cycling demand in the DM (mentioned in ‘DM Step 5’ above) was uplifted based on either the:
 - Sustrans Infrastructure Toolkit (Low Growth)
 - PCT Government Target (Near Market) scenario (Core Growth)
 - PCT Go Dutch scenario (High Growth)
- **DS Step 3:** Cycling route demand was growthed from 2011 to 2023 based on NTEM growth factors for Bedford
 - As AMAT includes an annual growth factor for trips no additional growth factor was applied for future year demand.

3. Economic Appraisal

Introduction

- 3.1 This section discusses the scheme costs and the methodology adopted to monetise the impacts of the proposed Levelling up Central Kempston Active Travel schemes. Information on the results of the appraisal can be found in the application form and supplementary spreadsheets.
- 3.2 It should be noted that as there is the need to provide an overall BCR as part of the LuF bid, it was decided to package together the active travel projects for input into AMAT in order to reduce double counting. The packages were created based on geographical proximity and do not overlap, enabling each active travel intervention to be assessed. Packages include both walking and cycling interventions. These are as follows:
- **Package 1**
 - Upgrades to Kempston Mill Bridge
 - Upgrades to Back Channel Bridge
 - Kempston Riverside Path – Lighting Upgrades and Resurfacing for Cyclists
 - **Package 2**
 - Cycle path improvements along core stretch of the B531
 - Foot path improvements along core stretch of the B531
 - Improved lighting along the core stretch of the B531
 - Cycle parking at Saxon Centre (secure facilities) and Halsey Road
 - General public realm improvements at the Saxon Centre
- 3.3 The two packages have been input into the AMAT, and analysis has been undertaken post-AMAT to total the overall benefits and produce an overall BCR for the Active Travel Projects.

Costs

3.4 The costs to develop the Active Travel Projects have been estimated by BBC and are shown in Table 3.1 below. Overall, the Active Travel Projects are estimated to cost £9.75 million.

Table 3.1 Costing Elements of Active Travel Projects

Active Travel Project	Costs (£)
Kempston Mill Bridge	£1,250,000
Back Channel Bridge	£1,250,000
Cycle path improvements along core stretch of the B531 (Bedford Road)	£1,800,000
Foot path improvements along core stretch of the B531 (Bedford Road)	£1,202,500
General public realm improvements at the Saxon Centre	£2,497,500
Improved lighting along core stretch of the B531 (Bedford Road)	£500,000
Improved lighting and resurfacing for cyclists along Kempston Riverside Path	£250,000
Cycle parking	£175,000
E-bike charging hub at St John's Car Park	£750,000
Active travel monitoring equipment	£75,000
Total	£9,750,000

3.5 For input into AMAT, it has been assumed that all third party contributions are private contributions, including the Waterways Trust Contribution. In addition, a maintenance cost of 2.5% every 5 years has been assumed based on AMAT Guidance and professional judgement.

Input to AMAT – Walking

3.6 No pedestrian demand uplift for the DS scenario has been calculated. There are therefore no health benefits associated with an increase in pedestrian demand relative to the DM, although it is anticipated pedestrians will benefit from aspects of improved journey quality and ambience. The AMAT has been used to monetise improvements in journey quality.

3.7 Each of the proposed walking interventions was categorised based on the AMAT infrastructure improvement categories (Street lighting; Kerb level; Crowding; Pavement evenness; Information panels; Benches; and Directional signage).

3.8 The improvements to the walking infrastructure in Kempston (the DS scenario) varies depending on the intervention:

- Footpath improvements along core stretch of the B531 (Bedford Road)
 - Pavement Evenness
 - Kerb level
- Improved lighting along core stretch of the B531 (Bedford Road)
 - Street lighting
- Improved lighting along Kempston Riverside Path
 - Street lighting
- General public realm improvements at the Saxon Centre

- Information panels
 - Benches
 - Directional signage
- 3.9 Data specific to Kempston were input to the AMAT to monetise improvements in journey quality, including DM and DS walking demand, appraisal period, proportion of trips using the scheme to commute to work (based on NTS), route length (based on proposed intervention) and scheme costs. No additional changes were made in the toolkit. Assessment was undertaken for two appraisal periods, as discussed above. No additional changes were made in the toolkit.
- 3.10 The monetised benefits and costs were assessed separately for each package after inputting package specific data in the toolkit, and a benefit cost ratio (BCR) calculated.

Input to AMAT – Cycling

- 3.11 AMAT has been used to monetise the economic benefits and costs associated with the change in cycling demand from the DM to DS.
- 3.12 Data specific to the proposed cycling interventions were input to AMAT, including DM and DS cycling demand, appraisal period, proportion of trips using the scheme to commute to work (based on NTS), route length (based on proposed interventions), and scheme costs. No additional changes were made in the toolkit.
- 3.13 The existing and proposed infrastructure across Kempston specific to the cycling interventions was categorised based on the AMAT infrastructure improvement categories, as follows:
- **No provision:** no physical infrastructure to facilitate cyclists.
 - **On road segregated cycle track:** a segregated lane for cyclists that is part of the carriageway, however only for the use of cyclists.
 - **On road non segregated cycle track:** a visually defined lane for cyclists to use on the carriageway, however cyclists and vehicles share this lane.
 - **Off road segregated cycle track:** segregated cycling infrastructure which is separated from other road traffic.
- 3.14 The improvements to the cycling infrastructure in Kempston (the DS scenario) varies dependent on the intervention:
- Kempston Riverside Path – Resurfacing for Cyclists
 - Off road segregated cycle track
 - Cycle path improvements along core stretch of the B531
 - Off road segregated cycle track
 - Cycle parking at Saxon Centre (secure facilities) and Halsey Road⁹
 - Secure cycle parking
 - Kempston Mill Bridge
 - Off road segregated cycle track
 - Back Channel Bridge
 - Off road segregated cycle track
 - Cycle path improvements along core stretch of the B531 (Bedford Road)
 - Off road segregated cycle track

⁹ Cycle parking at Saxon Centre and Halsey Road similar to that recently (summer 2021) provided in Bedford Town Centre - secure, indoor / sheltered provision paid and accessed by an app.

- 3.15 The monetised benefits and costs were assessed separately for each package after inputting package specific data in the toolkit, and a benefit cost ratio (BCR) calculated.

AMAT Assumptions

- 3.16 As part of running AMAT, a number of assumptions are made. These assumptions can be broadly split into AMAT-defined assumptions which do not need to be changed unless local data dictates/ is available, and scheme based assumptions.
- 3.17 The AMAT-defined assumptions pertinent to the Active Travel Projects are:
- Monetised costs and benefits are presented in 2010 prices and values, discounted to 2010 in line with HMT Green Book Guidance¹⁰.
 - Inflation rates are taken from the DfT's TAG Databook GDP Deflator¹¹.
 - No decay rate in cycling and walking demand is assumed.
 - The average length of a cycling trip is assumed to be 4.84km as per AMAT
 - The average length of a walking trip is assumed to be 1.1km as per AMAT
- 3.18 The scheme based assumptions for the Active Travel Projects are:
- The opening year is assumed to be 2023 for all the schemes
 - DS scenario (and different demand scenario options within this) is assessed against the DM scenario.
 - Two appraisal periods assessed: 10 years (2023-2033) and 20 years (2023-2043).
 - The growth rate in walking and cycling demand from 2011 to 2023 has been taken from NTEM for Bedford
 - Share of walking and cycling commuting and non-commuting trips is based on NTS data¹².
 - For cycling routes there are three DS demand scenarios: 'Sustrans', 'Government Target' and 'Go Dutch'.

4. Caveats

- 4.1 The data used and methodology employed were guided by the time constraints in which to undertake this appraisal. It was not possible in the timescales to undertake a full OD assessment of demand and assign demand (in particular for longer trips) to routes and hence identify demand that is common to more than one intervention.
- 4.2 There is uncertainty about the possible walking and cycling demand and associated travel patterns on each of the proposed routes due to uncertainty in the future socio-economic profile of the area. This applies equally to all modes.
- 4.3 The mode shift towards cycling from other modes in the DS is based on the recommended data set out in the DfT AMAT.
- 4.4 The benefits of the DS schemes were based on assumptions based on the differences with existing/ Do Minimum provision, based on interpretation of high level information provided on the existing situation and the DS schemes by BBC.

¹⁰ HMS Treasury (2018). The green book: Central government guidance on appraisal and evaluation. London: HM Treasury. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/685903/The_Green_Book.pdf

¹¹ DfT (2019). TAG Data Book. <https://www.gov.uk/government/publications/tag-data-book>

¹² NTS. <https://www.gov.uk/government/statistical-data-sets/nts03-modal-comparisons#mode-by-purpose>; https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/821603/nts-2018-notes-and-definitions.pdf

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