Report
May 2023

# Sustainable Transport for Employment – Feasibility and Strategic Business Case


Source: **Forth Bike, Super SOCO UK**

Clackmannanshire Economic Regeneration Trust (SCIO) - CERT
Our ref: 24407001
Client ref: V28V28

steer

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# EXECUTIVE SUMMARY

**Introduction**

This business case is written for the consideration for funding by the UK's Levelling Up Fund. It sets out work done to identify a solution to transport challenges faced by the unemployed residents of Clackmannanshire, and it is presented to support funding applications to appropriate bodies (including the Levelling Up fund).

The business case demonstrates that there is a robust case for the development and delivery of two potential schemes combined to help unemployed residents of Clackmannanshire to access employment and education opportunities including:

- **350 e-mopeds** available for private hire by unemployed residents to help them to secure and maintain jobs; and
- **125 shared e-bikes** available to hire for short periods of time (a few minutes to an hour) from **25 docking stations across Clackmannanshire and beyond.**

**Strategic case**

Clackmannanshire has a working age population of around 32,000 of which 800 were unemployed and 8,400 were economically inactive. 2,400 of the economically inactive residents wanted a job and a further 2,000 economically inactive residents were students as of September 2022. There were about 1,200 benefit claimants in Clackmannanshire in February 2023. [1]

The 10-year Clackmannanshire Local Outputs Improvement Plan (2017-2027) highlights that 2,700 workless households in the region lived in poverty and areas of high deprivation as of 2017. There is a very low job density in Clackmannanshire at 0.5 jobs per working age population (Sept 22) (compared to 0.8 jobs across Scotland) which makes it difficult for residents to secure employment locally, especially for young adults (18-24 years) and women: *'This shortage of jobs in Clackmannanshire is a problem for all residents with barriers to travelling for work.'* [2]

Therefore, the problem to be addressed can be summarised as:

> "Unemployed residents of Clackmannanshire are prevented from securing jobs within and outwith Clackmannanshire due to the lack of appropriate and affordable transport to suit the location and timing of work opportunities".

The four core objectives for the business case are the following:

- Facilitate travel to jobs and education that is flexible to meet individual needs;
- Stimulate an increase in use of sustainable transport;
- Encourage healthy lifestyles; and
- Reduce unemployment and economic inactivity.

**Economic case – summary of preferred option**

Several options for achieving the objectives were explored (starting with a comprehensive longlist and then identifying a shortlist of options that were realistic). The four shortlisted options explored in detail were:

[1] Nomis - Official Census and Labour Market Statistics (nomisweb.co.uk)
[2] Local Outcomes Improvement Plan 2017-2027 (Clackmannanshire.gov.uk)

- **An e-bike share scheme**: to develop a bike share scheme with up to 25 docking stations covering areas where users live and/or work;
- **E-moped hire**: to provide access to e-mopeds to users seeking or obtaining employment for long-term hire (up to six months);
- **A combined solution** of both e-mopeds and e-bikes described above; and
- **Digital Demand Responsive Transport (DDRT) service**: shared bus transport (typically using minibuses) with flexible routes operating between flexible pick-up and drop-off locations and accessed via an app/phone.

The combined solution was shown to offer the best value for money and ability to address the problem statement and objectives, compared to associated risks, through an analysis of its relative costs, benefits and risks. The details of this assessment are set out in this business case.

The table below summarises the proposed solution which will include both an e-moped hire and an e-bike share scheme.

**Table 1.1: Summary of preferred option**

| Particulars | E-bike share scheme | E-moped hire scheme |
|---|---|---|
| **Description** | The e-bikes are available to rent from designated docking stations on a pay-per trip or subscription basis. | The e-mopeds are rented out to potential users for up to 6 months, at a fixed weekly charge. |
| **Scope and size** | 125 e-bikes and 25 docking stations across Clackmannanshire and Stirling. | 350 e-mopeds across Forth Valley, operated from Clackmannanshire. |
| **User fees** | 8 pence per minute, or £12 monthly pass, and £78 annual pass. | £60 (including VAT) per week. |
| **Operating model** | Owned by a charity, operated by a third-party operator procured through a tendering process. | Owned by a charity, operated by a fully owned subsidiary. |
| **Capital costs (funding required)** | £918k | £2.56m |
| **Annual revenue support** | Up to £55k (user revenue will not be sufficient to cover all operating costs). | N/A |

This combined option will have the greatest contribution to the objectives, compared to the other options evaluated. It consists of two complementary, but discrete, elements:

- The e-bike share scheme will support access to employment within short distances (up to 10 km) within Clackmannanshire and to Stirling which is anticipated to account for a significant proportion of all work trips.[3] This scheme will provide a cost-effective travel option through user subscriptions to annual membership programmes for the scheme.
- The e-moped hire element offers a private and flexible mode of travel to unemployed residents with no upfront costs of purchase and at an affordable price point. This will allow individuals to access job interviews, secure and retain employment during the initial months until they find an alternative mode of travel. It will increase the scope of employment opportunities outside Clackmannanshire or during off-peak hours (e.g. for jobs with shifts and in remote locations) which are otherwise not possible due to scarce or no public travel options. It will support journeys of a reasonable distance (up to 30km).

[3] Based on current Journey to Work data where 60% of work trips are less than 10 kms.

The greatest benefit will be achieved if both elements can proceed in parallel, because they have complementary strengths. However, they are not dependent upon each other, and it is feasible for one to move ahead in advance of the other if this is necessary.

**Economic case – options appraisal summary**

Considering the economic appraisal (non-transport) across options:

- **Combined e-mopeds and e-bikes scheme generates the greatest absolute benefits** with 4,388 unemployed residents supported into employment and £139m distributional GVA "brought into" Clackmannanshire;
- **The Return on Investment (ROI) is higher with Option 2** (implementing only the e-moped programme); and
- The return on investment of Option 1 (implementing only the e-bike share programme) **is low, but still positive**.

**Table 1.2: Economic impact of options over 10 years**

| | Additional Gross Value Added in Net Present Value £000s | Return on Investment in Gross Value Added £ | Distributional Benefits to Clackmannanshire in Net Present Value £000s | Return on Investment Distributional Income £ | Number of unemployed securing jobs |
|---|---|---|---|---|---|
| **Option 1: ebikes core plus 50% increase in use from 2022 levels** | | | £ 11,608 | £ 10.05 | 1,242 |
| **Option 1b: ebikes low at current usage levels** | £ - | £ - | £ 11,608 | £ 10.05 | 1,242 |
| **Option 2: emopeds: 90% utilisation** | £ 1,124 | £ 0.35 | £ 106,428 | £ 33.12 | 2,616 |
| **Option 2b: emopeds: 75% ultisation** | £ 1,124 | £ 0.33 | £ 128,019 | £ 37.24 | 3,146 |
| **Option 3: ebikes and emopeds: ebikes 50% increase in usage; emopeds 90% utilisation** | £ 1,124 | £ 0.24 | £ 139,626 | £ 30.41 | 4,388 |
| **Option 3b: ebikes and emopeds: ebikes 50% increase in usage; emopeds 75% utilisation** | £ 1,124 | £ 0.26 | £ 118,035 | £ 27.02 | 3,858 |

Source: CERT analysis

The transport economic appraisal across options reveals:

- A medium value for money will be achieved for the combined e-mopeds and e-bikes option;
- A high value for money for the e-mopeds only option as the scheme is expected to operate at a surplus with core utilisation assumption of 90%; and
- A poor value for money (BCR<1:1) for the e-bikes only option as the scheme will require ongoing revenue subsidy between £36k to £55k.

**Financial case**

The total set up/ capital costs for the combined e-mopeds and e-bikes scheme is £3.5 million. This will be funded through grant funding.

The e-moped hire scheme will be financially self-sustainable if the scheme meets a minimum utilisation of 75% with weekly user fees of £60 (including VAT). With the scheme meeting the target utilisation of 90%, the scheme will also be able to cover the renewal costs of the e-mopeds over time.

The e-bike share scheme will require annual revenue support between £35,000 and £55,000 depending on the level of usage of the scheme. This implies that over 10 years, the scheme will require revenue support in the range between £360,000 to £550,000 at 2023 prices to be financially feasible/deliverable.

### Combined appraisal

After the initial appraisal of the options in financial terms, DDRT bus was dismissed for further investigation to meet this problem statement. Appraisals were then undertaken on the performance of the options against strategic fit, qualitative benefits and risk. The summary of the appraisal is presented below.

**Table 1.3: Summary of the appraisal**

| | ebike share scheme | emoped hire scheme | Combined ebike share and emopeds | DDRT Bus |
|---|---|---|---|---|
| Fit to Problem Statement | ** | ** | *** | ** |
| Capital required | £918k | £2.6m | £3.478m | |
| Financial Sustainability | £35k to £55k pa deficit | Yes | £35k to £55k deficit pa | c£600k pa deficit |
| Risk | 11 | 8 | 9.5 | n/a |
| Qualitative Benefits | 21 | 22 | 27 | n/a |
| Economic Appraisal Return on Investment | 10.05 | 37.24 | 30.41 | n/a |
| Transport Economic Appraisal Cost Benefit Appraisal | 0.94 | 2.13 | 1.71 | n/a |
| Number unemployed supported into job over 10 years | 1,242 | 3,974 | 4,388 | n/a |

Source: CERT Analysis

### Commercial case

The e-moped hire scheme will be owned by a charity and operated by a fully owned subsidiary. Necessary training of staff will be organised by the charity (e.g. in collaboration with Kickstart mopeds, the largest operator of similar scheme in the UK).

The e-bike share scheme will also be owned by a public sector or charity lead organisation and operated by a third party operator (with relevant experience in the UK) procured through a tendering process.

The two schemes can be delivered through separate commercial models, but there are advantages and weaknesses for these projects being aligned. This would occur where the lead organisation owning the e-bikes and the charity owning the e-mopeds are the same organisation.

### Management case

A lead organisation will be set up to manage each scheme:

- E-bike share: the lead organisation will be in charge of procuring and contracting with potential operator to acquire physical assets and the back-end systems. The ownership of the assets—primarily the docking stations and e-bikes —as well as the permanency of the assets in the streetscape, will be the lead organisation.
- E-moped hire: A lead organisation who would have charitable status will receive all capital funds and revenue funds and purchase and own the e-mopeds. The purchase of the e-mopeds will be undertaken on a phased basis as the level of usage of the e-mopeds will increase over 3 years. A trading subsidiary, limited by shares, wholly owned by the lead organisation, will operate the e-moped business.

The grant funding contracts will be with the lead organisation. The lead organisation will also be responsible for monitoring, evaluation and reporting of the performance of the schemes.

**Conclusion**

In bringing together all aspects of the appraisal, as set out above, the proposed solution offers a deliverable and attractive way to overcome some of the substantial barriers faced by the population of Clackmannanshire in obtaining employment, in a way which is environmentally sustainable and contributes to improvements in health and wellbeing.

It achieves all the objectives set, it is economically viable and commercially deliverable. There is a clear implementation plan, and a governance structure that is ready to oversee its delivery.

This is a prime candidate for funding through the Levelling Up programme and is submitted for consideration.

# 1 Introduction

## Purpose of this document

1.1 This business case is written for the consideration for funding by the UK's Levelling Up Fund. It sets out work done to identify a solution to transport challenges faced by the unemployed residents of Clackmannanshire, and it is presented to support funding applications to appropriate bodies (including the Levelling Up fund).

## Summary of the proposal

1.2 Clackmannanshire has a working age population of around 32,000 of which 800 were unemployed and 8,400 were economically inactive. 2,400 of the economically inactive wanted a job and a further 2,000 economically inactive were students as of September 2022. There were about 1,200 benefit claimants in Clackmannanshire in February 2023.[4]

1.3 The 10-year Clackmannanshire Local Outputs Improvement Plan (2017-2027) highlights that 2,700 workless households in the region lived in poverty and areas of high deprivation as of 2017. There is a very low job density at 0.5 jobs per working age population (Sept 22) (compared to 0.8 jobs across Scotland) which makes it difficult for residents to secure employment locally, especially for young adults (18-24 years) and women: *'This shortage of jobs in Clackmannanshire is a problem for all residents with barriers to travelling for work.'*[5]

1.4 The business case demonstrates that there is a robust case for the development and delivery of two schemes combined to help unemployed residents of Clackmannanshire to access employment and education opportunities:

- **125 shared e-bikes** available to hire for short periods of time (a few minutes to an hour) from 25 designated docking stations.
- **350 e-mopeds** available for private hire by unemployed residents to help them to secure jobs; and

1.5 The greatest benefit will be achieved if both elements can proceed in parallel, because they have complementary strengths, particularly in the travel distances they would be suitable for. However, they are not dependent upon each other, and it is feasible for one to move ahead in advance of the other if this is necessary.

## How this document has been produced

1.6 The production of this business case has been led by the Clackmannanshire Economic Regeneration Trust (CERT). CERT is a charity with the vision *that Clackmannanshire is a vibrant place to live where people are happy, healthy and where opportunities, connections and support are available for all.* CERT has run the largest employability programme in Clackmannanshire supporting 366 unemployed and economically inactive residents to move towards employment.

[4] Nomis - Official Census and Labour Market Statistics (nomisweb.co.uk)
[5] Local Outcomes Improvement Plan 2017-2027 (Clackmannanshire.gov.uk)

1.7 CERT have developed the business case with the assistance of a Steering Group made up of stakeholders from SEStran, Clackmannanshire Council, Department of Work and Pensions (DWP), Clackmannanshire Third Sector Interface (CTSI), and organisations managing similar schemes including Kickstart Mopeds, Dial a Journey, and Forth Environment Link. Financial support from Paths For All's Smarter Choices, Smarter Places has been gratefully received to fund the development of this business case.

1.8 The identification of need, setting of objectives, development of possible options and assessment and choice of the preferred option have all been carried out in discussion with the Steering Group, over the course of three workshop sessions in January, March and April 2023.

1.9 In addition, discussions have been held with a range of individuals and organisations, including:

- Pete Leonard, Director of Place, Clackmannanshire Council;
- Ian MacDonald, Lesley Deans, Transport, Clackmannanshire Council;
- Stuart Cullen, Transportation Team Leader, Clackmannanshire Council;
- Gary Fraser, Active Travel, Clackmannanshire Council;
- Paul Morris, Economic Development, Clackmannanshire;
- Shirley Paterson, Forth Environment Link (the current lead of Forth Bikes, the regional e-bike share scheme);
- Laura Dawson and Pam Cameron, Department for Work and Pensions;
- Wendy Shaw, Stirling Council;
- Dale Curtis, Kickstart Mopeds;
- Ann Jacob-Chandler and Angela Simpson, Stirling and Clackmannanshire City Region Deal;
- Amy Gover-Kaney and Alison Morrison, University of Stirling;
- Pauline Donaldson, Forth Valley College;
- Theresa Glasgow and Ann Dougan, Shaping Places: Transport and Travel Connections Team, Clackmannanshire Council;
- Duncan Hearsham and Martin Kenny, Dial a Journey;
- Harriet Cross, CoMoUK;
- Hattie James, SEStran;
- Liz Rowlett, Clackmannanshire Third Sector Interface (CTSI); and
- Jenny Milne, Scottish Rural and Islands Transport Community.

1.10 Assumptions and analysis in the business case have been informed by detailed research, including:

- Survey of Unemployed in Clackmannanshire: A survey of 10% (80) unemployed in Clackmannanshire on their views of transport challenges and interest in a range of transport solutions;
- Workshops with unemployed: Two workshops were held with unemployed residents to gather qualitative views on potential transport solutions;
- Survey of the participants of the Pre-Employability in Clackmannanshire (PEC) employability programme which highlighted transport as a barrier to employment;
- Policy research: Review of relevant national, regional and local policy documents that highlight the need to address this challenge; and
- Data analysis to evaluate underlying demand and quantify the scale of challenge and interventions needed.

1.11 Technical assistance and advice have been provided by **Steer**, an independent transport consultancy that works with both public sector and private sector clients across the UK. CERT led by Jean Hamilton an economist have undertaken the economic and financial appraisal.

1.12 The Folio Partnership, an independent management consultancy, has provided technical and strategic assistance on the application of the five-case model for business cases, and facilitated the process.

## Structure of this document

1.13 This business case has been developed following the principles of the HM Treasury's "Five Case Model", which is recommended for use across the public sector in the UK. The five-case model explores the proposal from five perspectives:

- The STRATEGIC CASE explores the case for change – whether the proposed investment is necessary and whether it fits with the overall organisational strategy. It also defines the specific investment objectives for the scheme;
- The ECONOMIC CASE asks whether the solution being offered represents best value for money. It requires alternative options to be considered and evaluated;
- The COMMERCIAL CASE tests the likely attractiveness of the proposal to developers and whether it is likely that a commercially beneficial deal can be struck;
- The FINANCIAL CASE assesses whether the proposed investment is affordable and will deliver an adequate financial standing; and
- The MANAGEMENT CASE demonstrates that the proposed solution is deliverable and will be implemented smoothly.

# 2 Strategic Case

## Overview

2.1 The STRATEGIC CASE explores the "case for change", i.e. whether the proposed investment is necessary and whether it fits with the overall policy imperative of the region. It also defines the specific investment objectives for the scheme.

## Employment and transport in Clackmannanshire

2.2 The focus of this business case is on the relationship between unemployment and transport. This section describes the current situation in Clackmannanshire in relation to this.

2.3 Clackmannanshire is located in Scotland and borders Falkirk, Perth and Kinross, Fife and Stirling Council areas. Alloa is the principal town within Clackmannanshire and offers a central base from which there are direct transport connections to cities such as Stirling and Glasgow.[6]

2.4 Clackmannanshire has a working age population of around 32,000 of which 800 were unemployed and 8,400 are economically inactive. Of these, 2,400 economically inactive people want a job and there are 2,000 students (as of September 2022). There were about 1,200 benefit claimants in Clackmannanshire in February 2023.[7]

2.5 The 10-year Clackmannanshire Local Outputs Improvement Plan (2017-2027) highlights that 2,700 workless households in the region lived in poverty and areas of high deprivation as of 2017. A very low job density at 0.5 jobs per working age population (compared to 0.8 jobs across Scotland) makes it difficult for residents to secure employment locally, especially for young adults (18-24 years) and women: *'This shortage of jobs in Clackmannanshire is a problem for all residents with barriers to travelling for work.'* [8]

2.6 The latest Clackmannanshire Local Transport Strategy's survey identified that whilst car ownership rate is quite high at 1.25 cars per household, over 12% of the survey's respondents had no access to a car. Further, over 60% of respondents said that they would find it difficult to get to work or access shops if they could only travel by public transport, cycle or walk. Also, only 40% think that the Clackmannanshire Bus Network adequately cover the area.[9]

2.7 This highlights the high dependence on car in the area and poses a risk of social exclusion to those who do not have access to a car, alongside detrimental effects of air pollution and emissions from overuse of cars. This, along with poor job density in the area which requires residents to travel longer distances to be able to access jobs, further increases the risk of poverty, unemployment, and social exclusion.

2.8 The Pre-Employability in Clackmannanshire (PEC) was a UK Community Renewal Funded employability programme, managed and part delivered by Clackmannanshire Economic

[6] Clackmannanshire in Scotland (Clackmannanshire.gov.uk)
[7] Nomis - Official Census and Labour Market Statistics (nomisweb.co.uk)
[8] Local Outcomes Improvement Plan 2017-2027 (Clackmannanshire.gov.uk)
[9] Travel Survey (Clackmannanshire.gov.uk)

Regeneration Trust (CERT), which supported over 350 unemployed and economically inactive to progress to employment in 2022. CERT surveyed PEC participants who had not yet found a job and 37% cited transport as a barrier to moving to employment, the largest barrier identified. For those who participated in PEC, only 24% had a driving licence and 75% had no access to a car.

2.9 Transport has been consistently highlighted as a challenge for Clackmannanshire residents and poor transport system has negatively affected all aspects of its society and the economy including:

- **Delivery of Training and supports**: PEC was been forced to re-timetable all delivery of supports to start after 9.30 am to allow participants to attend by using public transport. Where activities have been held outside Clackmannanshire ((Scotland's Rural College (SRUC) and Stirling), there was no available public transport to meet timing of courses. Taxis and private hire cars were not available due to an overall shortage, particularly at the peak demand time of the school run.
- **Delivery of education**: Forth Valley College delivers education courses across 3 campuses – Stirling, Alloa and Falkirk. Different courses are offered at different campuses. Many Clackmannanshire based students are unable to attend courses delivered in Falkirk as it takes about two hours to travel by public transport for a 20 to 30 minutes' drive. A pilot college bus service ran from January to June 2022 which confirmed the value of more direct transport.
- **Access to health care**: There are no realistic options to travel to key health locations: particularly eye clinic in Falkirk, and for those in rural areas to access GP services. The taxi card system funded by the Council and aimed at addressing such barriers struggles to operate with a shortage of taxis.
- **Bus transport is highly unreliable**: The main route within Clackmannanshire around Alloa/Tullibody/Sauchie has been withdrawn and the Council is currently seeking an operator. All bus routes have poor reliability performance often due to driver shortage and there is a major gap in direct bus provision to Falkirk/Grangemouth the main employment areas of Forth Valley

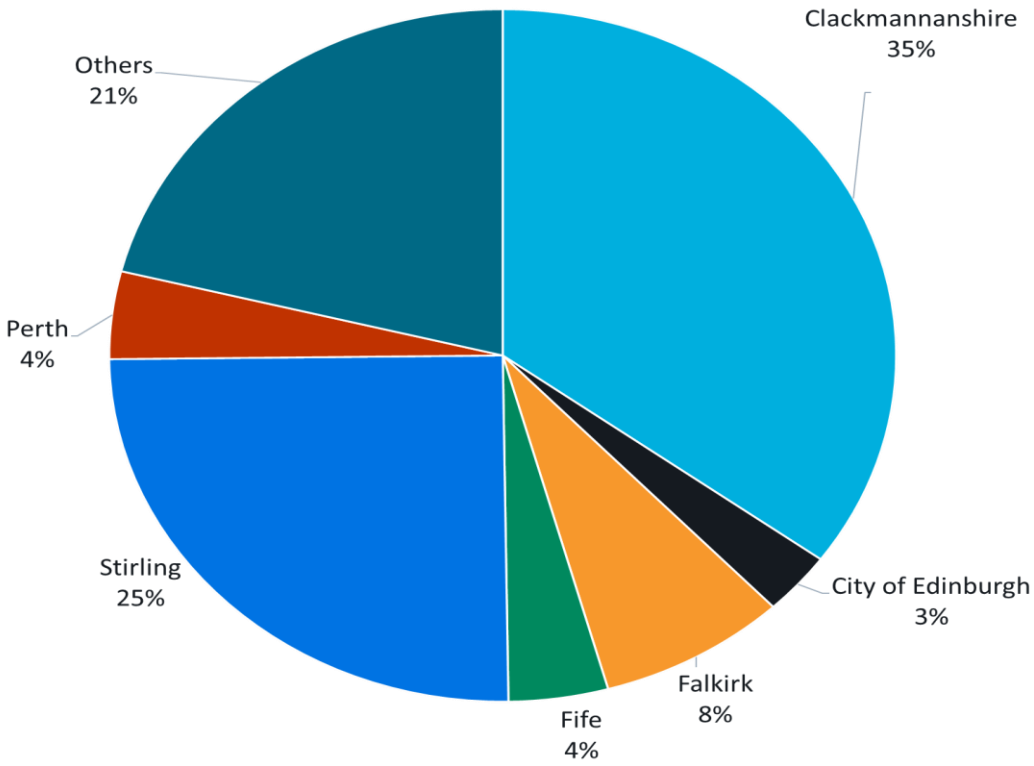
2.10 Overall, the Department for Work and Pensions and employability programmes report the lack of transport provision as one of the main barriers to employment for Clackmannanshire residents.

## Specific needs to be addressed

2.11 This section sets out the findings of the research to understand the transport needs and patterns of travel for Clackmannanshire residents in relation to employment.

2.12 Firstly, research has been completed on the location and travel patterns of those residents of Clackmannanshire who are currently employed. The analysis of the 2011 Scottish Census data on employed people highlights that about 35% of Clackmannanshire residents are employed within Clackmannanshire, whilst 65% are employed outside Clackmannanshire including 25% in Stirling and another 16% in neighbouring Falkirk, Fife and Perth. The locations of employment of Clackmannanshire residents are presented in Figure 2.1 below.

**Figure 2.1: Locations of employment of Clackmannanshire residents**



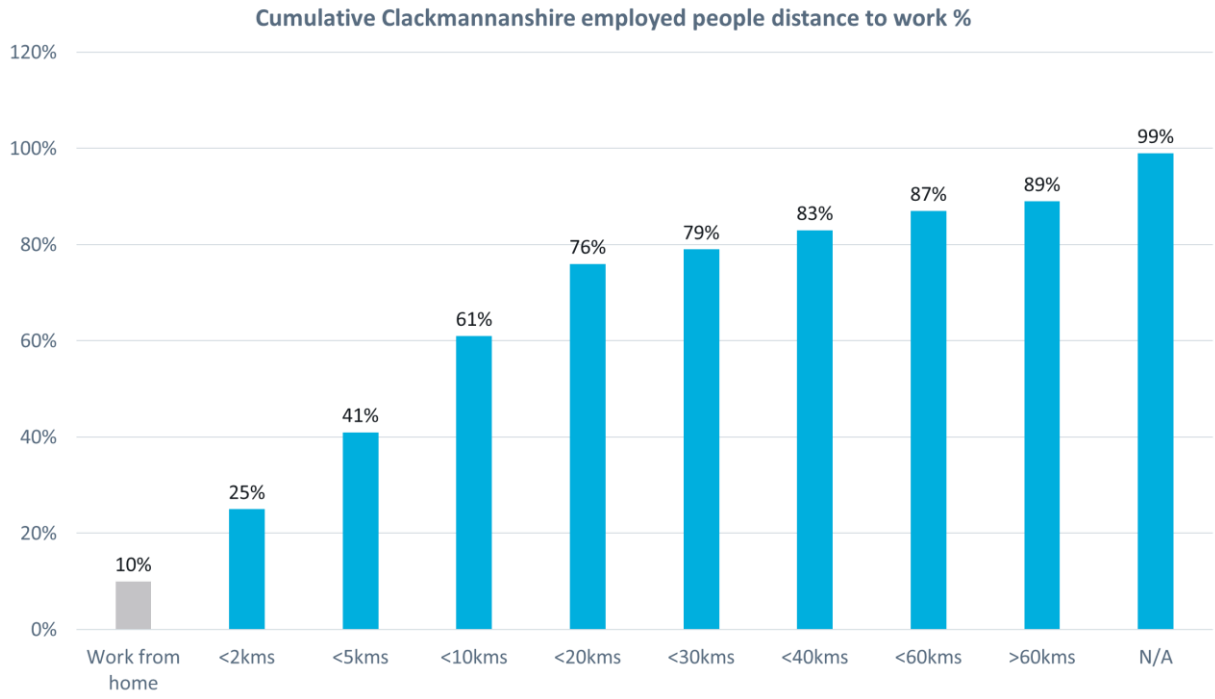

Source: Scotland Census 2011

2.13 The analysis of the 2011 Scottish Census data on employed people (Journey to work data) shows that about 25% of Clackmannanshire residents travel 2km or less for work, whilst 20% travel less than 10km for work and 15% of residents travel between 10 and 20km for work.

2.14 In total, 61% of work trips originating in Clackmannanshire are less than 10km, therefore, similar trips could be undertaken using the e-bike share scheme and almost 80% of work trips are less than 30kms which could further be undertaken by a personal vehicle such as e-mopeds or a bus service. Figure 2.2 presents the distance to work for employed people in Clackmannanshire.

2.15 If similar travel patterns for work are assumed for the unemployed people seeking and securing new employment, active travel choices could be a potential option for travel to areas of employment within the region for almost 60% of unemployed residents.

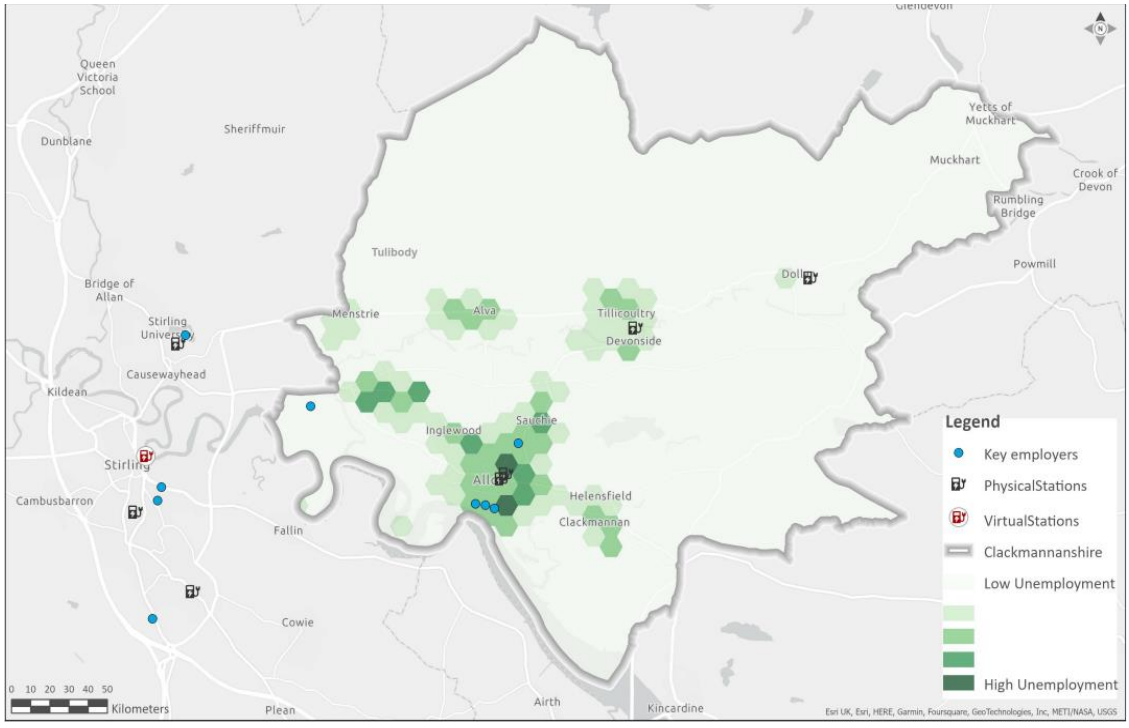
**Figure 2.2: Cumulative Clackmannanshire employed people distance to work, %**




Source: Scotland Census 2011

2.16 The findings from the unemployment index of the 2020 Scottish Index of Multiple Deprivation (SIMD) are presented in Figure 2.3. The areas highlighted in dark green have high levels of unemployed residents. This shows that the majority of unemployed residents (over 90%) live around Alloa, Tillicoultry, Tullibody, Alva and Clackmannan.

**Figure 2.3: Clackmannanshire, SIMD – Employment index**

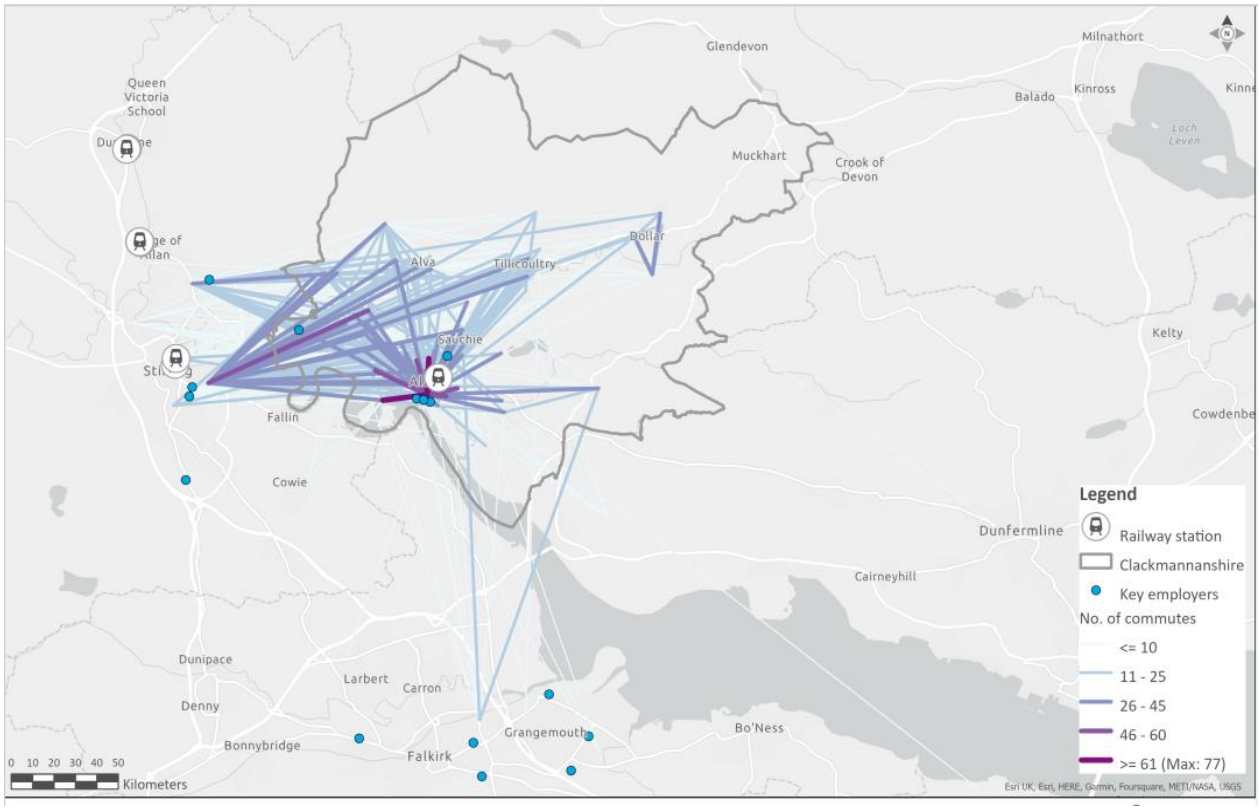



Source: Steer analysis of the 2020 SIMD Employment data

2.17 The analysis of the distance travelled to work data from the 2011 Scottish Census data is presented in Figure 2.4 below: the darker lines represent the greater number of work journeys being made between the locations. This shows that the majority of journeys to work from Clackmannanshire centred around Alloa Railway Station (either people live here or work here), and a significant number of work journeys are made towards the key employers in Stirling.

2.18 Despite there being substantial employment opportunities in Falkirk and Grangemouth there is very little take up of jobs in that area. In travel patterns for the unemployed people seeking employment the interventions/transport solutions should be planned to improve connectivity between the currently popular locations; those areas with job opportunity but limited travel currently; and on areas with lower public transport accessibility.

**Figure 2.4: Clackmannanshire journey to work, origin-destination trips**




Source: 2011 Scottish Census

## Policy context

2.19 This section sets out the national, regional, and local policy context which frames the need for intervention including the review of the policy documents presented in the table below.

**Table 2.1: Policy and strategy documents included in the policy review**

| |
|---|
| **National** |
| • Scotland's National Strategy for Economic Transformation 2022.[10]<br>• No One Left Behind Delivery Plan[11] |
| **Regional** |
| • Regional Transport Strategy SEStran 2008-2023.[12]<br>• Stirling and Clackmannanshire City Region Deal<br>• Forth Valley Connectivity Commission |
| **Local** |
| • Local Economic Strategy / Corporate Plan 2018-2022.[13]<br>• Local Outcomes Improvement Plan 2017-2027.[14]<br>• Local Employability Partnership No-One Left Behind 2022-2025.<br>• Clackmannanshire Council's Local Transport Strategy 2009 - 2014[15] |

2.20 The relevant points of each of the policy documents presented above can be summarised as follows:

**Scotland's National Strategy for Economic Transformation**

- Healthy life expectancy is low in deprived areas and the underlying causes of inequality and poverty need to be addressed by providing economic opportunity to improve the health and social outcomes of disadvantaged families and communities.
- Delivering higher rates of employment across Scotland and wage growth is key to improving health, reducing poverty and improving cultural and social outcomes.
- We must ensure that people have the skills they need at every stage of life to meet the demands of a changing economy and employers invest in skilled employees to grow their business is important.
- Unemployed people, particularly parents and carers, face substantial barriers and transport needs to be addressed to facilitate travel to jobs and education.

**SEStran Regional Transport Strategy**

- Improve accessibility for those with limited transport choice or without a car, particularly individuals who live in rural areas. Specific targets are set for access to employment, health and other services.
- Support interventions where affordability is a barrier to the use of public transport, and ensure the efficiency and effectiveness of public transport makes it an attractive option for existing car users.
- Encourage economic growth and regional prosperity by widening the labour market, improving transport connectivity, and tackling congestion.

[10] https://www.gov.scot/publications/scotlands-national-strategy-economic-transformation/pages/4/

[11] https://www.gov.scot/binaries/content/documents/govscot/publications/strategy-plan/2020/11/no-one-left-behind-delivery-plan/documents/no-one-left-behind-delivery-plan/no-one-left-behind-delivery-plan/govscot%3Adocument/no-one-left-behind-delivery-plan.pdf

[12] https://sestran.gov.uk/wp-content/uploads/2017/01/Regional-Transport-Strategy.pdf

[13] https://www.Clackmannanshire.gov.uk/document/5973.pdf

[14] https://www.Clackmannanshire.gov.uk/document/5633.pdf

[15] https://www.clacks.gov.uk/document/4655.pdf

- Decarbonising transport as a contribution towards sustainable growth and net zero commitments, particularly in rural communities.
- Transport interventions to be designed and operated to minimise their impacts on the environment. There is a commitment to enhance conditions for pedestrians, cyclists, and public transport users.
- Improved population health through reducing noise and air pollution; reducing transport related injuries and death; and through encouraging healthy lifestyles with schemes which favour enhanced greater physical activity.

**Stirling and Clackmannanshire City Region Deal**

- In September 2016, the leaders of Stirling and Clackmannanshire Councils made a joint commitment to a City Deal for the region. The councils have worked together to achieve an investment of £90.2 million for the region from both Scottish and UK Governments, announced in May 2018.[16]
- As part of the City Region Deal, Clackmannanshire is set to benefit from: the development of new and improved active travel routes throughout the region in addition to investments to improve regional connectivity between Stirling and Alloa and outlying settlements. This includes an Active Travel Programme which aims to deliver an investment in more than 50km of dedicated walking, cycling, and wheeling infrastructure in Clackmannanshire and Stirling.[17] Improving active travel options will help connect residents to public transport which will provide better access to employment and education.
- There are also plans for a programme of skills and inclusion which will ensure that businesses and communities throughout the region are given the opportunity to engage in and benefit from the opportunities arising from the investments delivered through the deal. The project utilises funding and seeks to deliver support to 500 people across the region facing or experiencing labour market exclusion which will influence the wider regions skills and employability system.[18]
- The Regional Energy Masterplan for the Forth Valley area is also central to the local regions' response to the climate emergency The City Deal has allocated £200,000 of capital funding to provide a Regional Energy Masterplan for the city region.[19]

**Forth Valley Connectivity Commission**

- The Forth Valley Connectivity Commission will consider how improving transport and connectivity in the region can support the transition to net zero. The commission aims to identify connectivity challenges within Forth Valley and propose an evidence-based programme of recommendations which can build on investments to drive sustainable and inclusive growth.[20]
- The commission aims to utilise a collaborative approach to help meet the regions mobility needs through a range of investments where the commission will consider how enhanced connectivity and transport in the region can bring added value maximising productivity.[21]

**Clackmannanshire Council's Corporate Plan**

- Economic success requires better connections between interventions to create jobs and employment. The plan aims to enable affordable transport, improved infrastructure and affordable active transport.

[16] City Deal in Clackmannanshire (Clackmannanshire.gov.uk)
[17] annualreport.pdf (Clackmannanshire.gov.uk)
[18] annualreport.pdf (Clackmannanshire.gov.uk)
[19] annualreport.pdf (Clackmannanshire.gov.uk)
[20] Forth Valley Connectivity Commission | About | University of Stirling
[21] Forth Valley Connectivity Commission | About | University of Stirling

- Improving cycle and walking infrastructure to promote active travel and improve opportunities for tourism in the area.
- Promoting self-care and community support, increasing access to sport and active travel, and maximising income benefits through employment opportunities to provide sustainable and healthy pathways for children and their families out for poverty.
- It details that Clackmannanshire's job density is below the Scottish average and lower than other regions with similar levels of deprivation. The plan recognises that high unemployment combined with high costs of travel means there are limited pathways out of poverty for Clackmannanshire residents. The plan identifies that inclusive growth is critical for Clackmannanshire so that people can contribute to and benefit from the economic success of the local area.
- The plan aims to increase job density in the local area and increase hourly pay, particularly for women, and improve qualifications and skills. In addition, the plan is committed to maximise the benefits of community regeneration and encourage learning and empowerment in deprived communities.

**Clackmannanshire Alliance's Local Outcomes Improvement Plan**

- Ensure communities are more inclusive and cohesive through well designed developments where residents have access to employment, services and amenities.
- Making the local area attractive to businesses and people and ensuring fair opportunities for all.
- Specific aims to:
  - Increase the proportion of young people in employment;
  - Improve the proportion of young people in positive destinations; and
  - Improve the number and range of jobs locally.
- Developing a new Inclusive Economic Growth Strategy for Clackmannanshire which focuses on a skilled workforce for the future and engage with most vulnerable families on employment advice.

**No-One Left Behind Delivery Plan**

- Strategic outcomes are for Clackmannanshire to be attractive to businesses and people; ensure women and girls are confident and aspirational; families and young people have the best start in life; and communities are resilient and empowered.
- Key performance indicators include: reduce unemployment among youth and working age; increase skills of the working age population; reduce underemployment; reduce the gender employment gap; reduce child poverty and health inequalities.
- Focus on improving employability of Clackmannanshire and reducing unemployment in the area.
- Recognises that there are limited public transport links to travel to work areas and cost of transport is a significant barrier to employment for many.

**Clackmannanshire Council's Local Transport Strategy 2009-2014**

- The over-arching aims include:
  - supporting and enhancing the local economy by improving connection between people and markets; and developing a sustainable transport system
  - managing travel to reduce its environmental impact by encouraging greater use of walking, cycling and public transport; promoting eco-driving techniques; reducing greenhouse gas and other pollutants; and reducing our carbon footprint
  - work towards a seamless transport system to increase social inclusion by reducing the number of modal interchanges required to make key journeys
  - remove barriers to accessibility by enhancing healthy and alternative modes of travel

- Recognising its importance, the Council has made a commitment to developing an Active Travel Strategy.

## Summary of the case for change

2.21 Bearing in mind the policy context described above and the specific characteristics of unemployment and transport issues in Clackmannanshire, there is a clear problem that needs to be addressed.

2.22 For the purposes of this business case, the problem is summarised as:

*"Unemployed residents of Clackmannanshire are prevented from securing jobs within and outwith Clackmannanshire due to the lack of appropriate and affordable transport to suit the location and timing of work opportunities".*

2.23 The proposed options and interventions should therefore be planned to improve transport connections and provide alternative modes of travel for residents to access employment opportunities within the region.

## Objectives for this business case

2.24 The following objectives have been developed and agreed by the Steering Group as being the most appropriate. They provide a framework to structure and drive the business case discussions. All possible solutions will be assessed in relation to how far they can meet these objectives:

- Facilitate travel to jobs and education that is flexible to meet individual needs;
- Stimulate an increase in the use of sustainable transport;
- Encourage healthy lifestyles; and
- Reduce unemployment and economic inactivity.

# 3 Economic Case – developing options

## Overview

3.1 The ECONOMIC CASE asks whether the solution being offered represents best value for money. It requires alternative options to be considered and evaluated.

3.2 The process followed is based on that recommended in national guidance, and has had five key phases:

- Establishing a comprehensive "long list" of options to address the problem
- Identifying a "short list" of these options which both meet the needs and are realistic and deliverable.
- Developing the shortlisted options in sufficient detail to allow them to be assessed.
- Assessing the shortlisted options from four perspectives:
    - Economic benefits and impact
    - Transport benefits and impact (this is an additional test for transport schemes)
    - Qualitative (i.e. non-economic) benefits and impact
    - Potential risk.
- Identifying a preferred option on the basis of the four tests above.

3.3 The first three of these steps are described in the sections which follow. The assessment of options and identification of a preferred option are described in the next chapter.

## Identifying a shortlist of options

3.4 In considering how to address the problem and achieve the objectives set out in the Strategic Case, a wide range of possible solutions were reviewed. All were assessed in terms of whether they would be likely to address the problem statement, meet the objectives, and in terms of whether they would satisfy five other key factors (also known as Critical Success Factors (CSFs)).

3.5 The objectives were as set out in the Strategic Case above:

- Facilitate travel to jobs and education that is flexible to meet individual needs;
- Stimulate an increase in the use of sustainable transport;
- Encourage healthy lifestyles; and
- Reduce unemployment and economic inactivity.

3.6 The Critical Success Factors were:

- Do they fit with wider strategies?
- Are they likely (at first glance) to offer value-for-money?
- Will they be attractive to suppliers and customers?
- Will they be affordable (to whoever is funding)?
- Are they deliverable?

3.7 The wide range of possible solutions and their assessment are shown in the table below.

**Table 3.1: Assessment of the long list of options**

| Possible solution | Meet objectives? | Other success factors? | Rationale |
|---|---|---|---|
| **Ideas that were relatively easily dismissed as unrealistic and/or failing to meet objectives** | | | |
| Establish a hire car company | | N | This is already in place but is not used. Fails the "Attractive" success factor. |
| Fund/use taxis | | N | Taxi capacity not available. Fails on "Deliverable". |
| Network of volunteer drivers | N | N | No current capacity – fails "Deliverable". Not a long-term option for commuting – fails "Objectives". |
| Grants to buy cars | N | N | Not sustainable transport; few beneficiaries – fails "Objectives". Expensive – Fails on "Affordable". |
| Awareness, skills and information for active travel | N | | Insufficient to impact – fails "Objectives". |
| Scooter initiative | | N | Not legal. |
| **Ideas that do not meet the specific objectives / CSFs of *this* business case, but which might have merit for consideration in other projects** | | | |
| Establish a taxi company | N | N | Provides capacity, but unaffordable for commuting. Fails "Objectives" and "Affordable". |
| Driving lessons for unemployed | N | | Running a car unaffordable for new recruits. Carbon costly. Fails "Objectives". |
| More cycleways and routes | N | | Without bicycles, not effective – fails "Objectives". |
| Encourage new employers to provide transport | N | | Only appropriate for large employers – fails "Objectives". |
| **Ideas which potentially could meet all objectives and satisfy the success factors** | | | |
| More e-bikes and e-bike docking stations | Y | Y | SHORTLISTED for further exploration |
| E-moped hire programme | Y | Y | SHORTLISTED for further exploration |
| A combination of e-bikes and e-mopeds | Y | Y | SHORTLISTED for further exploration |
| Establish and operate a bus company with flexible bus routes/pick-up and drop-off locations (Digital Demand Responsive Transport) | Y | Y | SHORTLISTED for further exploration |

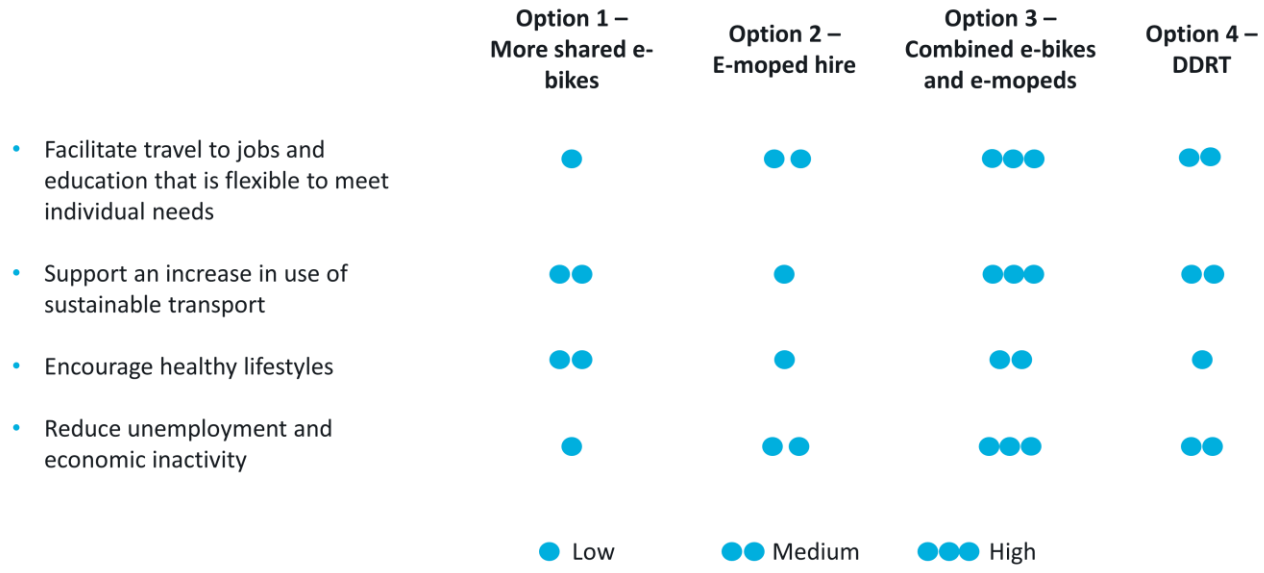
Source: CERT

3.8 As a result of the initial assessment above, four options were selected to explore in detail (these were presented and agreed with the Project Steering Group through the Workshop):

- **An e-bike share scheme**: to develop a bike share network with up to 25 hire locations covering areas where users live and/or work;
- **E-moped hire**: to provide access to mopeds/e-mopeds to unemployed users seeking or obtaining employment for long-term hire (up to six months);
- **A combined solution** including both e-mopeds and e-bikes;
- **Digital Demand Responsive Transport (DDRT) service**: shared bus transport (typically using minibuses) with flexible routes operating between flexible pick-up and drop-off locations and accessed via an app/phone.

3.9 The shortlisted options were all considered to be both realistic and potentially effective in delivering the project's four objectives (see Figure 3.1 below).

**Figure 3.1: Options alignment with the strategic objectives**




Source: Steer, CERT

## Development of the options

3.10 The four shortlisted options were then assessed in more detail. The next four sub-sections describe each of the shortlisted options setting out:

- An outline of how the solution would work;
- Its key features;
- A summary of the potential users' views (surveyed as part of this business case); and
- A high-level summary of the assumptions that are made for the option in terms of operating model, scope, scale, cost, charges, usage.

**Description of Option 1 – E-bike share scheme**

*Overview – Option 1*

3.11 An e-bike share scheme would allow both unemployed and other residents to hire an e-bike on a short-term basis (per minute) from designated docking stations where the e-bikes need to be returned to at the end of the hire. The users will be charged either on a pay-per-trip basis or they will have an option to subscribe to a monthly or annual membership.

3.12 The proposed e-bike share scheme would be similar to the regional scheme, Forth Bike, which until April 23 had four docking stations and approximately 20 e-bikes in Clackmannanshire. The scheme would focus on areas with high demand/need from unemployed residents in Clackmannanshire and areas of high density of employment in Clackmannanshire and "destination" sites in Stirling.

*Key features – Option 1*

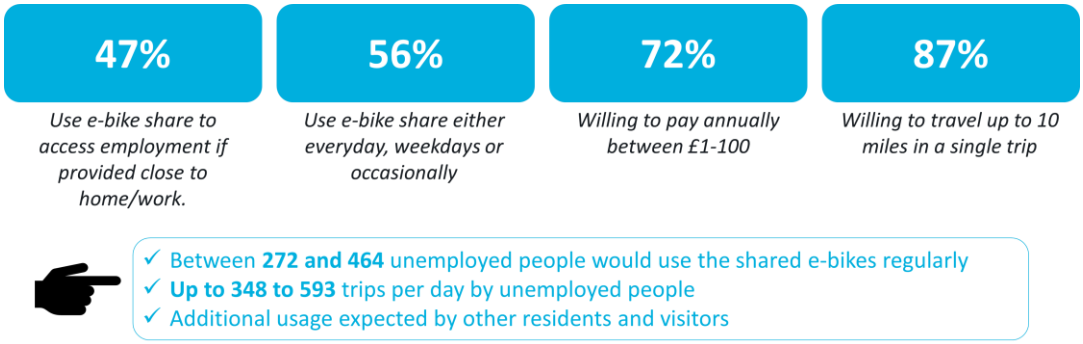
3.13 The key reasons behind shortlisting this option include:

- Facilitate short distance work and/or education trips (<10kms);
- Connect residents in remote areas to transport hubs/stations to access employment and/or education;
- Service available 24 hours, seven days a week providing a flexible transport solution;
- Offer affordable prices compared to car use;
- Support wider uptake of sustainable mode of travel by residents; and
- Increase the use of the ongoing cycle infrastructure expansion.

*Survey of potential users – Option 1*

3.14 A survey was undertaken with unemployed people in Clackmannanshire to understand their interests in using the scheme, how far would they travel using the shared e-bikes, as well as how much they are willing to pay for the service. 80 responses were received, a summary of the findings is presented in Figure 3.2 below.

**Figure 3.2: E-bike share survey findings**




Source: Clackmannanshire Transport for Employment (office.com)

*Operating model – Option 1*

3.15 The scheme would operate with a charity/public sector organisation as lead organisation who would own the assets and infrastructure, while an external operator would be procured for operations and maintenance of the system. The scheme would require an annual subsidy. Further details are included in the **Commercial case**.

*Assumptions on scope and size of scheme for Option 1*

3.16 Three scenarios for the size and scope of the scheme were considered.

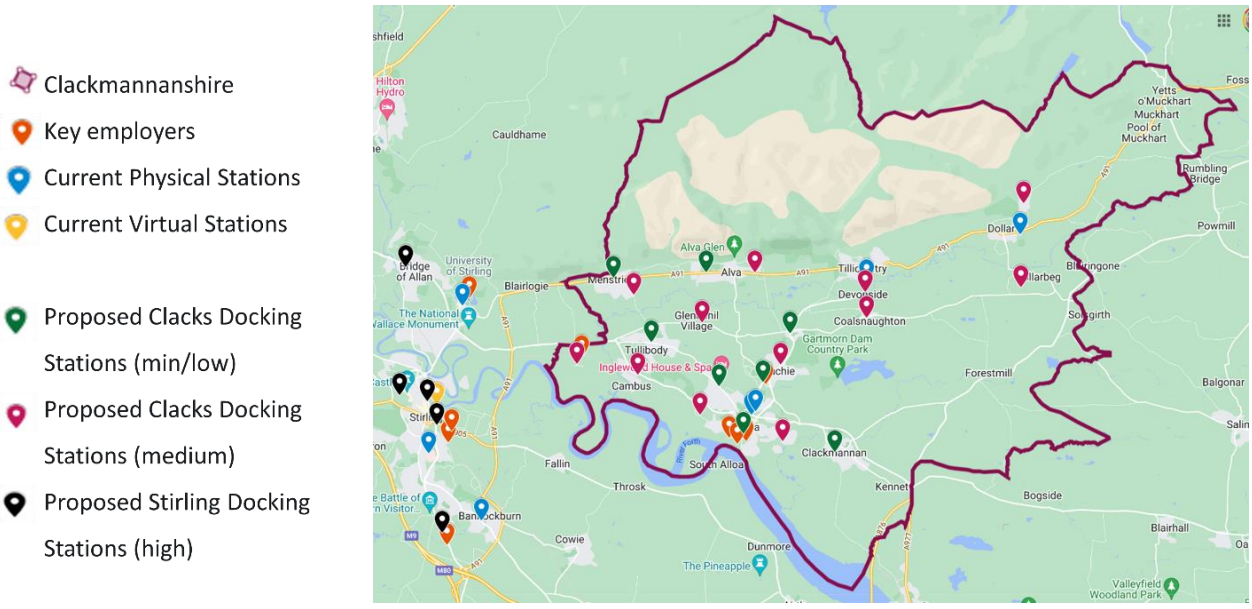
- "Low" – a Clackmannanshire only scheme, adding only eight docking stations and 40 e-bikes;
- "Medium" – a Clackmannanshire only scheme with 20 docking stations and 100 e-bikes; and
- "'High" – a scheme with 25 docking stations and 125 e-bikes in total across Clackmannanshire as well as at key employment "destination" locations in Stirling.

3.17 An assessment of all these scenarios was made in relation to their alignment with policy, likely attractiveness to users, likely overall value for money, and deliverability. As a result, the "High" scenario was found to be the most appropriate to take forward as the basis for assumptions. This scenario was discussed and agreed with Stirling Council. It offers maximum coverage of employment destinations for Clackmannanshire residents within a cyclable distance.

3.18 It is assumed that each docking station will have approximately five e-bikes and 10 docking points.

3.19 A GIS-based underlying demand analysis was conducted to identify the locations for the e-bike shared docking stations, noting the areas where unemployed residents live within Clackmannanshire and where they look for employment (while also considering the areas with non-availability of public transport) within a cyclable distance (e.g. up to 10kms). Refer to Appendix B for the methodology and findings from the analysis. The locations of the proposed docking stations were also identified to ensure there was a sufficient closeness, covering isolated towns and villages and to maximise transport connectivity to key employers and local services.

**Figure 3.3: Proposed e-bike docking stations**




Source: *Steer,* click on this link to view the map on © Google maps

*Capital cost assumptions – Option 1*

3.20 Capital costs assumptions have been developed based on the costs of the regional scheme, Forth Bike, as provided by the managing charity Forth Environment Link and market knowledge. Capital costs for the e-bike share scheme include cost of e-bikes, docking stations, set-up and project management costs. A contingency allowance of 20% above all capital costs has been applied to account for variations in market dynamics.

3.21 Capital costs for the e-bike share scheme with 125 e-bikes and 25 docking stations will be £918,000 including VAT with the breakdown of costs presented in 3.2 below.

**Table 3.2: E-bike share scheme capital costs**

| Capital cost | £, at current prices including VAT |
|---|---|
| Purchase of e-bikes | £375,000 |
| Docking Stations | £150,000 |
| Set-up costs | £90,000 |
| Project management | £150,000 |
| Contingency (20%) | £123,000 |
| **Total capital costs** | **£918,000** |

Source: Forth Environment Link and market knowledge of Steer

*Operating costs, revenue and operating balance – Option 1*

3.22 The total operating costs are assumed to be around £93,500 annually which includes costs of staff to maintain and redistribute vehicles. We have assumed that the e-bikes will be charged at the docking stations.

3.23 Revenue has been calculated based on two demand scenarios:

- A 'core' scenario assumes that usage will be 50% higher than the existing regional Forth Bike scheme usage in Clackmannanshire in 2022. This is because there will be a higher density of docking stations (25 compared to four) within the operating area allowing more residents to access a vehicle within a walking distance. Forth Bike scheme usage was 0.53 trips per e-bike per day in 2022, and therefore this scenario assumes that there will be 0.8 trips per e-bike per day. This implies that about 36,272 trips will be made annually using the shared e-bikes in this scenario.
- A 'Low' scenario with the current usage rate of 0.53 trips per e-bike per day. This implies that about 24,181 trips will be made annually using the shared e-bikes in this scenario.

3.24 Users will be charged a fee per trip, or they can buy a day pass, monthly pass or an annual subscription similar to the existing Forth Bike scheme. An assumption was made for the average user fee per trip based on average user fee per trip for the Forth Bike scheme. A cost of £1.60 per trip was assumed.

3.25 User revenue for the two demand scenarios is presented in Table 3.3 below.

**Table 3.3: E-bike annual user revenue**

| User revenue | £, at current prices |
|---|---|
| Core scenario (50% higher demand than current levels) | £58,035 |
| Low scenario (same demand as current levels) | £36,690 |

Source: Steer analysis of Forth Environment Link data

3.26 **The scheme will require annual revenue support (subsidy) between £35,715 and £55,060, depending on the scheme usage** (operating costs – user revenue). Fundability of the annual revenue shortfall (up to £58,000 per annum) is explored further in the **Financial Case**.

**Table 3.4: E-bike share scheme annual operating balance**

| | Core scenario | Low scenario |
|---|---|---|
| Operating costs | £93,500 | £93,500 |
| User revenue | £58,035 | £36,690 |
| **Loss/Subsidy needed** | **-£35,715** | **-£55,060** |

Source: Steer analysis of Forth Environment Link data

### Description of Option 2 – E-moped hire scheme

*Overview – Option 2*

3.27 An e-moped hire scheme would allow individuals to hire an electric moped (e-moped) at a weekly cost, based on the Wheels to Work[22] model: these are small motorbikes which are 50cc, and which are not allowed on the motorway and travel c30 mph.

3.28 The scheme would rent the e-mopeds to users (mainly unemployed people or students aged 17+) for a few months to help them find and keep jobs. The project will pay for the insurance of the vehicles, personal protective equipment for the users and Compulsory Bike Training (CBT) to use the vehicles.

*Key features - Option 2*

3.29 The key features of this option include:

- A personalised and flexible transport option suited to reach employment at many locations and times;
- Increased access to work and/or education, particularly for longer distance trips (>10kms);
- Provision of a personal transport option able to meet flexible travel needs of the users;
- No upfront costs to the users;
- Provision of an alternative to personal car travel; and
- E-mopeds are more environmentally friendly and have lower operating costs for the users compared to petrol cars (e.g. no fuel costs).

*Demand Appraisal – Option 2*

3.30 The demand for the e-moped scheme has been undertaken through:

- A review of experience of other wheels to work projects, operating in England
- A survey of unemployed residents in Clackmannanshire;
- Two workshops with the unemployed in Clackmannanshire; and
- Analysing the number of unemployed and economically inactive people in Clackmannanshire and neighbouring local authority areas

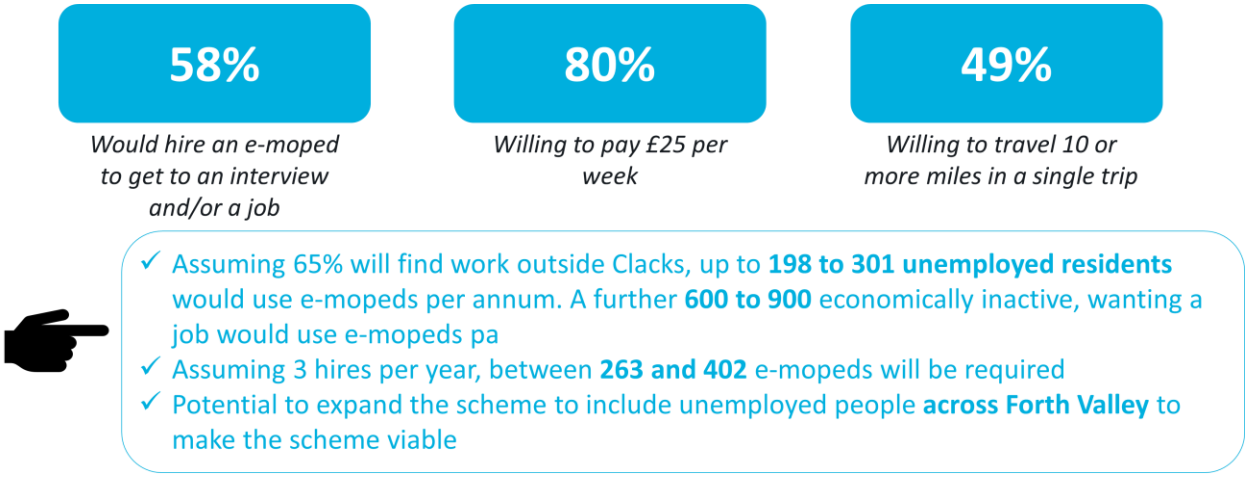
3.31 Further details of the market demand appraisal is set out in Appendix C.

[22] Wheels to Work (W2W UK) is a scooter hire scheme intending to help those struggling with a lack of affordable transport to get to work, a training course or further education. Wheels to Work has operators around the UK able to hire out insured powered two-wheeled scooters, usually with a maintenance package and delivery included. https://www.wheels2workuk.org/#:~:text=Wheels%20to%20Work%20%28W2W%20UK%29%20is%20a%20scooter,usually%20with%20a%20maintenance%20package%20and%20delivery%20included.

*Survey of potential users - Option 2*

3.32 A survey of unemployed people in Clackmannanshire was conducted to understand their interests in using the scheme, how far would they travel using e-mopeds, and how much they are willing to pay for the service. 80 responses were received (10% of the unemployed in Clackmannanshire). A summary of the findings is presented in the Figure 3.4 below.

**Figure 3.4: E-moped hire survey findings**




Source: Clackmannanshire Transport for Employment (office.com)

*Operating model – Option 2*

3.33 The preferred operating model for the scheme was established following engagement with the largest Wheels to Work scheme in England operated by a charity, Kickstart Mopeds in Norfolk, and consideration of different commercial elements.

3.34 A charity will own the assets while the e-mopeds will be leased to a wholly owned trading subsidiary responsible for the operations and maintenance of the vehicles including revenue collection. More details on this model are included in the **Commercial Case**.

*Assumption on the scope and size of the scheme for Option 2*

3.35 Two scenarios for the size and scope of the scheme were considered based on a Low or a High scenario.

3.36 The Low scenario with 50 e-mopeds would be financially unsustainable and, therefore, poses significant threats to deliverability in medium to long term. It is also less attractive to users and offers poor value for money overall. The High scenario is better on all these factors. Therefore, in discussion with the Steering Group, the High option of 350 e-mopeds was selected as the basis for development.

3.37 The e-mopeds will be available for hire by the unemployed and economically inactive wanting to work, across the Forth Valley region which will ensure high utilisation of the vehicles. Anticipating a gradual growth in demand over time as the scheme becomes more visible and accepted, the e-mopeds will be purchased gradually over the first three years to maximise the financial sustainability of the scheme. The vehicles, where appropriate, could also be made available to other user groups.

*Capital cost assumptions – Option 2*

3.38 The capital costs assumptions have been determined from engagement with the existing Wheels to Work schemes, including:

- Kickstart Mopeds on set up and protective equipment/clothing costs;
- Tees Valley Combined Authority on cost of units, set up, and equipment/clothing; and.
- Indicative costs of electric mopeds from open-source research.[23]

3.39 The total capital costs required will be £2.562million (including VAT on purchase equipment). A contingency of 20% was applied due to the novelty of the scheme. A breakdown of the capital costs for the e-moped scheme are presented in Table 3.5 below.

**Table 3.5: E-mopeds capital costs**

| Capital cost | £ (current prices) |
|---|---|
| Purchase of e-mopeds | £1,575,000 |
| Protective clothing | £362,250 |
| Lock up | £100,000 |
| Project management | £72,000 |
| Computers for staff | £6,000 |
| Vehicle to transport e-mopeds | £20,000 |
| Contingency (20%) | £427,050 |
| **Total capital costs** | **£2,562,300** |

Source: Kick-start mopeds, Tees Valley Combined Authority

*Operating costs, revenue and operating balance – Option 2*

3.40 The main operating costs include vehicle insurance fees, training of drivers, maintenance and upkeep of vehicles and operating staff's salaries and overhead costs. Assumptions on operating costs have been based on the same sources and engagement as the capital costs with some specifics:

- The data provided by Tees Valley Combined Authority was used to calculate costs for annual vehicle insurance (£900 per vehicle pa), maintenance costs per vehicle (£300 for parts per vehicle pa), and number of drivers (3 new drivers per vehicle pa);
- The data provided by Kickstart Mopeds was used to calculate the cost of training and licenses (£195 per driver);
- It is assumed that the costs of training and licenses per new driver can be covered by the Department for Work and Pensions (DWP) or other employability providers either through the DWP Flexible Support Fund or other discretionary funds;
- The assumed number of staff required to operate is up to five and a half members of staff including mechanics and support staff; the salary between £20,000 and £28,000 per staff is considered; and
- Overheads including marketing, evaluation and general costs are estimated.

3.41 To avoid low usage, it is proposed to expand the scheme gradually over three years with 100 e-mopeds available in Year 1, 250 in Year 2 and 350 in Year 3. **The costs to operate the scheme will be between £300,000 to £350,000 on average per year**, with lower costs in the initial two years due to lower number of vehicles and operating staff.

3.42 Users are charged a weekly fee to hire the e-mopeds. An assumption was made for this figure based on weekly fees charged by Kickstart Mopeds and Tees Valley Combined Authority (taking into

[23] 5 of the best electric mopeds with removable batteries | electric bike reviews, buying advice and news - ebiketips (road.cc)

account bad debt from hirers), as well as estimates for weekly cost of running a car.[24] A cost of £60 per week (including VAT) was assumed and used to calculate revenue per year.

3.43 Revenue has been calculated based on two demand scenarios:

- The objective of the scheme will be to achieve a 'Core' utilisation of 90% (with a 10% contingency for vehicles needing maintenance and spares) which is achievable as established from discussions with both Norfolk and the Tees Valley schemes (e.g. the schemes have waiting lists). **In this scenario, the scheme is expected to make a net income of around £100,000 by year 5** which will be invested into the scheme's development (e.g. replacement of vehicles, cost subsidies for selected users, funding training costs, promotional activities, etc.).
- A more conservative 'Low' demand scenario with a **utilisation of 75% is also tested, and it was found that the scheme will still be financially sustainable**, when the users are charged a fee of £60 per week (including VAT) but with limited scope for reinvestment in the scheme.

**Description of Option 3 – Combined e-moped hire and e-bike share schemes**

3.44 This option includes both Option 1 and Option 2, and the scheme description, rationale, and assumptions for each of e-bike share and e-moped hire scheme have been applied.

**Description of Option 4 – Digital Demand Responsive Transport (DDRT)**

*Overview of Option 4*

3.45 This is an on-demand bus service that will pick up users near where they live and drop them at their destination and vice-versa. The service is typically operated on a semi-flexible route based on user demand. This will have much greater flexibility than normal buses. The service can be booked by phone or app in advance of travel.

*Key features of Option 4*

3.46 The key reasons behind shortlisting this option include:

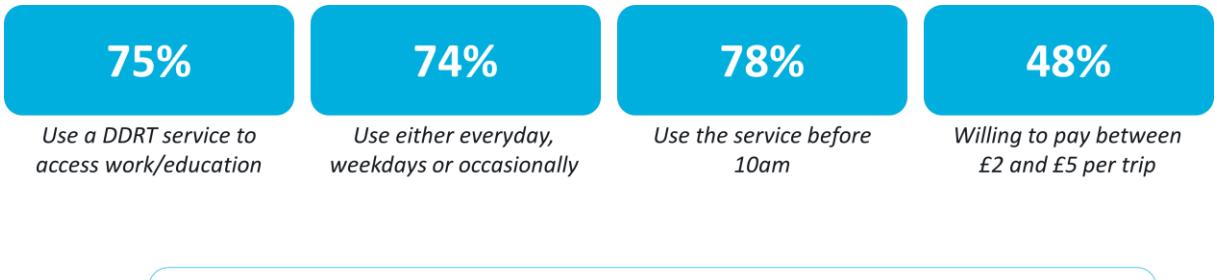
- Increase access to work and/or education, particularly for longer distance trips (>10kms);
- Provide an on-demand flexible transport option;
- Compliment public transport network in the area;
- Provide a sustainable travel option to a wider population (who cannot cycle or drive an e-moped);
- Provides access to transport for a broader group of residents irrespective of disability or other access issue; and
- Provide an alternative to personal car travel.

*Survey of potential users – Option 4*

3.47 Similar to the other options, a survey was launched to unemployed people in Clackmannanshire to understand their interests in using the scheme, how frequently and when they would use the DDRT service, as well as how much they are willing to pay for the service. 80 responses were received, a summary of the findings is presented in Figure 3.5 below.

[24] How Much Does It Cost to Run a Car in the UK? Read This First | Carplus

**Figure 3.5: DDRT survey findings**




Source: Clackmannanshire Transport for Employment (office.com)

*Costs and revenue assumptions – Option 4*

3.48 Based on industry knowledge, and prior engagement with DDRT operators it was found that:

- A minimum of 2 to 3 buses/mini vans are required to operate a DDRT service;
- Need for a partner (e.g. a community or commercial bus operator) who will run the operations and a call centre;
- Ongoing revenue support will be required irrespective of the level of demand (this was confirmed with both SEStran and Clackmannanshire Council officers as well as a Dial a Journey operator):
  - Worst case scenario (no demand): £200K operating costs per year per vehicle which implies up to £600k for three buses, the revenue shortfall will decrease if the number of passengers increases but will not be able to cover the operating expenses in total; and
  - A minimum of £130k to £170K per vehicle per year revenue support needed (cited by another operator).
  - There are approaches which would reduce the cost of operation through the use of taxis and volunteer drivers, drawn on only when required (as opposed to establishing a dedication of 2 buses and drivers per day). This would still require ongoing revenue support.

Due to the high annual revenue support required for this option, which makes it financially unworkable, it was agreed with the Steering group to NOT take this option forward.

Therefore, this option was removed from the shortlisted options at this point and further appraisal was not undertaken.

3.49 It is recognised that when considering a broader problem statement such as to address transport barriers for residents to access social, public and health services, accessibility for those with physical disabilities, a DDRT bus service would be scored more highly. It is recommended that this is reconsidered in that context.

# 4 Economic Case – assessing the options

## Introduction

4.1 Having established that the Digital Demand Responsive Transport (DDRT) scheme would not be financially workable, the following shortlisted options have been taken forward for formal assessment and appraisal:

- Option 1 – e-bike share scheme;
- Option 2 – e-moped hire scheme; and
- Option 3 – a combination of the two schemes (e-bike share and e-moped hire).

4.2 The assessment was carried out in line with business case guidance, appraising the relative performance of the three options from four perspectives:

- Economic benefits and impact;
- Transport benefits and impact (this is an additional test for transport schemes);
- Qualitative (i.e. non-economic) benefits and impact; and
- Potential risk.

4.3 The results are set out in the sub-sections that follow.

## Economic appraisal (non-transport)

**Methodology**

4.4 An economic appraisal has been undertaken for each of the three short listed options using the Treasury Green Book appraisal guidelines. The options are 1. E-bike share scheme; 2. E-moped hire; and 3. Combined e-moped hire and e-bike share. Each option has been appraised against the impact of a Do Nothing or Business as Usual case. Three economic benefits have been calculated at the level of Clackmannanshire:

- Job and Wealth Creation: Those new jobs that are created by the direct delivery of the project. This is presented in Gross Value Added (GVA). These direct jobs and GVA are generated by the delivery of the e-moped hire scheme;
- Distributional Benefits. The income which is secured by unemployed Clackmannanshire residents securing a job and wage from employment outside Clackmannanshire. The impact of "bringing wealth into Clackmannanshire"; and
- Unemployed Supported to Secure a Job.

4.5 Benefits which have been EXCLUDED are:

- The distributional benefit of one Clackmannanshire unemployed resident gaining a job which would otherwise be taken by another Clackmannanshire resident. While this may provide distributional benefits to a resident who currently has a lower income, the extent and scale of such benefits are uncertain so have been excluded;

- Direct benefits from the operation of the e-bike share scheme: As part of the delivery of the scheme, a local organisation would be contracted to maintain and repair the bikes and ensure they are located where needed. There is no clear supplier of these services in Clackmannanshire at present, although, there are organisations nearby in the wider region who can deliver these services. Given the uncertainty of the geographical scope of the e-bike share scheme, these benefits have been excluded;
- Benefits to non-Clackmannanshire residents: All options will operate across Clackmannanshire boundaries and residents of more than one local authority area will benefit from the projects. For the purpose of this appraisal, these benefits have been excluded;
- Where e-mopeds are hired by those who were not unemployed at the start of the hire or by employers to support the delivery of their services, these have been excluded. Although uncertain, it is assumed that much of these benefits are non additional, where alternative transport options would have been available; and
- Benefits of filling "Hard to Fill vacancies": In the current economic climate, unemployment is low, and many companies are struggling to fill vacancies, particularly those who are lower paid, operate shift patterns and are not located close to residential areas. These projects will help fill these vacancies and the performance of the businesses will improve as a result. The scale of these improvements is uncertain, so have been excluded. These hard to fill vacancies include those in public health which have a knock on negative impact on health and wellbeing.

4.6 Key assumptions have been derived from the project outlines and financial appraisal and used in the economic appraisal. Across all options these include:

- Wage of all new jobs secured by beneficiaries is the Real Living Wage - £20,000 currently then forecast to grow 3% pa;
- 90% of jobs are sustained;
- Net Present Value of 3.5% has been applied to costs and benefits;
- A local multiplier of 1.2 has been applied to calculate indirect and induced benefits in Clackmannanshire; and
- An optimism bias of 20% has been applied to all benefits. Aligned to the 20% contingency applied to capital costs, this provides an overall optimism bias of 40%.

**Option 1 - e-bike share**

4.7 Key assumptions used are:

- The number of unemployed residents in Clackmannanshire who use the project to secure a new job grows to 368 in each year. This aligns with the results of the survey of unemployed people where between 34% and 58% (272 and 464) of the unemployed at a specific time said they would use it to get to work;
- A 50% increase in usage of the e-bike share scheme by the unemployed has been calculated as a core demand scenario. This represents an increase in the forecasts from the survey of unemployed but is thought to be realistic on the basis of a "demonstration" effect once the project is fully established. This increases the number of users to 552 previously unemployed residents;
- 20% of users will travel to employment outwith Clackmannanshire, the remainder commuting within Clackmannanshire; and
- It is assumed that the majority of users will use the e-bike share scheme for commuting on an ongoing basis. In every year there is an assumed "churn" of 25% of new users of the scheme who were previously unemployed with 25% no longer using the e-bikes either moving to use an alternative mode of transport or leaving/changing employment.

4.8 The findings on potential number of users of the e-bike share scheme who were previously unemployed are presented in the tables below.

**Table 4.1: Number of users of e-bike share scheme who were previously unemployed, Core demand scenario (50% higher usage compared to current)**

| | | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 | Year 7 | Year 8 | Year 9 | Year 10 | Total over 10 years |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Number beneficiaries** | | | | | | | | | | | | 0 |
| Number of unemployed Clackmannanshire residents using ebikes | | 150 | 300 | 450 | 552 | 552 | 552 | 552 | 552 | 552 | 552 | 4764 |
| **Number newly using ebikes** | | | | | | | | | | | | |
| Number of unemployed Clackmannanshire residents newly using ebikes | | 150 | 150 | 150 | 102 | 138 | 138 | 138 | 138 | 138 | 138 | 1380 |
| Number of unemployed Clackmannanshire residents travelling outwith Clacks | | 30 | 30 | 30 | 20 | 28 | 28 | 28 | 28 | 28 | 28 | 276 |

Source: CERT analysis

**Table 4.2: Number of users of e-bike share scheme who were previously unemployed, Low demand scenario (current usage levels)**

| | | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 | Year 7 | Year 8 | Year 9 | Year 10 | Total over 10 years |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Number beneficiaries** | | | | | | | | | | | | 0 |
| Number of unemployed Clackmannanshire residents using ebikes | | 100 | 200 | 300 | 368 | 368 | 368 | 368 | 368 | 368 | 368 | 3176 |
| **Number newly using ebikes** | | | | | | | | | | | | |
| Number of unemployed Clackmannanshire residents newly using ebikes | | 100 | 100 | 100 | 68 | 92 | 92 | 92 | 92 | 92 | 92 | 920 |
| Number of unemployed Clackmannanshire residents travelling outwith Clacks | | 20 | 20 | 20 | 14 | 18 | 18 | 18 | 18 | 18 | 18 | 184 |

Source: CERT analysis

Key results for 10 years

4.9 The level of impact increases as the level of usage of the e-bike share scheme increases, and with 50% more users, 1,242 unemployed people are supported into employment. The return on investment while higher at £10.05 brought back into Clackmannanshire for every £1 invested, is substantially lower than e-moped hire scheme but remains a positive return. As the level of usage of e-bikes increases, the level of subsidy required is expected to reduce, however, this has not been included in this analysis.

**Table 4.3: Economic impact of e-bike share scheme over 10 years: 50% greater usage**

| Summary Impacts | Total £000s | RoI |
|---|---|---|
| Number Clackmannanshire unemployed supported into employment over 10 years | 1,242 | |
| Cost per job secured and sustained £ | | £ 930 |
| Public Sector Cost in Net Present Value | £ 1,155 | |
| Additional Gross Value Added in Net Present Value | £ - | £ - |
| Distributional Gross Value Added to Clackmannanshire in Net Present Value | £ 11,608 | £ 10.05 |

Source: CERT analysis

4.10 The economic impact of the e-bike share scheme with current usage levels is lower than where usage increases. 828 unemployed residents are supported to secure employment, however with most (80%) assumed to be commuting to jobs within Clackmannanshire there is a lower distributional benefit to the project with only £5.91 for every £1 spent on the project being redistributed into Clackmannanshire. This does provide a substantial positive return on investment in economic benefit terms.

**Table 4.4: Economic impact of e-bike share scheme over 10 years, current usage level**

| Summary Impacts | Total £000s | RoI |
|---|---|---|
| Number Clackmannanshire unemployed supported into employment over 10 years | 828 | |
| Cost per job secured and sustained £ | | £ 1,394 |
| Public Sector Cost in Net Present Value | £ 1,155 | |
| Additional Gross Value Added in Net Present Value | £ - | £ - |
| Distributional Gross Value Added to Clackmannanshire in Net Present Value | £ 6,821 | £ 5.91 |

Source: CERT analysis

### Option 2 – e-moped hire

4.11 Key assumptions include:

- Direct employment at the e-moped operator build to 5.5 Full Time Equivalent jobs;
- Benefits calculated at 90% (core) and 75% (low) utilisation of e-mopeds;
- The e-mopeds are hired to three groups – the unemployed who are residents in Clackmannanshire; unemployed who are resident elsewhere; and the employed. The share of users is set out below;

- On average a beneficiary will hire an e-moped for 4 months, therefore 3 users per e-moped pa;
- For those who secure employment, three years of their income from this employment is attributed to the impact of the e-moped scheme;
- All employment secured is located outwith Clackmannanshire;
- Displacement is assumed as 0, with no existing provider of e-mopeds for hire; and
- Additionality is assumed as 100% for the first 3 years of employment – where it is assumed that without the project, the beneficiaries would not be able to secure employment.

4.12 The findings on number of beneficiaries from the e-moped hire scheme for two potential demand scenarios (Core – 90% utilisation and Low – 75% utilisation) are presented in Table 4.5 and : Number of beneficiaries from e-moped hire scheme – Low demand scenario (75% Utilisation)

4.13 respectively. The numbers of users from Clackmannanshire has been deliberately set at less than the forecast demand. This appraisal assumes a growth to 376 (in the core demand scenario) Clackmannanshire Unemployed using the programme per annum. The demand analysis set out in Appendix C show a potential demand of up to 600 to 900 Clackmannanshire users pa.

**Table 4.5: Number of beneficiaries from e-moped hire scheme – Core demand scenario (90% Utilisation)**

| | | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 | Year 7 | Year 8 | Year 9 | Year 10 | Total over 10 years |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of emopeds on the road | | 100 | 250 | 350 | 350 | 350 | 350 | 350 | 350 | 350 | 350 | |
| Number of New Drivers | | 196 | 511 | 871 | 783 | 940 | 940 | 940 | 940 | 940 | 940 | 7,998 |
| | | | | | | | | | | | | |
| **Number beneficiaries** | | | | | | | | | | | | |
| % rented to unemployed Clackmannanshire residents | | 100% | 75% | 40% | 40% | 40% | 40% | 40% | 40% | 40% | 40% | |
| % rented to unemployed, non Clacks residents | 0.5 | | | 30% | 30% | 30% | 30% | 30% | 30% | 30% | 30% | |
| % rented to NOT unemployed | | 0% | 25% | 30% | 30% | 30% | 30% | 30% | 30% | 30% | 30% | |
| | | | | | | | | | | | | |
| Number of unemployed Clacks residents supported | | 196 | 383 | 348 | 313 | 376 | 376 | 376 | 376 | 376 | 376 | **3,495** |
| Number of unemployed non Clacks residents supported | | - | - | 261 | 235 | 282 | 282 | 282 | 282 | 282 | 282 | **2,187** |
| **Total number of unemployed supported** | | **196** | **383** | **610** | **548** | **658** | **658** | **658** | **658** | **658** | **658** | **5,683** |
| Number of not unemployed | | - | 128 | 261 | 235 | 282 | 282 | 282 | 282 | 282 | 282 | **2,315** |
| **Total Drivers supported** | | **196** | **511** | **871** | **783** | **940** | **940** | **940** | **940** | **940** | **940** | **7,998** |

**Table 4.6: Number of beneficiaries from e-moped hire scheme – Low demand scenario (75% Utilisation)**

| | | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 | Year 7 | Year 8 | Year 9 | Year 10 | Total over 10 years |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Number of emopeds on the road | | 100 | 250 | 350 | 350 | 350 | 350 | 350 | 350 | 350 | 350 | |
| Number of New Drivers | | 160 | 423 | 723 | 653 | 783 | 783 | 783 | 783 | 783 | 783 | 6,656 |
| | | | | | | | | | | | | |
| **Number beneficiaries** | | | | | | | | | | | | |
| % rented to unemployed Clackmannanshire residents | | 100% | 75% | 40% | 40% | 40% | 40% | 40% | 40% | 40% | 40% | |
| % rented to unemployed, non Clacks residents | 0.5 | | | 30% | 30% | 30% | 30% | 30% | 30% | 30% | 30% | |
| % rented to NOT unemployed | | 0% | 25% | 30% | 30% | 30% | 30% | 30% | 30% | 30% | 30% | |
| | | | | | | | | | | | | |
| Number of unemployed Clacks residents supported | | 160 | 317 | 289 | 261 | 313 | 313 | 313 | 313 | 313 | 313 | **2,907** |
| Number of unemployed non Clacks residents supported | | - | - | 217 | 196 | 235 | 235 | 235 | 235 | 235 | 235 | **1,822** |
| **Total number of unemployed supported** | | **160** | **317** | **506** | **457** | **548** | **548** | **548** | **548** | **548** | **548** | **4,729** |
| Number of not unemployed | | - | 106 | 217 | 196 | 235 | 235 | 235 | 235 | 235 | 235 | **1,928** |
| **Total Drivers supported** | | **160** | **423** | **723** | **653** | **783** | **783** | **783** | **783** | **783** | **783** | **6,656** |

Source for both tables: CERT analysis

Key results for 10 years

4.14 For the core demand scenario, with 90% utilisation of vehicles, 3,146 unemployed Clackmannanshire residents will be supported to secure employment over 10 years. While the additional Gross Value Added (GVA) generates a low return on investment of 0.33, this benefit relates only to the direct employment at the project and is recognised as a relatively minor benefit to the project.

4.15 The greatest impact is on the generation of distributional benefits, bringing income to those who are currently unemployed and, in particular, income from employment outwith Clackmannanshire into the county. For every £1 spent on the project, a further £29.37 will be brought back into Clackmannanshire.

**Table 4.7: Economic impact of e-moped hire scheme over 10 years: 90% utilisation**

| Summary Impacts | Total £000s | RoI |
|---|---|---|
| Number Clackmannanshire unemployed supported into employment over 10 years | 3,974 | |
| Cost per job secured and sustained £ | | £ 1,156 |
| Public Sector Cost in Net Present Value | 4,592 | |
| Additional Gross Value Added in Net Present Value | 1,124 | 0.24 |
| Distributional Gross Value Added to Clackmannanshire in Net Present Value | 134,839 | 29.37 |

Source: CERT analysis

4.16 For the low demand scenario with 75% utilisation of vehicles, the scheme will support a fewer number of unemployed residents (2,616) and the return on investment reduces but remains high with £25.45 brought back into Clackmannanshire from every £1 spent on the project.

**Table 4.8: Economic impact of e-moped hire scheme over 10 years: 75% utilisation**

| Summary Impacts | Total £000s | RoI |
|---|---|---|
| Number Clackmannanshire unemployed supported into employment over 10 years | 3,444 | |
| Cost per job secured and sustained £ | | £ 1,292 |
| Public Sector Cost in Net Present Value | 4,450 | |
| Additional Gross Value Added in Net Present Value | 1,124 | 0.25 |
| Distributional Gross Value Added to Clackmannanshire in Net Present Value | 113,248 | 25.45 |

Source: CERT analysis

**Option 3 – Combined e-mopeds hire and e-bike share schemes**

4.17 There are benefits to deliver both the e-moped hire and e-bike share projects. This will provide affordable transport for employment which suits the distance to employment and affordability for unemployed residents. There are also potential benefits in aligning the operation of the two projects. These are included in the qualitative benefit assessment and not included within this analysis.

4.18 The economic appraisal of delivering the combined solution is set out below. The absolute benefits of Option 3 (e-mopeds and e-bikes) are greater with the combination of the two options, supporting 3,974 unemployed residents to secure employment. The return on investment to generate distributional benefits is £29.37 for every £1 invested which is less than for the e-moped hire scheme

only, reflecting bringing together the e-moped hire scheme with the e-bike share scheme which has a lower equivalent Return on Investment.

**Table 4.9: Economic impact of combined e-moped hire and e-bike share scheme over 10 years: 90% utilisation of e-mopeds, 50% uplift in usage of e-bikes**

| Summary Impacts | Total £000s | RoI |
|---|---|---|
| Number Clackmannanshire unemployed supported into employment over 10 years | 4,388 | |
| Cost per job secured and sustained £ | | £ 1,046 |
| Public Sector Cost in Net Present Value | £ 4,592 | |
| Additional Gross Value Added in Net Present Value | £ 1,124 | £ 0.24 |
| Distributional Gross Value Added to Clackmannanshire in Net Present Value | £ 139,626 | £ 30.41 |
| Distributional Gross Value Added in Net Present Value | £ 205,714 | £ 44.80 |

Source: CERT analysis

### Conclusion of Economic Appraisal (non-transport)

4.19 Considering the economic appraisal across options:

- **Option 3 (e-mopeds and e-bikes) generates the greatest absolute benefits** with 4,388 unemployed residents supported into employment and £139m distributional GVA "brought into" Clackmannanshire for the core demand assumptions (i.e. e-bikes 50% increase in usage, and e-mopeds 90% utilisation);
- **The Return on Investment (ROI) is higher with Option 2** (implementing only the e-moped programme); and
- The return on investment of Option 1 (implementing only the e-bike share programme) **is low, but still positive**.

**Table 4.10: Economic impact of options over 10 years**

| | Additional Gross Value Added in Net Present Value £000s | Return on Investment in Gross Value Added £ | Distributional Benefits to Clackmannanshire in Net Present Value £000s | Return on Investment Distributional Income £ | Number of unemployed securing jobs |
|---|---|---|---|---|---|
| **Option 1: ebikes core plus 50% increase in use from 2022 levels** | | | £ 11,608 | £ 10.05 | 1,242 |
| **Option 1b: ebikes low at current usage levels** | £ - | £ - | £ 11,608 | £ 10.05 | 1,242 |
| **Option 2: emopeds: 90% utilisation** | £ 1,124 | £ 0.35 | £ 128,019 | £ 37.24 | 3,146 |
| **Option 2b: emopeds: 75% ultisation** | £ 1,124 | £ 0.33 | £ 106,428 | £ 33.12 | 2,616 |
| **Option 3: ebikes and emopeds: ebikes 50% increase in usage; emopeds 90% utilisation** | £ 1,124 | £ 0.24 | £ 139,626 | £ 30.41 | 4,388 |
| **Option 3b: ebikes and emopeds: ebikes 50% increase in usage; emopeds 75% utilisation** | £ 1,124 | £ 0.26 | £ 118,035 | £ 27.02 | 3,858 |

Source: CERT analysis

## Economic assessment (transport)

### Methodology

4.20 The standard appraisal period defined by Transport Appraisal Guidance (TAG) for transport schemes is 60 years, although this is mostly referred to infrastructure investments in road and rail schemes, with long asset lives and which, therefore, need longer appraisal periods to completely assess the full economic impact of the infrastructure.

4.21 Active travel schemes tend to have more uncertainty around the longevity of their impacts and, therefore, shorter appraisal periods tend to be used. For this case, in line with previous project experience and after discussions with the client, an appraisal period length of 20 years has been defined for all options assessed in terms of transport economic benefits.

4.22 2023 has been defined as the appraisal start year and the opening year of the scheme. Cost and yield assumptions provided for the appraisal are assumed to be in 2023 prices.

4.23 The price base year and discount year used for this appraisal are both 2010, as the default DfT's reference year, as set out as well in TAG guidance. All figures provided as a result of the economic (transport) appraisal of the whole appraisal period are presented in re-based and discounted prices to 2010.

4.24 The re-basing process, to convert prices to real 2010 prices, has been done using GDP Deflator, while the discount rate used is 3.5% (per annum), as defined by TAG. The monetisation of user benefits and externality benefits has been based on TAG data book parameters, with the appraisal of health and absenteeism impacts using the official AMAT model.

4.25 Capital costs and renewals costs in the appraisal have been uplifted with an assumption of a 20% optimism bias, following TAG guidance. Capital costs, renewals, operating costs and revenues have been converted to market prices (19% uplift) for their inclusion in the appraisal, also following appraisal guidance.

### Option 1 - e-bike share

4.26 For the appraisal of the e-bike share option, the following demand assumptions have been used:

- The scheme will have 125 e-bikes; and
- The usage ratio for the appraisal is 0.8 trips/bike/day. This is 50% higher than the 2022 usage ratio of the regional Forth Bike scheme in Clackmannanshire.

4.27 The cost and revenue assumptions used for the appraisal of the e-bike option are the following:

- Capital costs include the cost of purchasing the vehicles, at £2,500 per e-bike, as well as the cost of the docking stations (£5,000 per station), their set-up costs (£3,000 per station) and Project Management costs (£150,000);
- The assumption is that the e-bike fleet will be renewed every 10 years. This means that 10 years after the introduction of the vehicles, the capital costs associated with vehicle purchases will be incurred again and are not included in this appraisal. The docking stations are not assumed to be renewed during the appraisal period;
- Operating costs are assumed to be £750 per bike per year, which covers general operations, staff and maintenance costs. It is assumed that the e-bikes will be charged at the docking stations, when docked; and
- The average yield per ride has been assumed to be £1.59. This is the 2022 average yield of the regional Forth Bike scheme.

4.28 It is assumed that the increased provision of e-bikes (compared to only 20 e-bikes in the Forth Bike scheme) will result in increased demand, this means that new users will be changing mode (or making new trips) as a result of obtaining a personal benefit from doing so. This benefit is generally a reduction of their baseline (Do Minimum) generalised travel cost, which is the combination of travel time (monetised as per TAG guidance) and direct travel costs.

4.29 Given the absence of detailed travel data in the scope area, it is challenging to determine the exact generalised travel cost saving for users switching to e-bike. Therefore, a simple approach using an average saving figure of 5 minutes (its monetised value) as a proxy for the estimation of user benefits, has been followed. Sensitivity tests around the magnitude of user benefits have been undertaken, with the results included in Appendix D.

4.30 The second group of benefits is the health and absenteeism benefits associated with more people using bikes instead of other non-active modes. This is calculated using the AMAT tool from DfT, and it requires an assumption of the proportion of new e-bike users that would otherwise use non-active modes.

4.31 The last element is the externality benefits. These are positive impacts to society as a whole as a result of fewer cars on the road and less distance travelled by car, as a percentage of e-bike users are expected to come from car/taxi. Reduced car use generates (small) externality benefits related to decongestion, infrastructure costs, noise, air quality, accidents and greenhouse gas emissions, and a disbenefit as a result of lower tax revenues due to lower fuel consumption. This will be calculated from an assumption of the proportion of e-bike users that would otherwise travel by car.

4.32 The results of the economic appraisal of the e-bike share scheme are shown in Table 4.11. These are 2010 rebased and discounted prices, as required by TAG guidance.

4.33 These results show that the Benefit Cost Ratio (BCR) of the scheme will be 0.94:1, slightly below 1:1, which means that the present value of benefits is lower than the present value of costs. This is mainly a result of the large gap between revenue and operating costs, which the benefits are not able to close, due to low usage ratios.

4.34 It is important to note that the appraisal is highly sensitive to usage, although 50% higher than current, it is a realistic assumption. A sensitivity test with 2022 usage rate is included in Appendix D.

**Table 4.11: Transport economic appraisal results - E-bike share scheme**

| Element | Core scenario (£, 2010 PV) |
|---|---|
| Time benefits | £270,161 |
| Health and Absenteeism benefits | £385,269 |
| Non-user benefits | £111,082 |
| **PVB** | **£766,511** |
| Capital costs | £453,486 |
| Renewals | £185,647 |
| Operating costs | £779,148 |
| Revenue | (£613,516) |
| Externalities | £11,278 |
| **PVC** | **£816,043** |
| **NPV** | **(£49,532)** |
| **BCR** | **£0.94** |

**Option 2 – e-moped hire**

4.35 For the appraisal of the e-moped hire option, the following demand assumptions have been used:

- Initial fleet of 100 vehicles in Year 1, increased to 250 vehicles in Year 2 and to 350 vehicles from Year 3 onward; and
- An assumption of 90% utilisation of the fleet is made for the core scenario. Two appraisals with Low (75%) and Lower (50%) utilisation assumptions, respectively, have also been undertaken, with their results included in Appendix D.

4.36 The cost and revenue assumptions used for the appraisal of the e-mopeds option are the following:

- Capital costs include the cost of purchasing the vehicles, at £4,500 per e-moped (including VAT), and protective clothing such as helmets and gears, at £115 per vehicle and drivers, as well as other set up costs of the system and transport vehicles (£198,000 in total);
- The assumption is that the e-mopeds fleet will be renewed every 10 years. This means that 10 years after the introduction of the vehicles, the capital costs associated with vehicle purchases will be incurred again (i.e. e-mopeds introduced in Year 1 will be renewed in Year 11, those introduced in Year 2 will be renewed in Year 12, and so on);
- Operating costs include fixed system staff costs, marketing costs, professional fees, evaluation costs, insurance, tax, maintenance (spares) and driver training costs.
  - Staff costs cover up to 5.5 FTE staff, with salaries between £20,000 and £28,000 per year. An allowance for NI and pension payments (13%) and overheads (7.5%) has been considered;
  - Marketing costs include the website set up (£5,200), professional fees are assumed to be £2,500 in the first year and £500 per year during the rest of the appraisal period, and evaluation costs are assumed to be £10,000 per year;
  - Insurance, tax and maintenance costs are assumed to be £900, £20 and £300 per vehicle per year, respectively;
  - Training costs are £195 per driver per year. This cost is expected to be incurred on average 3 times per year for each e-moped (3 different users per e-moped every year);
- Each e-moped is assumed to generate £50 per week in user fares when utilised (£60 per week including VAT).

4.37 It is important to note that the appraisal of the e-moped hire scheme has been undertaken to understand the value for money of the transport proposal, under the set of demand, cost and revenue assumptions described above, as provided by the client.

4.38 The fleet of 350 vehicles (with a gradual start of 100 after the first year and 250 after the second year), the high utilisation of the fleet and the fee of £60 per week are inputs for this appraisal, and are figures derived from other examples of similar schemes in the country and informed by local surveys.

4.39 The objective of this economic appraisal is not to validate these assumptions, but to test the potential benefits of the scheme (and its Benefit Cost Ratio and Value for Money) if those assumptions materialised.

4.40 It is also important to note that the other existing e-moped schemes in the country are in areas that might have different geographies, demographic patterns and socio-economic mixes to those of Clackmannanshire and the surrounding region, which will have a large impact on the potential demand for the scheme.

4.41 The fleet size and the proposed weekly fee are also crucial factors that will determine the utilisation of the fleet and, therefore, its potential in terms of generation of transport benefits and of being a commercially viable scheme. The proposed weekly fee is higher than in some other similar schemes in the country, which, linked to the plan of targeting unemployed people, as the users of the scheme, might make achieving the required utilisation levels to sustain a fleet of 350 vehicles, from local residents, challenging for the operator. This will be alleviated by expanding the geographical scope of the project.

4.42 There is a risk that, for the proposed fleet size and fee, the scheme could have a lower utilisation, which would impact its financial viability and benefit production, as shown in the sensitivity test results in Appendix A. However, given the scalable nature of the scheme (only a small proportion of the total 350 e-mopeds will be purchased initially), the operator would have room for manoeuvre, with the capacity for adjusting the fleet size and fee depending on the demand response. This is considered in more detail in the risk appraisal.

4.43 The e-moped scheme is expected to generate both journey time / generalised cost savings for its users, and externality benefits as a result of reduced car use, in those cases where users would have otherwise travelled by car.

4.44 For simplicity, the assumption is that externality benefits will be claimed for air quality, greenhouse gas emissions, noise and indirect tax, excluding infrastructure and accidents. Congestion externality benefits are considered, but with a factor of 50% (using an e-moped instead of a car does not remove the congestion impact by 100%).

4.45 Externality benefits are calculated using the Marginal External Costs (MEC) approach defined in TAG guidance, from an assumption that a proportion of e-moped users would otherwise travel by car.

4.46 Users of the e-moped hire scheme are expected to have a travel cost benefit from using the scheme (compared to their current transport options). This travel cost is a combination of direct transport costs and the monetary value of journey time savings.

4.47 As the available transport data in the scope area and the absence of a model makes it challenging to determine the average generalised travel cost savings for the new e-moped users, a high-level figure has been used as a proxy, to illustrate this.

4.48 As for the appraisal of e-bikes, a 5-minute journey time saving has been used as this proxy. It is also reasonable to assume that, given the longer range and higher speed of the e-moped, it would be competitive with bus and car alternatives, hence competing for longer trips and therefore resulting in higher average time savings. A proxy figure of 7.5 minutes average time saving per trip (50% higher) has been used as the proxy to estimate user benefits for the scheme.

4.49 Sensitivity tests around the magnitude of user benefits have been undertaken, with the results included in Appendix D.

4.50 The results of the economic (transport) appraisal of the e-moped hire scheme are shown in Table 4.12. These are 2010 re-based and discounted prices, as required by TAG guidance.

4.51 These results show that, with a fleet of 350 e-mopeds from Year 3, a 90% utilisation and a weekly fee of £50 per vehicle (excluding VAT), the Benefit Cost Ratio (BCR) of the scheme would be about 2.13:1, 'High' Value for Money (BCR > 2:1).

4.52 With the assumed costs, demand and revenue, the scheme would have an operating surplus of around £700,000, as shown in the table below.

**Table 4.12: Transport economic appraisal results - E-moped hire scheme**

| Element | Central scenario (£, 2010 PV) |
|---|---|
| Time benefits | £2,477,413 |
| Health and Absenteeism benefits | - |
| Non-user benefits | £673,540 |
| **PVB** | **£3,150,954** |
| Capital costs | £1,203,567 |
| Renewals | £945,696 |
| Operating costs | £5,584,604 |
| Revenue | (£6,345,405) |
| Externalities | £87,517 |
| **PVC** | **£1,475,979** |
| **NPV** | **£1,674,975** |
| **BCR** | **£2.13** |

### Option 3 – Combined e-moped hire and e-bike share

4.53 The combined option includes the e-moped hire and e-bike share options as described above. The results of the economic appraisal are shown in Table 4.13. These are 2010 rebased and discounted prices, as required by TAG guidance.

4.54 The appraisal outputs reported here are for a combination of the core demand scenarios for the e-bikes (Option 1) and the e-mopeds scheme (Option 2). The 'Core' scenario for e-mopeds assumes a 90% utilisation of the fleet, while the 'Core' scenario for e-bikes assumes a 50% higher trip rate compared to 2022 usage.

4.55 This combined scenario would have a BCR of 1.71:1. This means that a combined scheme would generate a 'Medium' Value for Money (>1.5:1 ratio), based on the assumptions listed above.

**Table 4.13: Transport economic appraisal results – Combined option scheme**

| Element | Core e-mopeds and e-bike scenario (£, 2010 PV) |
|---|---|
| Time benefits | £2,747,574 |
| Health and Absenteeism benefits | £385,269 |
| Non-user benefits | £784,622 |
| **PVB** | **£3,917,465** |
| Capital costs | £1,657,053 |
| Renewals | £1,131,343 |
| Operating costs | £6,363,753 |
| Revenue | (£6,958,922) |
| Externalities | £98,795 |
| **PVC** | £2,292,022 |
| **NPV** | £1,625,443 |
| **BCR** | **£1.71** |

## Qualitative (non-economic) benefits assessment

### Methodology

4.56 There are several other material benefits which cannot be economically quantified and so cannot be reflected in the economic appraisal. In order to assess these benefits, a separate exercise was carried out. The benefits were identified, then given a weight to reflect their relative importance. Each option was then scored to show how well it would deliver each benefit.

4.57 This exercise was structured by CERT and advisors, then discussed, amended and finally endorsed by the Steering Group.

4.58 The benefits are summarised in the table below, along with their assigned weights, and a relative scoring for each option.

4.59 The “weighted score” for each option is derived by multiplying each score by the weight assigned to that benefit; then summing the products. The weighted score is therefore a summary of the overall relative performance of the options against the qualitative benefits.

**Figure 4.1: Qualitative assessment of options**

## Qualitative benefits - Scoring of options

| | | | Options | | |
|---|---|---|---|---|---|
| | **Benefits** | **Weight** | **E-bike share expansion** | **e-moped hire** | **Combined e-bikes and e-mopeds** |
| *1* | *Potential to meet flexible needs of the unemployed people (e.g., costs, distance, location etc.)* | *2* | 2 | 3 | 3 |
| *2* | *Improve the delivery of private and public services* | *1* | 1 | 2 | 2 |
| *3* | *Improve access to private and public services* | *1* | 2 | 1 | 2 |
| *4* | *Provide accessible transport option to other residents and visitors* | *1* | 2 | 2 | 2 |
| *5* | *Increase use of expanding cycle network in the area* | *1* | 3 | 0 | 3 |
| *6* | *Complement public transport in the area* | *1* | 2 | 1 | 2 |
| *7* | *Broaden the range of employment and career opportunities* | *1* | 2 | 3 | 3 |
| *8* | *Support employment for 'hard to fill' jobs and reduce job vacancy in the region* | *1* | 1 | 3 | 3 |
| *9* | *Improve attractiveness of the local area* | *1* | 2 | 2 | 2 |
| *10* | *Improve standard of living of residents* | *1* | 2 | 2 | 2 |
| | ***Weighted score (out of):*** | ***33*** | **21** | **22** | **27** |
| | | | | | |
| | *Scoring Approach:* | *3* | *High* | | |
| | | *2* | *Medium* | | |
| | | *1* | *Low* | | |
| | | *0* | *Not Applicable* | | |

Source: Steer and CERT



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### Conclusion of the Qualitative Benefit Appraisal

4.60 The table above shows that:

- **Options 1 and 2 have very similar scores**, reflecting their complementary strengths and weaknesses; and
- **Option 3 (combined e-mopeds hire and e-bikes share) has the highest score**, because it delivers all the benefits of its two component elements.

4.61 All options fail to generate benefits to support those with disabilities or additional support needs to facilitate travel.

## Risk assessment

### Methodology

4.62 The risks associated with each option were also explored and scored in relative terms, using a similar methodology to that used for qualitative benefits. In this case the "weighting" reflects the potential impact of that risk on the success of the project; and the "scores" reflect the likelihood of the risk arising under each option. The results are multiplied and added together (as for qualitative benefit weights and scores) to produce an overall "weighted risk score" for each option. These are presented in the figure below.

**Figure 4.2: Assessment of risks**

| Risks - Scoring of options | | | | | | |
|---|---|---|---|---|---|---|
| | | | | Options | | |
| | Risks | Type of risk | Weight | E-bike share expansion | e-moped hire | Combined e-bikes and e-mopeds |
| *1* | *Insuffient capital funding for scheme set up* | *Financial* | *1* | 1 | 1 | 1 |
| *2* | *Insuffient scheme usage impacting financial sustainability of the scheme/s* | *Financial* | *2* | 2 | 1 | 1.5 |
| *3* | *The operating structure does not work* | *Commercial* | *2* | 2 | 1 | 1.5 |
| *4* | *Safe use of the vehicles* | *Reputational* | *1* | 2 | 3 | 2.5 |
| | ***Weighted score (out of):*** | | ***18*** | **11** | **8** | **9.5** |
| | | | | | | |
| | *Scoring Approach:* | | *3* | *High* | | |
| | | | *2* | *Medium* | | |
| | | | *1* | *Low* | | |
| | | | *0* | *Not Applicable* | | |

Source: Steer, CERT

### Conclusion of Risk Assessment

4.63 The table above shows that:

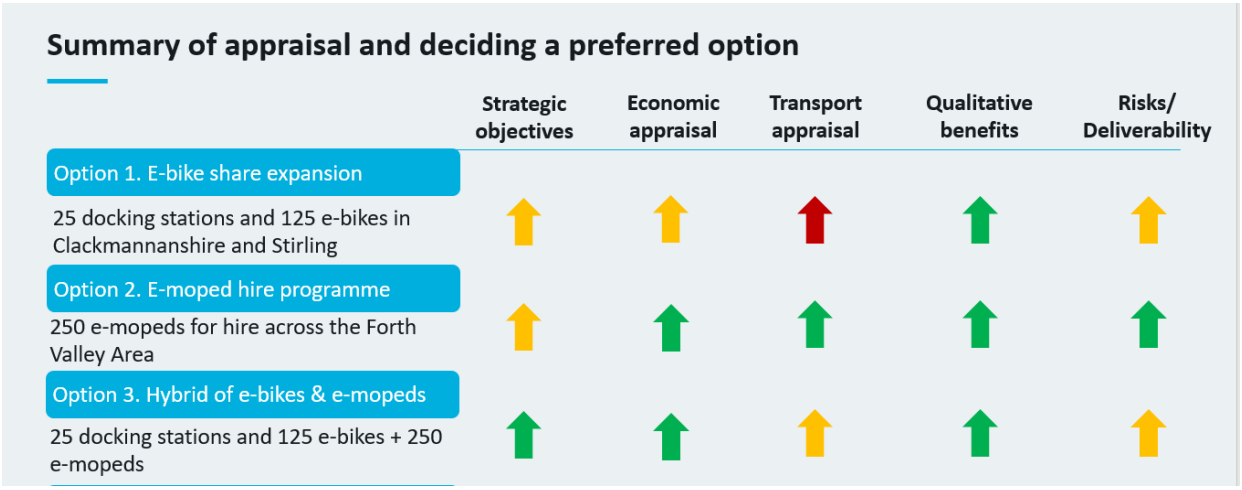
- Option 1 (e-bikes only) has the highest risk because of its less resilient financial sustainability and operational structure;
- Option 2 (e-mopeds only) has the lowest risk (its only high-risk area is that relating to safety concerns); and
- Option 3 (both elements combined) is mid-range in terms of risk.

## Selection of preferred option

4.64 The economic appraisal summary, along with the qualitive and risk assessment for each of the three options were presented to the Project Steering Group and were discussed in detail through the workshop.

4.65 The Steering Group recognised that the three shortlisted options had different strengths and weaknesses, depending on the appraisal considered. This is illustrated in the figure below. The first column ("Strategic objectives") reflects the early assessment carried out at shortlisting stage and described in Section 3.9 above.

**Figure 4.3: Summary of appraisal**




Source: Steer and CERT

4.66 **Option 2** (the e-moped hire) performs strongest on the **four formal assessments**. The combined option (Option 3) is nearly as good but is slightly marked down on deliverability and on transport impact because the e-bike element has more challenges.

4.67 Nevertheless, in terms of addressing the **strategic objectives**, it is **Option 3** (the combined scheme) which comes out strongest. This is because the two elements are complementary, each addressing a slightly different set of needs (e-bikes are very affordable for users and support short journeys; e-mopeds are more costly but have a greater range to access the majority of employment opportunities).

4.68 On this basis, Steering Group's judgement is that the preferred option should be **Option 3: Combined e-mopeds and e-bikes options.** A summary of the option is presented in the table below.

**Table 4.14: Summary of the preferred option**

| Particulars | E-moped hire scheme | E-bike share scheme |
|---|---|---|
| **Description** | The e-mopeds are rented out to potential users for up to 6 months, at a fixed weekly charge. | The e-bikes are available to rent from designated docking stations on a pay-per trip or subscription basis. |
| **Scope and size** | 350 e-mopeds across Forth Valley. | 125 e-bikes and 25 docking stations across Clackmannanshire and Stirling |



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| Particulars | E-moped hire scheme | E-bike share scheme |
|---|---|---|
| **User fees** | £60 (including VAT) per week. | 8 pence per min, or £12 monthly pass, and £78 annual pass (based on the Forth Bike scheme). |
| **Operating model** | Owned by a charity, operated by a fully owned subsidiary. | Owned by a public sector/charity lead organisation, operated by a third-party operator procured through a tendering process. |
| **Capital costs (funding required)** | £2.56 million | £918k |
| **Annual revenue support** | N/A | Up to £55k (as user revenue will not be sufficient to cover all operating costs) |

Source: Steer, CERT

4.69 The risks of the preferred option are acknowledged, and work has been done to consider them and develop mitigation strategies. These are summarised below.

**E-bike share – risks and mitigation measures**

*Risk 1. Capital costs overrun*

4.70 A conservative assumption has been made for the set-up costs of the e-bike share scheme, this is primarily based on the Forth Bike scheme. The bike share market is evolving rapidly, and more efficient and cheaper options are being developed by the industry. A contingency allowance of 20% has also been added to account for any uncertainty in costs. A thorough engagement with the market can be conducted to verify the cost assumptions prior to tendering to ensure that costs can be covered within the assumed budget.

*Risk 2. Insufficient scheme usage leading to insufficient revenue and lower benefits*

4.71 There is a potential that the scheme will not meet the expected level of demand, therefore, leading to higher revenue support/subsidy requirements impacting the financial viability of the scheme. However, based on the analysis of the 2022 Forth Bike scheme data which shows that Clackmannanshire bikes are more utilised compared to other bikes in the regional scheme (0.53 trips/bike/day compared to 0.4 trips/bike/day for the region), along with the survey findings from the potential users which shows 50% respondents are likely to use the service, it can be assumed that there will be sufficient usage to meet the expected level of demand.

4.72 Furthermore, the expanding cycle infrastructure in Clackmannanshire will support higher usage of the scheme, reducing the road safety concerns of potential users.

*Risk 3. Inability to secure funding for ongoing revenue support needed*

4.73 Several sources will be explored to fund the revenue gap for the scheme, prior to procuring it. Given the low levels of subsidy requirements (up to £55,000) this can be sourced from a combination of different sources including private sector sponsorship.

4.74 Also, there are economies of scale of having a single operator in the region (managing multi-council area schemes) in terms of lowered operating costs. The option of joint delivery of the scheme with the adjoining local authorities, e.g. Stirling and Falkirk will be explored further in the next stage of the SBC.

*Risk 4. Deliverability of the scheme*

4.75 Deliverability and the associated risks related to operation, revenue and long term sustainability of the scheme are minimised in this option by leveraging the expertise of an external operator while also delivering on scheme policy objectives through high levels of the lead organisation's control.

4.76 While there are risks to the lead organisation to secure funds to cover the operation of the scheme (largely through inability to identify funds to meet any revenue gaps) and/or the failure of the operating contractor (the bike share operator), the risks are minimised by the lead organisaton owning the assets (e.g. e-bikes) and being able to continue to own them until alternative funding can be sourced. The exposure to trade creditors is minimal and will be controlled through the contract with an operator.

*Risk 5. Insufficient market interest in operating the scheme*

4.77 It is possible that operators of bike share schemes in the UK will not be interested in operating the scheme due to its smaller size. A pre-tender market engagement will be conducted to evaluate the interests of potential operators, particularly with the operator who will win the Stirling tender as the operator can achieve economies of scale by operating two adjoining schemes. An engagement with Falkirk council will also be undertaken to understand the potential for joint delivery of a larger regional scheme.

**E-mopeds hire – risks and mitigation measures**

*Risk 1. Capital Cost Over-run*

4.1 This project is small compared to most transport projects, however, as with all capital projects careful management of capital costs is essential. The capital costs include a 20% contingency. Costs of the main capital cost item – e-mopeds – at the current market rate per item, and it is expected that a substantial bulk discount can be secured from the purchase of 350 e-mopeds.

4.2 This risk has been mitigated by the highly conservative approach to costing. In addition, the design of the project where the e-moped fleet will grow in response to the growth of demand from unemployed beneficiaries means that the capital costs will be easily managed and will not over-run (rather e-mopeds will stop being purchased when the funds are spent).

*Risk 2. Poor Financial Sustainability*

4.3 The level of demand for the scheme may be lower than envisaged causing commercial and financial challenges. The key determinant on financial viability is the level of rental from e-mopeds received. An appraisal with only a 75% utilisation of the e-mopeds (as opposed to 90% used in this SBC appraisal which is comparable to other Wheels to Work projects), shows a continued financial viability. This lower utilisation rate may occur due to the proposed pricing of £50 plus VAT per week.

4.4 This is mitigated by a thorough financial appraisal which has demonstrated that with a lower 75% utilisation the scheme remains viable. If the unexpected event of demand being lower, the separation of the charity who owns the assets and the trading company ensures that the assets are retained for the public good and can be used by an alternative commercial vehicle.

4.5 A detailed financial appraisal has been undertaken for the operations of the e-moped business. This has drawn on information gathered from the existing operators of Wheels to

Work projects in England. Conservative budgets of the costs of insurance (£900 per bike pa) and staffing costs have been made and are comparable to the operations elsewhere.

*Risk 3. Complete Commercial Failure of Operations*

4.6 Although not expected, for whatever reason the e-moped operating business may commercially fail. The management structure of the project where the assets, principally the e-mopeds, are owned by a charity means that in this event the e-mopeds will be retained with the ability to continue the project with a different operating company. This will retain all the assets for the wellbeing of residents of Clackmannanshire.

*Risk 4. Procurement of e-mopeds could be delayed with global shortages of products.*

This will be mitigated by the use of a phased purchase approach and using multiple suppliers.

*Risk 5. Lack of operational expertise*

4.7 The staff of the trading subsidiary, operating the e-moped scheme, will need appropriate skills and experience. This will be mitigated by ensuring the board of the trading subsidiary has appropriately skilled members to oversee and support the staff. In the worst-case scenario, this board would be able to replace staff.

# 5 Financial Case

## Overview

5.1 The FINANCIAL CASE assesses whether the proposed investment for the preferred option is affordable and will deliver an adequate financial standing.

5.2 The preferred option is Option 3: Combined e-mopeds hire and e-bike share schemes. In this option, the greatest benefit will be achieved if both elements can proceed in parallel, because they have complementary strengths. However, they are not dependent upon each other, and it would be feasible for one to move ahead in advance of the other if this is necessary.

5.3 For this reason, the financial standing of the e-moped hire and the e-bike share schemes are analysed and presented separately below.

## E-bike share

### Capital costs

*Set up costs – Year 1*

5.4 The proposed capital costs for the scheme with 125 e-bikes and 25 docking stations will require capital funding of £918,000 at 2023 prices. A breakdown of the capital costs is presented in the table below. No subsequent expansion of the scheme is considered.

**Table 5.1: E-bike share scheme capital costs**

| Capital cost | £, at current prices including VAT |
|---|---|
| Purchase of e-bikes | £375,000 |
| Docking Stations | £150,000 |
| Set-up costs | £90,000 |
| Project management | £150,000 |
| Contingencies (20%) | £123,000 |
| **Total capital costs** | **£918,000** |

*Renewal costs – Year 10*

5.5 The fleet will be renewed after 10 years, in line with the industry estimates of an e-bike lifecycle. This will require an additional capital funding of £375,000 at the end of Year 10. The cost of this has not been included in this appraisal.

5.6 The other elements of capital costs such as the docking stations, back-end software (included in set-up costs) do not require renewals. A Project Manager and other staff would be recruited with appropriate skills to ensure the delivery of the project.

**Affordability analysis**

5.7 As indicated in the Economic case, the scheme will require annual revenue support between £35,715 and £55,060 at 2023 prices depending on the level of usage for the scheme. The scheme is assumed to achieve same level of demand across all the years of operation with the same number of e-bikes and docking stations, the revenue shortfall is assumed to remain the same across all years.

5.8 This implies that over 10 years, the scheme will require revenue support in the range between £360,000 to £550,000 at 2023 prices to be financially feasible/deliverable.

**Table 5.2: E-bike share affordability analysis for 10 years**

**Core scenario - 50% higher usage than current**

| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 | Year 7 | Year 8 | Year 9 | Year 10 | 10 Year Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Total number of trips | 36,272 | 36,272 | 36,272 | 36,272 | 36,272 | 36,272 | 36,272 | 36,272 | 36,272 | 36,272 | 362,719 |
| Income - user revenue | £ 58,035 | 58,035 | 58,035 | 58,035 | 58,035 | 58,035 | 58,035 | 58,035 | 58,035 | 58,035 | 580,350 |
| Operating costs | £ 93,750 | 93,750 | 93,750 | 93,750 | 93,750 | 93,750 | 93,750 | 93,750 | 93,750 | 93,750 | 937,500 |
| **Revenue shortfall/Subsidy required** | **£ 35,715** | **£ 35,715** | **£ 35,715** | **£ 35,715** | **£ 35,715** | **£ 35,715** | **£ 35,715** | **£ 35,715** | **£ 35,715** | **£ 35,715** | **357,150** |

**Low scenario - same usage as current regional scheme**

| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 | Year 7 | Year 8 | Year 9 | Year 10 | 10 Year Totals |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Total number of trips | 24,181 | 24,181 | 24,181 | 24,181 | 24,181 | 24,181 | 24,181 | 24,181 | 24,181 | 24,181 | 241,813 |
| Income - user revenue | £ 38,690 | 38,690 | 38,690 | 38,690 | 38,690 | 38,690 | 38,690 | 38,690 | 38,690 | 38,690 | 386,900 |
| Operating costs | £ 93,750 | 93,750 | 93,750 | 93,750 | 93,750 | 93,750 | 93,750 | 93,750 | 93,750 | 93,750 | 937,500 |
| **Revenue shortfall/Subsidy required** | **£ 55,060** | **£ 55,060** | **£ 55,060** | **£ 55,060** | **£ 55,060** | **£ 55,060** | **£ 55,060** | **£ 55,060** | **£ 55,060** | **£ 55,060** | **550,600** |

Source: Steer

### Funding gaps and potential funding sources

5.9 This is not a significant amount for a transport scheme and, given the push towards increase in use of active travel modes across the country and in Scotland in particular, this revenue shortfall can be funded using different funding sources.

5.10 The untimely closure of the regional scheme in the Forth Valley (Forth Bike, as of April 2023) along with the other schemes in Scotland such as in Edinburgh and Dundee highlights the need for Transport Scotland to allocate funding for similar schemes.

5.11 The potential funding sources include SEStran, Transport Scotland/Energy Savings Trust, Sustrans, Cycling UK, Clackmannanshire council and private sponsorship. The same sources will be explored to fund the renewal costs in Year 10.

## E-moped hire

### Capital Costs

5.12 To establish the e-moped hire project start up funding of £2.577m is required (made up of £2.562m capital costs and £15k working capital loan). The funding would be used over a period of three years, largely in response to the growing demand for the e-mopeds, until the fleet includes 350 vehicles. This includes purchase of protective clothing for the first beneficiaries.

**Table 5.3: E-moped hire scheme start-up costs**

| Cost Item | £ |
|---|---|
| Emoped Purchase | 1,575,000 |
| Protective clothing | 362,250 |
| Premises | 100,000 |
| Project Manager to set up | 72,000 |
| Computers for Staff | 6,000 |
| Vehicle to transport bikes | 20,000 |
| Contingency in Capital costs | 427,050 |
| **Total Capital** | **2,562,300** |
| Start Up working capital | 15,000 |
| **Total Funding Requirement** | **2,577,300** |

Source: CERT

5.13 Funding will also be required to cover the cost of premises, principally to store the e-mopeds when they are not being hired out and for maintenance of the fleet; one or more vehicles to transfer e-mopeds to various locations; and a project manager with appropriate skills will be employed for 24 months to establish the project.

5.14 A conservative 20% capital contingency has been applied. The largest cost is the e-mopeds, which has been drawn from costs sourced from Tees Valley e-mopeds of £4,500 including VAT. It is anticipated that in establishing a scheme as large as this, it will be possible to secure bulk discounts on this price.

5.15 A small working capital budget of £15,000 is required for the first 18 months of operation.

**Ongoing financial appraisal**

5.16 The e-moped hire scheme is forecasted to be financially sustainable after 18 months of operation and immediately with a £15k working capital grant. The table below sets out high level forecasts and Appendix E sets out the assumptions in more detail. Key assumptions are:

- A small team is formed to operate the project comprising a Project Manager and a part time administrator; which will gradually grow to include three other full time members of staff on maintenance and operations (5.5 FTE);
- Overhead of 7.5% of staffing costs is applied;
- Premises and other equipment purchased under the capital budget;
- Insurance per moped of £900 pa; and
- Parts for Maintenance per e-moped £300 pa.

5.17 The life of a well maintained, high quality e-moped as the ones included in this project is 10 years. The project, as shown below, will make sufficient income to allow a replacement of 30 new mopeds per annum from year 5 sufficient to refresh the fleet.

5.18 An important cost is for beneficiaries to have completed their Compulsory Basic Training (CBT) and have a provisional driving licence. This is estimated at £195 pp. While it is anticipated that some of the beneficiaries will already have these, to be conservative, it is assumed that no beneficiaries have this training. As with other Wheels to Work projects, it is assumed that, where necessary, the funding to meet these training costs will be sourced from other public sources such as DWP discretionary funds or employability programmes.

5.19 From year 3, the operations will generate a net income of c£120k pa. This will be used to reinvest in the project through funding expansion of e-mopeds (if there is the demand), renewal of e-mopeds when required and contributing to the costs of CBT costs and perhaps funding first months' rental for clients and other associated costs. This level of net income would allow c30 new e-mopeds to be purchased pa ensuring a fully renewed fleet. The project will not distribute its profits.

5.20 The financial appraisal is undertaken for the whole project; however, the assets will be held in a charity with the operational costs and income within a wholly owned trading subsidiary (see Management case).

**Funding gap and sources**

5.21 The e-moped project requires a total of £2.577m start-up funding to be established. After that time, it will be financially sustainable. This is made up of £15k working capital and the remaining £2.562m in capital funding.

5.22 In the first instance Levelling Up funding will be sought to meet the capital costs of establishing the project. There is no other source of funding for these capital costs known at this time. If the project is not successful in securing Levelling Up funding, discussions will be held with other partners and stakeholders to explore the potential for alternative funding.

5.23 A small working capital grant of £15,000 is required to support the first 18 months of operation while the number of e-moped rentals will be increased. This will be minimised as far as possible through staggering recruitment and other costs to align with the generation of income. There are a range of sources of this relatively small amount required and these will be pursued once the capital funding is confirmed. As a fallback, the charity will guarantee a working capital loan to meet these costs if no other grant can be secured.

5.24 Separately, it is estimated that there will be support for individual beneficiaries to secure the CBT training required. These will be secured from DWP and employability programmes which are

ongoing in Clackmannanshire and other grant sources. The project is not dependent on securing the grants for all beneficiaries, but it will be advantageous and will assist with maximising the number of beneficiaries and the benefits of the project.

**Table 5.4: E-moped hire: 10 year financial forecasts**

| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 | Year 7 | Year 8 | Year 9 | Year 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | |
| **Total Income** | **122,812** | **335,094** | **622,080** | **696,730** | **696,730** | **696,730** | **696,730** | **696,730** | **696,730** | **696,730** |
| | | | | | | | | | | |
| **COSTS** | | | | | | | | | | |
| Capital | 786,600 | 1,111,500 | 664,200 | | | | | | | |
| Vehicle Operation eg insurance, tax, maintenance | 51,973 | 140,750 | 314,375 | 386,500 | 395,500 | 395,500 | 395,500 | 395,500 | 395,500 | 395,500 |
| Driver costs licences | 38,171 | 99,596 | 169,796 | 183,602 | 183,222 | 183,222 | 183,222 | 183,222 | 183,222 | 183,222 |
| Staffing and central operations | 78,438 | 113,098 | 146,890 | 177,751 | 182,769 | 182,769 | 182,769 | 182,769 | 182,769 | 182,769 |
| | | | | | | | | | | |
| **Total Costs** | **955,181** | **1,464,944** | **1,295,262** | **747,853** | **761,491** | **761,491** | **761,491** | **761,491** | **761,491** | **761,491** |
| | | | | | | | | | | |
| **Net Income** | -832,369 | -1,129,850 | -673,182 | -51,124 | -64,761 | -64,761 | -64,761 | -64,761 | -64,761 | -64,761 |
| | | | | | | | | | | |
| **Cumulative Income** | -832,369 | -1,962,219 | -2,635,401 | -2,686,525 | -2,751,286 | -2,816,047 | -2,880,808 | -2,945,569 | -3,010,330 | -3,075,091 |
| | | | | | | | | | | |
| **Funded by** | | | | | | | | | | |
| Capital Funding | 786,600 | 1,111,500 | 664,200 | | | | | | | |
| Funding for CBT Licences | 38,171 | 99,596 | 169,796 | 183,602 | 183,222 | 183,222 | 183,222 | 183,222 | 183,222 | 183,222 |
| Working Capital Loan/Grant | 15,000 | | | | | | | | | |
| **Total Project Funding** | **839,771** | **1,211,096** | **833,996** | **183,602** | **183,222** | **183,222** | **183,222** | **183,222** | **183,222** | **183,222** |
| | | | | | | | | | | |
| **Funding gap in year** | 7,402 | 81,246 | 160,815 | 132,478 | 118,461 | 118,461 | 118,461 | 118,461 | 118,461 | 118,461 |
| **Funding Gap cumulative** | **4,804** | **79,012** | **224,108** | **337,262** | **435,947** | **554,408** | **672,869** | **791,330** | **909,791** | **1,028,252** |

Source: CERT analysis

## Potential funding options

5.25 Some of the potential funding options for the combined e-mopeds hire and the e-bike share schemes are presented in the table below.

**Table 5.5: Potential funding options**

| Fund | Description | Notes |
|---|---|---|
| Stirling-Clackmannanshire City Region Deal | The councils have worked together to achieve an investment of £90.2 million for the region from both Scottish and UK Governments, announced in May 2018. | The funding is being used to develop active travel network, which is complementary to the e-bike share scheme.<br>This funding can be used for the e-bike share scheme support. |
| Smarter Choices, Smarter Places (Paths for All)[25] | Smarter Choices, Smarter Places programme supports Scottish local authorities to encourage more journeys by foot, bike and public transport. | Funds, supported by Transport Scotland, are allocated on a population basis to local authorities, to enable projects to be implemented from April 2021. This Strategic Business Case has been developed with this support. Some of this funding can be used for project management of both the schemes. |
| The eBike Grant Fund[26] | The funding is available to assist local authorities, public sector agencies, further and higher education institutions, active travel hubs and community groups to adopt e-bikes as a sustainable alternative to car journeys.<br>The fund can be used to cover the cost of e-bikes, e-trikes, e-cargo bikes, cargo bikes and trailers, tandems, adapted cycles, and trikes. | The funding can be used to support partially funding the renewal of the e- bikes if the grant is still available when required. |
| The Cycling Friendly Community fund[27] | Funding of up to £20,000 for bikes or facilities that make cycling more accessible. | Community groups in Scotland who are looking to increase opportunities for people to cycle can apply. This can be applied for to fund the revenue gap for e-bike scheme. |
| The Cycle Fund[28] | The Cycle Fund supports the programme set out by the Scottish Government to increase cycling and active travel. It offers organisations the opportunity to deliver enhanced cycling infrastructure and encourage as many people as possible to integrate cycling into their everyday journeys. | The Cycle Fund will provide up to 50% of project costs. It can be used to support projects which will, for example, upgrade connections between stations and other local services such as schools and town centres.<br>The funding can be used to support funding partially the renewal of the e- bikes if the grant is still available. |
| Regional Transport Partnerships support (Sustrans) | To support delivery of active travel infrastructure. | Regional Transport Partnerships can apply. This funding source is being used by Clackmannanshire council to expand the cycle network, there is a potential to use some of this funding to fund the revenue gap for e-bike scheme. |

[25] Smarter Choices, Smarter Places Local Authority Fund | Paths for All
[26] eBike Grant Fund available in Scotland - Energy Saving Trust
[27] https://www.cycling.scot/what-we-do/cycling-friendly/community
[28] Cycle fund | ScotRail

| Fund | Description | Notes |
|---|---|---|
| National Lottery[29] | Larger amounts of funding (£10,000) could be used to subsidize the scheme for marginalized groups. | This funding can be sought for development of both the schemes – operational support. |
| Regeneration Capital Grant Fund (RCGF)[30] | The Regeneration Capital Grant Fund, delivered in partnership with COSLA and local government, supports locally developed place-based regeneration projects that involve local communities, helping to tackle inequalities and deliver inclusive growth in deprived, disadvantaged and fragile remote communities across Scotland. | Applications to the fund are invited on an annual basis and, where justified, can potentially cover more than one financial year (subject to available budget).<br>This funding can be sought for both set up and renewal costs of both schemes. |
| Rural Tourism Infrastructure Fund (RTIF)[31] | The Rural Tourism Infrastructure Fund was established by the Scottish Government and the Fund is managed by VisitScotland on their behalf. To date, £9 million of grant funding has been awarded to 45 projects across rural Scotland, since the start of the Fund in 2018. | RTIF is designed to support collaborative projects that focus on improving the visitor experience in rural parts of Scotland that are facing immediate and damaging pressures on their infrastructure, or negative impacts on communities due to significant increases in visitor numbers. |

5.26 Funding opportunities evolve over time and may have certain rules and restrictions imposed on them including:

- Restrictions on what elements the funding may be used for;
- Capping of amounts allocated to professional fees such as project management;
- Requirements to have reached a particular design stage before bids can be made; and
- Deadlines imposed for when the funding must be expended.

[29] https://www.tnlcommunityfund.org.uk/funding/programmes/national-lottery-awards-for-all-scotland#section-1
[30] Regeneration: Capital investment for regeneration - gov.scot (www.gov.scot)
[31] Rural Development Fund - Funding | VisitScotland.org

# 6 Commercial Case

## Overview

6.1 The COMMERCIAL CASE tests the likely attractiveness of the proposal to developers and whether it is likely that a commercially beneficial deal can be struck.

6.2 The preferred option is Option 3: Combined e-mopeds hire and e-bike share schemes. In this option, the greatest benefit will be achieved if both elements can proceed in parallel, because they have complementary strengths and there may be synergies in operation. However, they are not dependent upon each other and could move on different timeframes.

6.3 The two elements (the e-bike share scheme and the e-moped hire scheme) can be legally and operationally managed separately or as an integrated model. For the purpose of this strategic business case, the commercial model is set out separately for each. There is then a section highlighting where the models can be valuably integrated.

## E-bike share

**Commercial model**

6.4 The existing e-bike share scheme in the region – Forth Bikes – has recently closed. As a result, for the commercial model it was assumed that an e-bike share scheme will replace the existing scheme including all docking stations and e-bikes and secure a new operator and commercial structure.

6.5 The operating model for an e-bike share scheme depends on the ownership and level of control by the public sector/charity (scheme promoter/owner) or the private operator. The key variables when considering operating models include:

- Who owns the assets (bikes, hubs, redistribution vehicles, etc.);
- Who sets the tariff;
- Who operates the service;
- Who is liable for revenue risk? (e.g. who covers a financial deficit if scheme revenue does not cover operational costs); and
- If the case of revenue surplus who receives this?

6.6 This scheme would be owned by a lead organisation (this is to be identified but would be either a local authority or a charity) and externally managed via a concession contract. The project would be structured so that:

- E-bikes and docking stations are owned by the lead organisation;
- Back-end software licenced from an external operator (managed by operator) by the lead organisation;
- Operating contract given through open tendering to a single operator (or a consortium of operators managed by a single entity);

- Lead organisation has control over scheme characteristics, which may include scheme area, pricing and tariffs;
- Branding, marketing and outreach activities jointly managed by the lead organisation and operators;
- Funding to meet any ongoing deficit would be received by the lead organisation; and
- All revenue risks lie with the lead organisation, operator might have a profit share.

6.7 The lead organisation would receive all funding for the establishment and operation of the scheme and would be responsible for:

- Procurement of the operator(s) who will supply the e-bikes and docking stations, install the docking stations and operate the bike share scheme);
- Supporting the operator with installation of the docking stations and acquisition of the Traffic Regulation Orders (TROs);
- Supporting with the marketing and outreach activities; and
- Monitoring and evaluation of the scheme.

6.8 As with the existing scheme, landowners would allow the location of docking stations on their land free of charge or through a nominal lease fee.

6.9 The funding to meet any revenue deficit would be received by the lead organisation and used to fund operational funding gaps of managing scheme and maintenance.

6.10 The lead organisation will be identified through:

- An appraisal of existing public and third sector organisations willing and able to take on the scheme; and
- Consideration of organisations throughout the operating area.

6.11 There are advantages to the lead organisation being a charity which would have access to a wider range of public and charitable funding sources, particularly for the expected ongoing revenue funding gap.

**Procurement**

6.12 A tendering process will be undertaken to procure an e-bike share operator.

6.13 The level of detail provided in specifications is key to its success, the balance between providing a good technical specification as part of the procurement documents and limiting creativity needs to be considered, so that it does not prevent the spirit of innovation and collaboration.

6.14 It is recommended for a procurement specification to include the following:

- Objectives and definition of local requirements for each lot and strategic fit with the Council's overarching objectives.
- Confirmation of required services and facilities; and
- Required design and technical specifications.

6.15 It will be important to develop a specification which is a balance between meeting the objectives of the scheme and one which is sufficiently attractive to promote competition in the market. A procurement which is too constrained, or unattractive commercially may result in few or no bidders.

6.16 The procurement of the e-bike share operator/s will include the elements presented in the table below. The contract awarded will be time limited and will not include the transfer of assets or exclusive rights. These will be on a fixed price basis.

6.17 There are established e-bikes share providers in the UK market and it is not anticipated that there will be any problems in procurement.

**Table 6.1: Procurement elements**

| Procurement element | Description |
|---|---|
| Purchase of the e-bikes and docking station | A range of appropriate criteria including appropriateness for users, cost of maintenance, ease of operation and value for money will be used. |
| Installation of Docking Stations | This will include general professional fees, provision of connections with utilities and wider site preparation works |
| Operations | The operator will be responsible for the operation of the app, managing membership, gathering finances and managing the e-bikes and their location. The criteria will include level of subsidy, ease of operation, quality of user experience, financial terms, fit to the needs of users |
| Maintenance of the System | The maintenance of the e-bikes and ensuring that they remain on the road and there is sufficient coverage and availability. The criteria for tendering would include experience and capability in maintenance, ability to transport the vehicles at short notice. |

## E-mopeds hire

### Commercial model

6.18 The e-moped hire element of the preferred option, once established, is expected to be financially sustainable as presented in the Financial Case. Learning lessons from the schemes operating in England (e.g. Norfolk) and experience of effective operation of trading entities for public good, the project will be delivered through:

- A lead organisation who would have charitable status who will:
  - Receive all capital funds and revenue funds to support the working capital startup funding gap;
  - Purchase and own the e-mopeds and other capital assets such as premises;
  - Receive any ongoing revenue support to fund training costs for new participants (this might be preferred to be received to the trading company); and
  - Replace e-mopeds as required.
- A trading subsidiary, limited by shares, wholly owned by the lead organisation, would operate the e-moped business and would:
  - Employ staff to manage the programme and ensure maintenance of the e-mopeds;
  - Handle the financial transactions with hires;
  - Maintain all e-mopeds, operation of premises and other operational costs;
  - Hold insurance on the e-mopeds; and
  - Be VAT registered.

6.19 The lead organisation could either be an existing charity or a new charity established for this purpose. The trading subsidiary would be a new start established for this project.

6.20 The lead organisation would lease the e-mopeds and premises to the trading company on a nominal charge and provide working capital loans as required. The trading company would deed up any profits, prior to tax, to the charity.

6.21 This structure maximises the benefits of charitable status by avoiding corporation tax and securing rates relief for the premises. The structure also minimises the risk where all commercial and other liabilities are held by the trading subsidiary. In the worst-case scenario that the project is not financially viable, the assets are retained by the charity and can be used to establish an alternative business or sell the assets returning proceeds as required.

6.22 The board of the trading company would include representatives of the charity and the senior staff managing and delivering the programme.

**Procurement**

6.23 The e-mopeds are the single largest purchase. The purchase of the e-mopeds will be undertaken on a phased basis as the level of usage of the e-mopeds will increase over 3 years. This phased approach to purchase will allow the project to accommodate any waiting lists or delays in supply. These contracts will be with the charity.

6.24 There are a range of e-mopeds on the market and suppliers will be approached to quote for supply. Factors to be considered include ease of maintenance, ease of use by users; cost of operation by users; reliability and quality; range of battery; vehicle lifecycle, and value for money. It is anticipated that these tenders will be broken down into smaller contracts to ensure there was no reliance on a single brand or type of e-moped.

6.25 There are no other significant contracts.

6.26 With an increasing number of e-mopeds procuring these assets are not expected to be a problem and it is hoped that bulk discounts would be available through a competitive process.

## E-bike share and e-moped hire integrated and joint delivery

6.27 The two schemes can be delivered through separate commercial models, but there are advantages and weaknesses to these projects being aligned. This would occur where the lead organisation owning the e-bikes and the charity owning the e-mopeds are the same organisation.

**Table 6.2: SWOT analysis of joint delivery of both schemes**

| Strengths | Weaknesses |
|---|---|
| • Single organisation, less management time<br>• Ability to cross promote as complementary options for transport for employment. | • Charity involved in direct contracting with multiple third parties and potential liabilities<br>• Charity may not have sufficient transport expertise. |
| **Opportunities** | **Threats** |
| • Funding sources available for joint project, not available for single projects<br>• Allow potential for cross subsidy from profits of e-mopeds to e-bike share scheme<br>• E-moped trading company can tender for the contract to maintain e-bikes with potential associated cost savings | • Reputational risks, if one element of the project closes, then undermines the reputation of the other element |

# 7 Management Case

## Overview

7.1 The MANAGEMENT CASE demonstrates that the preferred option is deliverable and will be implemented smoothly.

7.2 This Management Case presents the different stages of launching and operating the combined e-moped hire and e-bike share schemes, and how the new scheme should be planned and delivered, including scoping and governance arrangements, implementation, and operations.

## Governance arrangements

**Overall governance**

7.3 The project would establish an appropriately skilled governing body: with an integrated and joint delivery organisation, an advisory group will be established which will provide oversight and direction to the work of these projects. This group would also have the potential to provide a strategic overview of the development of other transport projects and initiatives to benefit the residents of Clackmannanshire.

7.4 This advisory group would be selected to have a range of skills and draw on stakeholders from key organisations such as the council, regional transport authority, the operators of each of the two projects, those with expertise in active travel, travel for the unemployed and economic regeneration.

**Project governance**

7.5 The preferred option is Option 3: Combined e-mopeds hire and e-bike share schemes. In this option, the greatest benefit will be achieved if both elements can proceed in parallel, because they have complementary strengths. However, they are not dependent upon each other, and it would be feasible for one to move ahead in advance of the other if this is necessary.

7.6 It is assumed that the two elements of the scheme will be delivered by two separate structures:

- In the e-bike share element of the project, a public or third sector organisation will be identified as the lead organisation. They will have overall responsibility for the scheme including the ownership of the e-bikes and docking stations and contracting to third parties for the management of different elements of the programme. The lead organisation would be required to demonstrate their competence and capability to deliver the project. This would include experience and expertise in active travel and bike share schemes.
- In the e-moped hire scheme, the charity which owns the e-mopeds and other assets would be identified and would need to have robust expertise in governance, financial management, economic development and supporting the unemployed. It would be useful for them to also have expertise and experience of transport projects and support for the

unemployed. However, these skills will be held within the wholly owned trading subsidiary and would not be necessary in the charity. The e-moped trading company, operating as a commercial enterprise would have a board made up of those with appropriate experience in business management, transport, supporting the unemployed and key operational skills. As a new business, the manager and staff of the trading company would be recruited to have the appropriate skills, particularly in the operation of such hire schemes and management of fleets of vehicles.

## Project management implementation plan

### Overview

7.7 The following different stages are required to implement an e-moped hire scheme.

**Figure 7.1: Stages of launching and operating an e-moped hire scheme**

| Stage 1: Planning | Stage 2: Initiation | Stage 3: Implementation | Stage 4: Operations |
|---|---|---|---|
| •Scoping and business case development<br>•Joint governance arrangement | •Planning and design<br>•Stakeholder engagement<br>•Funding bid | •Acquire physical assets<br>•Planning<br>•Marketing and outreach<br>•legal entities and governance | •Operation of e-mopeds<br>•Monitoring and evaluation |

7.8 The following different stages are required to implement an e-bike share scheme. They are similar to implementation of the e-moped hire scheme with the key differences highlighted in the text below.

**Figure 7.2: Stages of launching and operating an e-bike share scheme**

| Stage 1: Planning | Stage 2: Initiation | Stage 3: Implementation | Stage 4: Operations |
|---|---|---|---|
| •Scoping and business case development<br>•Joint governance arrangement | •Planning and design<br>•Stakeholder engagement<br>•Funding bid | •Acquire physical assets/ procurement<br>•Planning<br>•Construction and installation works<br>•Marketing and outreach<br>•legal entity and governance | •Operation of e-bikes<br>•Monitoring and evaluation |

**7.9** Stages 1 and 2 are now complete and are reflected in the production of this business case document.

### Stage 1 – Planning

7.10 In the feasibility stage, the goal for the scheme owner/s is to identify the key purpose and objectives of the scheme, for example, encouraging more people to cycle, improving access to employment/ education, providing an alternative to car travel or improving health and wellbeing.

*Scoping and business case development*

7.11 The next step is to define the scheme characteristics, size and geographic coverage as well as conducting a business case analysis. This includes a breakdown of estimated costs and potential revenue opportunities, and help evaluate the financial positioning of the scheme. This analysis also supports application for capital funding.

**Stage 2 – Initiation**

7.12 This stage includes planning and design of the scheme, engagements with key stakeholders, and ultimately securing capital funding.

*Planning and design of the scheme*

7.13 The scheme parking model (e.g. station based or free floating) and type of infrastructure required should be determined, alongside operating area and the number of the docking stations and e-bikes required.

*Stakeholder engagement*

7.14 Stakeholder engagement is paramount to the success of a scheme over time. We recommend early, meaningful and continued engagement throughout planning and delivery to keep stakeholders involved and informed. It is also important to report back regularly and use the feedback to inform the planning process.

*Funding Bid*

7.15 At this stage, the lead organisation should submit the funding bid, with the detailed business case including an implementation plan with key timelines.

**Stage 3 – Mobilisation**

7.16 E-bike share: At this stage, the lead organisation will be in charge of procuring and contracting with potential operator/s in order to acquire physical assets and the back-end systems. The ownership of the assets—primarily the docking stations and e-bikes —as well as the permanency of the assets in the streetscape, will be with the lead organisation.

7.17 E-moped hire: A lead organisation who would have charitable status will receive all capital funds and revenue funds and purchase and own the e-mopeds. The purchase of the e-mopeds will be undertaken on a phased basis as the level of usage of the e-mopeds will increase over 3 years. A trading subsidiary, limited by shares, wholly owned by the lead organisation, will operate the e-moped business.

7.18 More details are presented in the Commercial Case.

*Procurement*

7.19 The procurement and operating models are discussed in detail in the Commercial case section.

*Planning*

7.20 E-bike share: Detailed design is required to identify the specific location to locate hubs for the e-bike share to operate and the precise boundaries of the scheme area. Traffic Regulation Orders (TROs) and public consultation might be required for each site. These are typically led by the lead organisation (e.g. Council or charity). TROs are required for all changes to the public highway which impact on traffic restrictions or waiting/loading restrictions and are therefore expected to be required for all e-bike share stations located on the public highway.

TROs require a document to be drafted detailing the proposed parking restrictions, which are advertised to the public for comment. Typically, the local highway authority would prepare and advertise the TRO and charge a fee for this service. The standard timescale for TROs comprises a four week advertisement period, 2-3 weeks for objections and two weeks to finalise and seal the order. The highway authority is Clackmannanshire Council.

*7.21* E-moped hire: The scheme set up will include hiring staff, acquiring premises to store the e-mopeds and working with the key stakeholders to launch the scheme.

*Construction and installation works (e-bike share only)*

7.22 Construction and installation of the docking stations and workshops should be carried out. This generally takes between four to twelve months depending on the size and nature of work requirements.

*Marketing and outreach*

7.23 Success of the schemes largely depend on the visibility of the scheme. Alongside installing the docking stations in key locations, the lead organisation, in the months leading to scheme launch, should engage in wide-scale marketing and targeted campaign activities to attract new users once the scheme is launched.

7.24 The lead organisation should work with the key agencies who support the unemployed and other stakeholders to promote e-moped hires scheme.

**Stage 4 – Operations**

7.25 Once the system has been procured and launched, the lead organisation of the scheme will also need to monitor it and evaluate the performance according to the defined service levels or regulatory requirement.

7.26 The lead organisation should commit to integrating consistent public outreach and proactive community and stakeholder engagement, as well as plans for equitable access to, and use of, the system, into all major decisions and all along the project lifetime.

7.27 A preliminary project management timetable is included as an Appendix G.

## Monitoring and evaluation plan

7.28 A monitoring and evaluation framework would be established for each project. This will be developed in detail, but will include, for the e-bike share scheme, passenger numbers, trips, start and end of trip, length of trip, timing. For memberships this will also include the information on the economic status of the individual and the main purpose and other purposes of their membership.

7.29 At key points in the delivery, an annual survey of members and users will be undertaken to ascertain their views of the operation of the programme, their use of the scheme; and for those who have been using it to travel to work the impact the project has had on them getting the job, sustaining the job, changing their transport patterns from alternative modes.

7.30 All metrics will be aligned with the targets set out in the project specification and the SBC to monitor progress.

### E-mopeds hire

7.31 For the e-moped scheme, detailed information will be secured on who will be hiring the e-mopeds, this will be a condition of their being eligible for the programme. This will include gender, age, length of unemployment, area of residents (to determine SIMD) and other characteristics.

7.32 At the end of the hire, each participant will be approached to provide information on their view of the impact of the e-moped on them getting a job, location of the job, their current economic status (have they returned to unemployment, continuing employment with that business, moving employment to another organisation, return to education etc), if continuing with employment - their current mode of transport and their general views of the strengths and weaknesses of the scheme.

7.33 A summary of the key metrics is presented in the table below.

**Table 7.1: Measuring success of the e-moped hire scheme**

| Metric | How to track | Value for the governance body |
|---|---|---|
| **Engagement** | | |
| **New User** | New registrations | Validate expansion strategy |
| **Length of hire** | Rental data on use | Impact and revenue |
| **Active user:** *Detailed information on the who will be hiring the e-mopeds, this will be a condition of their being eligible for the programme. This will include gender, age, length of unemployment, area of residents (to determine SIMD) and other characteristic.* | Application form to hire. | Assess efficiency of the system and capacity management |
| **Financial** | | |
| **System generated revenue** | Rental data | Cost effective monitoring, can be combined with other existing bike share schemes across the UK |
| **Level of utilisation** | Rental data | Critical to build long-term stable revenue |
| **Costs of repairs** | Financial data | Assess efficient use of resources |
| **Operations** | | |
| **Customer Satisfaction** | Surveys (after hire); Focus groups; Qualitative interviews | Assess people's level of satisfaction with the scheme. Surveys may help to assess:<br>• Who uses e-moped hire;<br>• Satisfaction with the service;<br>• Areas where the service can be improved; and<br>• How the scheme supports unemployed (have they managed to secure a new job; how long did it take, etc). |

| Metric | How to track | Value for the governance body |
|---|---|---|
| **Economic Impact:**<br>Current status of hire (employment, unemployed, further education/training)<br>Salary level, location of work<br>Degree of attribution of benefits to e-mopeds | Post hire surveys. | Assess the extent to which the programme is addressing the identified problem statement. |

### E-bike share

7.34 The UK Bike Share Users Survey published by CoMoUK since 2016 identifies key evidence of the social and environmental impacts of public bike share in the UK. The survey is produced in conjunction with private operators and local authority representatives and reviewed by independent analysts.

7.35 A recommended approach for e-bike share would be to undertake real-time monitoring of station occupancy rates as well as other key performance metrics, including:

**Table 7.2: Measuring success of the e-bike share scheme**

| Metric | How to track | Value for the governance body |
|---|---|---|
| **Engagement** | | |
| **New User** | New registrations | Validate expansion strategy and brings new revenue |
| **Active riders** | Trip data on users | Critical to build long-term stable revenue |
| **Trips** | Trip data on use | Impact and revenue |
| **Trips per bike per day** | All trips/ number of bikes in circulation | Assess efficiency of the system and capacity management |
| **Financial** | | |
| **System generated revenue** | Sales data and trips data | Cost effective monitoring, can be combined with other existing bike share schemes across the UK |
| **Non-system generated revenue** | Sponsor/partners | Critical to build long-term stable revenue |
| **Expenses** | Financial data | Assess efficient use of resources |
| **Operations** | | |
| **Customer Satisfaction** | Surveys; Focus groups; Qualitative interviews | Assess people's level of interest for the scheme. Surveys may help to assess:<br>• Who uses e-bike share;<br>• What trips e-bike share are used for;<br>• What modes e-bike share trips replace (especially car trips);<br>• Satisfaction with the service; and<br>• Areas where the service can be improved.<br>• How the scheme supports unemployed. |
| **Technology Improvement** | Annual report; technology upgrades | Adaptability of the scheme |

7.36 This will be supplemented by further information on those who are using the scheme to travel to work. Gathered through the customer satisfaction surveys, information will be secured on the economic status of the user before they started using the scheme and now and whether the use of the scheme helped them access their current job.

# Appendices

# A. Shortlisted options' alignment with the core objectives of the business case

## Option 1. E-bike share

***Objective 1*** *"Facilitate travel to jobs and education that is flexible to meet individual needs":*

- Connectivity and easy access to services helps an economy to thrive. With the advancements in technology and increased access to smart phones, shared mobility solutions such as bike share have been successful in recent years in complementing or replacing trips made by other modes, particularly providing a solution for first/last mile trips where traditional public transport has struggled. [32] Alongside offering an alternative option to private car travel, e-bike share can also facilitate flexible travel to jobs and education as they are operational 24 hours, all day a week.
- The CoMoUK Annual Bike Share Report found that 31% of respondents use bike share for commuting at least once a week and 15% use bike share for cycling to a place of education at least once a week, highlighting the potential for e-bikes to enable travel to jobs and education.[33] In addition, 46% of respondents stated that bike share makes their journey easier, whilst 50% of e-bike users highlighted that they use e-bikes because it reduced their journey times - this showcases the flexibility of e-bike share to meet individual needs.[34] While, 42% of respondents reported using e-bikes to avoid fatigue and getting sweaty from cycling which makes e-bike share an attractive solution for commuting.[35] E-bike share can provide an alternative to the private car facilitating travel to jobs and education by an e-bike for individuals who do not have access to their own bike.

***Objective 2****. Stimulate an increase in use of sustainable transport:*

- E-bikes are electric; thus, they do not emit any tailpipe emissions and the associated harmful chemicals which affect people's health and the environment.[36] As such, the CoMoUK Annual Bike Share Report found that there was an average reduction of about 2.3 car miles and 1kg of CO2 emissions per bike share user.[37] Moreover, 41% of respondents stated that they use bike share because they value the environmental benefits whilst 53% of bike users would have made their last trip by car or taxi if bike share had not been available highlighting the potential for modeshift.[38]
- A study conducted by the University of Leeds also found that e-bikes have the potential to reduce CO2 emissions by 50%.[39] In addition, the CoMoUK Annual Bike Share Report found that 34% respondents use e-bikes for trips more than five miles compared to 24% respondents for conventional bikes. This indicates that e-bike share is a viable alternative to car use and in can reduce carbon emissions and air pollution.

[32] Shared micromobility within the UK | Local Government Association
[33] https://uploadsssl.webflow.com/6102564995f71c83fba14d54/623082b095a4567ce1720e27_CoMoUK%20Bike%20Share%20Survey%202021.pdf
[34] https://uploadsssl.webflow.com/6102564995f71c83fba14d54/623082b095a4567ce1720e27_CoMoUK%20Bike%20Share%20Survey%202021.pdf

[35] https://uploadsssl.webflow.com/6102564995f71c83fba14d54/623082b095a4567ce1720e27_CoMoUK%20Bike%20Share%20Survey%202021.pdf
[36] Shared micromobility within the UK | Local Government Association
[37] https://uploadsssl.webflow.com/6102564995f71c83fba14d54/623082b095a4567ce1720e27_CoMoUK%20Bike%20Share%20Survey%202021.pdf
[38] https://uploadsssl.webflow.com/6102564995f71c83fba14d54/623082b095a4567ce1720e27_CoMoUK%20Bike%20Share%20Survey%202021.pdf
[39] e-bike carbon savings – how much and where? - CREDS

- The ability to charge the e-bikes through the docking system, which is being proposed, significantly lowers the cost of operations for such scheme due to the lack of the requirement to replace the batteries of the e-bikes. Moreover, increasingly, bike share operators are managing operations using electric vans for vehicle redistribution and through use of renewable power sources. This may significantly lower emissions from operations of the scheme.

***Objective 3.*** *Encourage healthy lifestyles*

- E-bike share can encourage healthier lifestyles by facilitating improved health and fitness. The CoMoUK Annual Bike Share Report stated that 42% of respondents use e-bikes because they reduce fatigue or getting sweaty. The survey reported that there was no age significant group of e-bike users, suggesting that e-bikes can serve wider demographics while 61% of survey respondents stated that they use bike share because it provides exercise and for 41% of respondents it provides mental health benefits.40 A study on the health benefits of e-bikes found that participants showed a reduction in cardiometabolic risk factors after four weeks of e-bike commuting.
- For many people e-bikes can help overcome mental health difficulties or low fitness levels. The DfT Shared Electric Bike Programme report highlighted that for individuals using e-bikes, 58% felt happier and 41% felt healthier.[41] This highlights that e-bike share can improve the physical and physiological health and wellbeing of users.[42] E-bikes can enable users to cycle longer, faster and over hillier geographies whilst also improving fitness levels.

***Objective 4****. Reduce unemployment and economic inactivity:*

- It is important that bike share is accessible to all groups of people irrespective of their income. 84% of respondents from The CoMoUK Annual Bike Share Report were aged between 15 and 75+, which highlights the inclusivity of e-bikes across different age groups.[43] This also shows that bike share is used by individuals of working age. In addition, while 72% of respondents stated they were employed, 12% were in education, 3% were retired, 4% were unemployed and the remaining 9% indicated other. This highlights that bike share can be the facilitator to access employment and education and can help reduce unemployment and economic inactivity.
- Over 39% of respondents from the CoMoUK Annual Bike Share Report highlighted that they use e-bikes for longer distances and 33% of respondents use e-bikes for trips of up to five miles whilst 18% use e-bikes for trips of up to 5-10 miles.[44] Whilst, the Forth Bike scheme witnessed an average trip length of 6.4km and average trip duration of 40 minutes in 2022.[45] This suggests that e-bikes could be a viable option for connecting people to employment within Clackmannanshire as well as in Stirling for example.

## Option 2. E-mopeds hire

***Objective 1*** *"Facilitate travel to jobs and education that is flexible to meet individual needs":*

- Moped hire schemes, often in the 'Wheels to Work' model, have been shown to provide a key tool in allowing individuals to secure employment or access to education/apprenticeships. The first Wheels to Work Scheme was established in 1996 and there are currently around 30 operating in the UK, the largest of these schemes is the Kickstart Mopeds scheme which operates in the Norfolk, Suffolk, and Cambridge areas with a fleet of around 350 mopeds. Kickstart Mopeds have facilitated around 5,300 individuals into secure employment, training, or education.

[40] https://uploadsssl.webflow.com/6102564995f71c83fba14d54/623082b095a4567ce1720e27_CoMoUK%20Bike%20Share%20Survey%202021.pdf
[41] 62dabeef4b3f6d4db2ce7042_CoMoUK Shared Electric Bike Programme Report 2016.pdf (webflow.com)

[42] https://www.urbantransportgroup.org/system/files/general-docs/UTG%20E-bikes%20Report%20FINAL.pdf
[43] https://uploadsssl.webflow.com/6102564995f71c83fba14d54/623082b095a4567ce1720e27_CoMoUK%20Bike%20Share%20Survey%202021.pdf
[44] https://uploadsssl.webflow.com/6102564995f71c83fba14d54/623082b095a4567ce1720e27_CoMoUK%20Bike%20Share%20Survey%202021.df

[45] Based on analysis of Forth Bike scheme data, as provided by Forth Environment Link in February 2023

- The Wheels to Work model provides NEET (not in education employment or training) individuals the opportunity to hire a small powered two-wheel vehicle in order to independently access employment. This is particularly relevant in areas with poor public transport links and rural deprivation. It provides a personal transport method that will meet an individual's needs, allow them to access the employment that suits their skillset and to ensure they are able to access work patterns and locations that may not align with public transport times (e.g. shift work, or hospitality work).
- Moped hire schemes offer a cost-effective alternative to public transport which may not serve employment sites directly, and car ownership which can be costly particularly to younger unemployed individuals. According to the DfT, on average, those living in rural areas will travel 50% more miles per year than those in urban areas and average weekly transport costs £14 higher than national average (as of 2015). For Wheels to Work hire generally costs between £20-£45 per week (including insurance) depending on vehicle capacity and fuel type and initial costs (training and protective equipment) often covered by referral partners. This highlights how moped hire schemes can offer an affordable alternative to the car or public transport and can facilitate travel to employment centres directly.
- The flexibility of Wheels to Work schemes is demonstrated by the individualised aspect of the model. Access is tailored to the individual, meaning they can access more than just employment depending on their needs. Data from Kickstart Mopeds in 2022-23 suggests 64% outcomes were 'Start/Sustain Employment' however, beyond this 20% accessed some form of educational or employment training or apprenticeship. A further 15% 'Addressed Complex Barriers to Work' with the scheme catering towards referrals from organisations such as social services and leaving care teams, where there may be some more complex barriers to employment (e.g., disabilities, employment/training restrictions, caring responsibilities).

***Objective 2**. Stimulate an increase in use of sustainable transport:*

- The use of fully electric mopeds in Wheels to Work schemes provides growing evidence that these schemes provide a zero-carbon alternative to employment or education access in areas where previously car dependency was high.
- Tees Valley Combined Authority launched the first fully e-moped scheme, with a fleet of Super Soco CPx bikes. Other schemes are now following: North Lincolnshire Council have added 18 new e-mopeds to its fleet, and Kickstart Mopeds are beginning to transition their fleet.

***Objective 3**. Encourage healthy lifestyles:*

- The provision of an accessible e-moped hire scheme can contribute towards increased social inclusion and improved mental health for the individual users. Allowing people greater independence is key in promoting wellbeing, with e-mopeds encouraging inclusion beyond work and into the wider social network including leisure activities.
- Clear links have been shown between access to employment and mental health for those who are unemployed and increasingly face risk of being cut off and social disconnect. This is particularly relevant for young people: Youth Employment UK reported that 51% of young people aged 19+ suggested mental health challenges were their biggest barrier to accessing work and 53.6% suggested travel/location as a barrier to applying for work. Therefore, increasing access to work through e-moped schemes can help with mental wellbeing challenges associated with accessing work

***Objective 4**. Reduce unemployment and economic inactivity:*

- Moped hire schemes have a high potential for reducing unemployment: 64% of outcomes for the Kickstart Mopeds scheme in 2022-23 had users 'Start/Sustain Employment' and a further 20% access a form of education or employment training/apprenticeship. In total, since their inception they have facilitated 5,300 NEET individuals into education or training.
- This is further reflected in the relationship between the Jobcentre and Wheels to Work models, an estimated 75% of referrals to the Kickstart Mopeds scheme come from the Jobcentre.

- Direct access to employment or training may not be an appropriate goal for all individuals, where complex barriers to work exist. In these cases, access to personalised transport will allow the individual to move 'closer' to the labour market. 15% of Kickstart Moped referrals in 2022-23 'Addressed complex barriers to work', meaning individuals with further steps to take before reaching secure employment were able to access health and social services, educational services, or obtain some personal independence in their travel.

## Option 3. Combined option with the e-mopeds hire and the e-bike share schemes

Findings on both option 1 and option 2 apply to this option.

## Option 4. Digital Demand Responsive Transport Scheme

***Objective 1*** *"Facilitate travel to jobs and education that is flexible to meet individual needs":*

- DDRT sits between traditional public transport and on-demand taxi and private hire services in convenience and flexibility. It can provide a new transport service or complement the existing transport network.
- The "Demand responsive transport: local authority toolkit"[46] from the UK's Department for Transport states the following benefits of DDRT services for users:
  - Provide access to a wider range of destinations, increasing personal mobility and reducing social isolation;
  - Enable travel at a more convenient time compared to a fixed timetable with limited frequency;
  - Provide an almost door-to-door service that can support individuals with limited mobility and cost less than other similar services, such as a taxi or private vehicle hire (PHV);
  - Help individuals and communities to access job opportunities through a direct service or services better suited to shift patterns.

***Objective 2****. Stimulate an increase in use of sustainable transport:*

- DDRT can reduce the number of private vehicle miles travelled thus potentially reducing congestion and pollution. Some of the positive outcomes referenced by Via in their "DDRT in the United Kingdom" summary[47] include:
  - 73% percent of fflecsi users reported that they were able to reduce their private car usage fflecsi is a DDRT service operating in rural and urban areas in Wales); and
  - 62% of users of Tees Flex (a DDRT service in Tees Valley) reported using their private cars less frequently.

***Objective 3.*** *Encourage healthy lifestyles:*

- Clear links have been shown between access to employment and mental health for those who are unemployed and increasingly face risk of being cut off and social disconnect. This is particularly relevant for young people: Youth Employment UK reported that 51% of young people aged 19+ suggested mental health challenges were their biggest barrier to accessing work and 53.6% suggested travel/location as a barrier to applying for work. Therefore, increasing access to work through DDRT schemes can help with mental wellbeing challenges associated with accessing work.

[46] Demand responsive transport: local authority toolkit - GOV.UK (www.gov.uk)
[47] Source: engagement with Via

- DDRT services can also support health and wellbeing by enabling easier access to services, facilities, social networks and community initiatives.[48]

***Objective 4**. Reduce unemployment and economic inactivity:*

- The "Demand responsive transport: local authority toolkit"[49] from the UK's Department for Transport states the following benefits for local authorities:
  - Economic benefits through increased access to employment, leisure and for visitors;
  - Increasing connectivity for rural communities, for example, by extending; and
  - Forming part of land use planning strategies, DRT services are increasingly used to provide access to new developments, such as employment sites and housing developments

[48] Demand responsive transport: local authority toolkit - GOV.UK (www.gov.uk)
[49] Demand responsive transport: local authority toolkit - GOV.UK (www.gov.uk)

# B. Underlying demand analysis for e-bike share docking stations

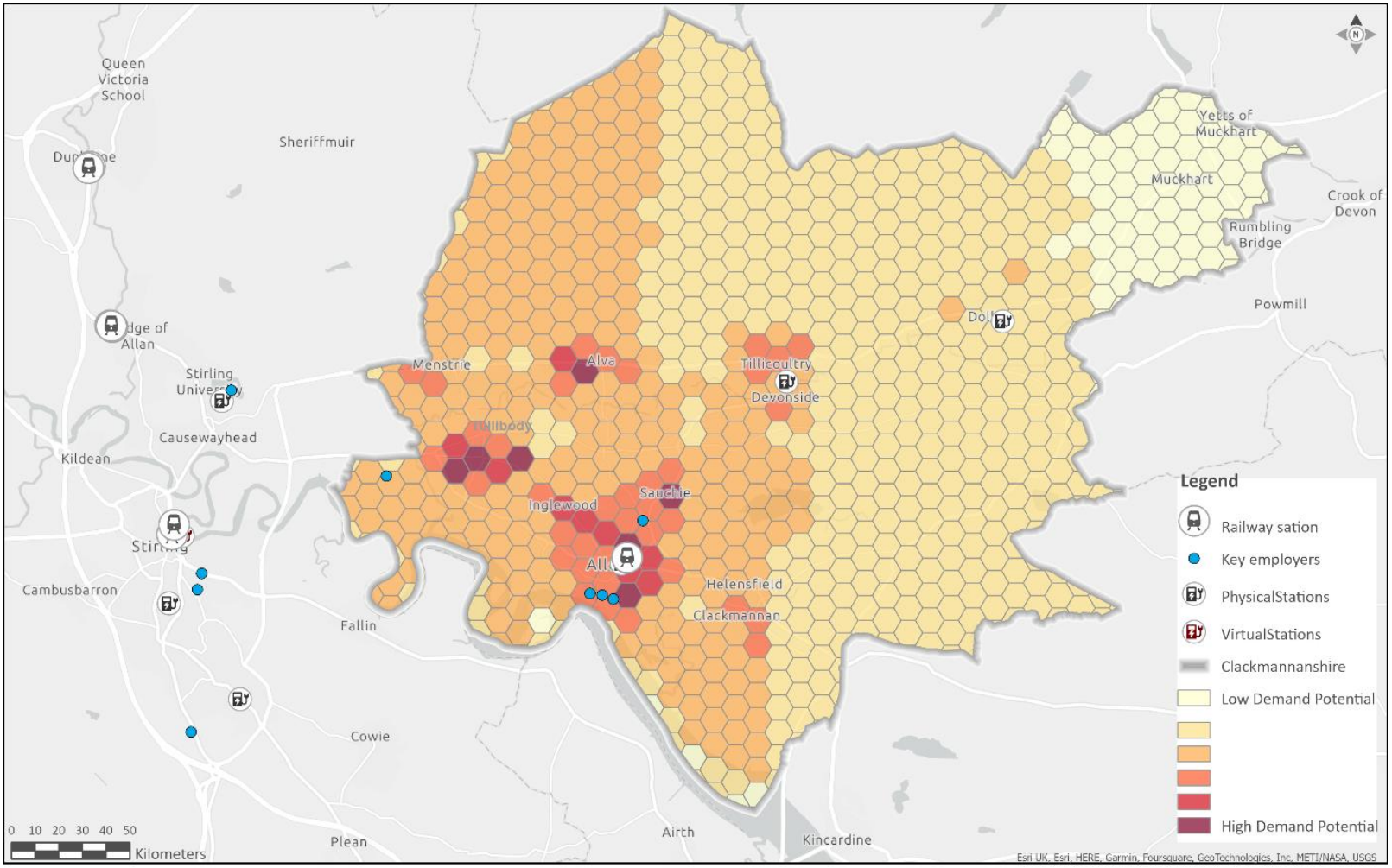
## GIS based analysis

We conducted a desktop-based data analysis to identify the location for e-bikes and docking stations which would serve the needs of the unemployed residents.

- The analysis considered the following factors:
- Population (high shows high need),
- Unemployment (high shows higher need),
- Income (low shows higher need),
- Access to car (low shows higher need),
- Distance to work (low shows higher need),
- Public transport accessibility (low shows higher need).

A map showing the relative demand/need for e-bike share docking stations is included in the figure below. The areas with darker shade have higher relative demand or need.

**Figure B.1: Underlying demand map for bike share docking stations**




**Clackmannanshire E-bikes and E-mopeds**

E-bikes and e-mopeds demand potential

steer

Scale: 1:93,605
Date: 24-02-2023
Creator: BBarik

# C. Underlying Demand Analysis – e-mopeds hire

The assessment of the demand for an e-moped hire scheme has been undertaken through:

- Review of demand and experience of wheels to work schemes in other areas;
- A survey of unemployed residents of Clackmannanshire to ascertain their view of using the scheme;
- Two workshops with unemployed people to identify their qualitative feedback on the scheme; and
- Analysis of the labour market in Clackmannanshire.

**Review of other schemes**

Two other schemes were investigated in detail to ascertain their demand:

(i) Tees Valley Combined Authority run a fleet of 75 e-mopeds and have a waiting list
(ii) Kick Start Mopeds, operating in Norfolk and Cambridge area has a fleet of 350 mopeds. This has gradually grown from a fleet of 50 in response to demand. They have been successful and securing demand from target markets with 75% referred by DWP/Job Centre or employability providers and 25% from social services, leaving care teams.

There are a further c30 wheels to work schemes which are operating in the rest of the UK.

**Survey of the unemployed**

The survey was undertaken using Microsoft Forms and was promoted to the unemployed through the Department for Work and Pensions, Clackmannanshire Council's employability team Clacks Works; and to the participants of the Pre Employability in Clackmannanshire (PEC) programme which CERT project managers.

A response rate of 80 was received at the point of the initial analysis which has since increased to 85. This represents over 10% of the unemployed in Clackmannanshire which is seek as a strong response rate and able to provide robust forecasts of demand.

The survey covered the interest in both shared e-bikes, e-mopeds and DDRT bus. Only the results in relation to e-mopeds are reported here.

The key results from this survey are:

- 38% of respondents would hire a e-moped with a further 20% perhaps, combing these, up to 58% of the unemployed report they may or would hire an e-moped.

| Would you hire an emoped to get to an interview or job? | | |
|---|---|---|
| | **Number** | **%** |
| Yes | 32 | 38% |
| No | 36 | 42% |
| Maybe | 17 | 20% |
| **Total Answered Question** | **85** | **100%** |

- 58% would travel 10 or more miles in a single journey. This makes the Falkirk/Grangemouth, Dunfermline, Stirling and parts of Perth and Kinross accessible.

| How far would you travel by emoped in a single journey? | | |
|---|---|---|
| | **Number** | **%** |
| 1 mile | 9 | 14% |
| 5 miles | 12 | 18% |
| 10 miles | 17 | 26% |
| 20 miles | 10 | 15% |
| 30 plus miles | 11 | 17% |
| Other | 7 | 11% |
| **Total Answered Question** | **66** | **100%** |

- Unsurprisingly the respondents reported an unwillingness to pay for the hire. When aligned to those who are starting employment, the acceptable price point is expected to rise and align with other Wheels to Work schemes.

| How much would you pay PER WEEK to hire an emoped | | |
|---|---|---|
| | **Number** | **%** |
| £0 | 32 | 41% |
| £1 to £25 | 32 | 41% |
| £26 to £50 | 9 | 11% |
| £51 to £75 | 0 | 0% |
| £76 to £100 | 3 | 4% |
| Other | 3 | 4% |
| **Total answered question** | **79** | **100%** |

**Workshops with the unemployed**

Two workshops were help with unemployed and economically inactive people. A total of 16 people participated. Key points which were raised at these workshops were:

- A universal recognition that transport is one of the most significant barriers to employment faced
- A general willingness to use all options for improved transport
- A greater interest and excitement for the e-moped hire scheme
- Concerns over road safety, which was mitigated by the provision of CBT and protective clothing and equipment
- Concerns that e-bikes would not be realistic for some distances
- That transport is not the only barrier and to be successful other barriers should also be addressed

- A recognition that the existing bus services were inadequate and unreliable.

**Analysis of market size for e-mopeds**

Combining the results of the survey of the unemployed with information on the labour market and known travel to work patterns it is possible to estimate the total likely demand for an e-moped hire scheme. In doing this assumptions have been made:

- 800 unemployed in Clackmannanshire
- 2,400 economically inactive who want a job (of 8,000 economically inactive overall) in Clackmannanshire
- 65% of those who are residents of Clackmannanshire and work, will work outside Clackmannanshire (2011 Census)
- 38% of potential users would use an e-moped hire scheme with a further 20% might. This makes a total potential market of 58%

From these assumptions, it is estimated that there is a total potential market of those who can move to employment outwith Clackmannanshire of 2,080. (65% of the unemployed and economically inactive seeking a job).

| **Total Potential Market for emopeds** | |
|---|---|
| Unemployed | 800 |
| Economically Inactive wanting a job | 2400 |
| **Total Seeking employment** | **3200** |
| Estimated who would secure employment outside Clackmannanshire (1) | 65% |
| **Total Potential Market for emopeds from Clackmannanshire Residents** | **2080** |

It is recognised that some will use the e-mopeds to travel to jobs within Clackmannanshire, particularly those with unsociable hours or locations that don't suit public transport, however these have been excluded. If the e-bike share scheme goes ahead, these would also be suitable for that mode of transport.

- Of these between 790 and 1,206 would use an e-moped hire scheme.

| **Forecast Clackmannnshire Users of e-moped Hire Scheme** | | | |
|---|---|---|---|
| | **Yes** | **Maybe** | **Maybe or Yes** |
| % of respondents who would hire an emoped to get to a job interview or job | 38% | 20% | 58% |
| Forecast Clackmannanshire Unemployed Users pa | 198 | 104 | 302 |
| Forecast Clackmannanshire Economically Inactive users pa | 593 | 312 | 905 |
| **Total Users pa** | **790** | **416** | **1,206** |

Assuming that there are 3 users per e-moped per annum, to meet this demand between 263 and 402 e-mopeds would be required. This would justify a forecast 90% utilisation of a fleet of 350 e-mopeds.

| **Size of Fleet Required for Clackmannanshire Users** | | | |
|---|---|---|---|
| | **Yes** | **Maybe** | **Maybe or Yes** |
| Unemployed | 66 | 35 | 101 |
| Economically Inactive wanting a job | 198 | 104 | 302 |
| **Total Fleet required** | **263** | **139** | **402** |

It is recognised that this is derived from the responses of only 10% of the unemployed in Clackmannanshire and that this demand may not be realised. While the focus and benefits from the scheme will be from supporting Clackmannanshire residents, the scheme would be made available to other groups and in particular:

- Unemployed in Falkirk who have around double of this client group compared to Clackmannanshire.
- Unemployed in Stirling who have around the same number of unemployed and economically inactive residents as Clackmannanshire.
- Employed.
- Those using the scheme to access education.

In all, this would expand the potential user base for the scheme by at least four. With such an expansion of market reach, the project would continue to operate from Clackmannanshire.

# D. Economic case – transport economic appraisal sensitivity tests

## Sensitivity testing

Sensitivity testing has been undertaken as part of the economic appraisal, to understand the robustness of the scheme and the sensitivity of the appraisal results to different assumptions of demand and benefits.

**Option 2 – e-bike share**

For the e-bike share option, sensitivity tests have been carried out for two elements of the appraisal:

- Demand: while the core assumption is that the usage of the e-bike fleet will be 50% higher than the 2022 regional scheme usage achieving 0.8 trips/bike/day, a sensitivity test has been completed (Demand ST1) with an assumption that the scheme achieves the same as the 2022 usage, at 0.53 trips/bike/day
- Journey time benefits: the core case uses an average journey time saving of 5 minutes for e-bike share users when compared with their alternative modes of travel. This is a proxy for the generalised cost saving, which would include both the costs of time and direct travel costs. Two sensitivity tests have been completed around this assumption, with a 50% lower average saving (Journey Time ST1) and with a 50% higher average saving (Journey Time ST2)

The appraisal results of the central case and these sensitivity tests are shown in the table below.

The demand sensitivity tests show the potential for significantly lower benefits if the usage ratio of the e-bike fleet remains at the current usage rate of 0.53 trips/bike/day, in fact it is less than 0.5:1 indicating benefits will be less than half of costs in monetary terms. As for the e-mopeds option, the journey time sensitivity tests provide a lower/higher BCR with a lower/higher time saving assumption. Given the low BCR of the central scenario, these have limited impact on the Value for Money of the scheme.

**Table D.1: Economic appraisal - e-bike share sensitivity tests**

| Element | Core scenario (£, 2010 PV) | Demand ST1 (£, 2010 PV) | Journey Time ST1 (£, 2010 PV) | Journey Time ST2 (£, 2010 PV) |
|---|---|---|---|---|
| Time benefits | 270,161 | 140,709 | 70,354 | 211,063 |
| Health and Absenteeism benefits | 385,269 | 202,031 | 202,031 | 202,031 |
| Non-user benefits | 111,082 | 57,855 | 57,855 | 57,855 |
| **PVB** | **766,511** | **400,595** | **330,241** | **470,949** |
| Capital costs | 453,486 | 453,486 | 453,486 | 453,486 |
| Renewals | 185,647 | 185,647 | 185,647 | 185,647 |
| Operating costs | 779,148 | 779,148 | 779,148 | 779,148 |
| Revenue | (613,516) | (319,540) | (319,540) | (319,540) |
| Externalities | 11,278 | 5,874 | 5,874 | 5,874 |
| **PVC** | **816,043** | **1,104,616** | **1,104,616** | **1,104,616** |
| **NPV** | **(49,532)** | **(704,021)** | **(774,375)** | **(633,666)** |
| **BCR** | **0.94** | **0.36** | **0.30** | **0.43** |

### Option 2 – e-moped hire

For the e-moped hire option, sensitivity tests have also been carried out for two elements of the appraisal:

- Demand: while the central assumption is that the fleet would have an average utilisation of 90%, two sensitivity tests (Utilisation ST1 and ST2) has been undertaken with 75% and 50% utilisation, respectively.
- Journey time benefits: the central case uses an average journey time saving of 7.5 minutes for e-moped users when compared with their alternative modes of travel. This is a proxy for the generalised cost saving, which would include both the costs of time and direct travel costs. Two sensitivity tests have been completed around this assumption, with a 50% lower average saving (Journey Time ST1) and with a 50% higher average saving (Journey Time ST2)

The appraisal results of the central case and these sensitivity tests are shown in the table below.

These results show how sensitive the appraisal is to the e-moped fleet utilisation assumption. Changing the assumption from a 90% to a 75% utilisation reduces the BCR from 2.13:1 (high) to 1.37:1 (low). A further reduction to 50% reduces the BCR to 0.66:1, as a result of revenue and benefits reducing significantly, while capital costs remain the same similar and operating costs reduce by a much smaller proportion. This illustrates the potential impacts of the risks highlighted in earlier sections regarding the demand assumptions for the e-mopeds hire scheme. In practice any low utilisation will be operationally managed by purchasing fewer e-mopeds.

The journey time tests only result in a change in the time benefits element compared to the central scenario, which drives the PVB down and up, respectively.

**Table D.2: Economic appraisal - e-moped hire sensitivity tests**

| Element | Central scenario (£, 2010 PV) | Utilisation ST1 (£, 2010 PV) | Utilisation ST2 (£, 2010 PV) | Journey Time ST1 (£, 2010 PV) | Journey Time ST2 (£, 2010 PV) |
|---|---|---|---|---|---|
| Time benefits | 2,477,413 | 2,064,511 | 1,376,341 | 1,032,256 | 3,096,767 |
| Health and Absenteeism benefits | - | - | - | - | - |
| Non-user benefits | 673,540 | 561,284 | 374,189 | 561,284 | 561,284 |
| **PVB** | **3,150,954** | **2,625,795** | **1,750,530** | **1,593,539** | **3,658,050** |
| Capital costs | 1,203,567 | 1,203,567 | 1,203,567 | 1,203,567 | 1,203,567 |
| Renewals | 945,696 | 945,696 | 945,696 | 945,696 | 945,696 |
| Operating costs | 5,584,604 | 4,980,571 | 3,973,848 | 4,980,571 | 4,980,571 |
| Revenue | (6,345,405) | (5,287,838) | (3,525,225) | (5,287,838) | (5,287,838) |
| Externalities | 87,517 | 72,931 | 48,621 | 72,931 | 72,931 |
| **PVC** | **1,475,979** | **1,914,926** | **2,646,506** | **1,914,926** | **1,914,926** |
| **NPV** | **1,674,975** | **710,868** | **(895,976)** | **(321,387)** | **1,743,124** |
| **BCR** | **2.13 (High)** | **1.37 (Low)** | **0.66 (Poor)** | **0.83 (Poor)** | **1.91 (Medium)** |

# E. Financial appraisal – e-moped hire scheme

Detailed financial forecasts have been completed for 5 years on a monthly basis to identify cash needs.

A summary of 10 year financial forecasts is on the table below.

Key assumptions used are:

**Capital Costs**

| **Cost Item** | **£** |
|---|---|
| Emoped Purchase | 1,575,000 |
| Protective clothing | 362,250 |
| Premises | 100,000 |
| Project Manager to set up | 72,000 |
| Computers for Staff | 6,000 |
| Vehicle to transport bikes | 20,000 |
| Contingency in Capital costs | 427,050 |
| **Total Capital** | **2,562,300** |
| Start Up working capital | 15,000 |
| **Total Funding Requirement** | **2,577,300** |

Source: CERT

- A project manager would be employed for 2 years to ensure the set up of the project
- 20% contingency on capital costs
- A small team is formed to operate the project comprising a Project Manager and a part time administrator; which will gradually grow to include three other full time members of staff on maintenance and operations (5.5 FTE);
- Overhead of 7.5% of staffing costs is applied;
- Premises and other equipment purchased under the capital budget;
- Insurance per moped of £900 pa; and
- Parts for Maintenance per e-moped £300 pa.
- A bad debt allowance of 4% (as per Kick Start mopeds)
- A further revenue contingency of 5%
- Evaluation costs of £10,000 pa

**Clackmannanshire e-Moped Employability Initiative**
**10 Year Financial Appraisal**

| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 | Year 7 | Year 8 | Year 9 | Year 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | |
| **Number of Vehicles** | 100 | 250 | 350 | 350 | 350 | 350 | 350 | 350 | 350 | 350 |
| **Direct Staff** | 3.5 | 3.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 | 5.5 |
| | | | | | | | | | | |
| **INCOME** | | | | | | | | | | |
| | | | | | | | | | | |
| Rental | 159,912 | 436,320 | 810,000 | 907,200 | 907,200 | 907,200 | 907,200 | 907,200 | 907,200 | 907,200 |
| Bad Debt | -5,117 | -13,962 | -25,920 | -29,030 | -29,030 | -29,030 | -29,030 | -29,030 | -29,030 | -29,030 |
| VAT | -31,982 | -87,264 | -162,000 | -181,440 | -181,440 | -181,440 | -181,440 | -181,440 | -181,440 | -181,440 |
| **Total Income** | **122,812** | **335,094** | **622,080** | **696,730** | **696,730** | **696,730** | **696,730** | **696,730** | **696,730** | **696,730** |
| | | | | | | | | | | |
| | | | | | | | | | | |
| **COSTS** | | | | | | | | | | |
| | | | | | | | | | | |
| **Capital** | | | | | | | | | | |
| Emoped Purchase | 450,000 | 675,000 | 450,000 | 0 | 0 | | | | | |
| Protective clothing | 103,500 | 155,250 | 103,500 | 0 | 0 | | | | | |
| Lock Up | 50,000 | 50,000 | 0 | 0 | 0 | | | | | |
| Project Manager to set up | 36,000 | 36,000 | 0 | 0 | 0 | | | | | |
| Computers for Staff | 6,000 | 0 | 0 | 0 | 0 | | | | | |
| Vehicle to transport bikes | 10,000 | 10,000 | 0 | 0 | 0 | | | | | |
| Contingency in Capital costs | 131,100 | 185,250 | 110,700 | 0 | 0 | | | | | |
| **Total Capital** | **786,600** | **1,111,500** | **664,200** | **0** | **0** | | | | | |
| | - | 0 | 0 | 0 | 0 | | | | | |
| Insurance | 49,973 | 136,350 | 253,125 | 283,500 | 283,500 | 283,500 | 283,500 | 283,500 | 283,500 | 283,500 |
| Tax | 2,000 | 4,400 | 7,000 | 7,000 | 7,000 | 7,000 | 7,000 | 7,000 | 7,000 | 7,000 |
| Maintenance | - | 0 | 54,250 | 96,000 | 105,000 | 105,000 | 105,000 | 105,000 | 105,000 | 105,000 |
| Total vehicles | 51,973 | 140,750 | 314,375 | 386,500 | 395,500 | 395,500 | 395,500 | 395,500 | 395,500 | 395,500 |
| | | | | | | | | | | |
| Contingency in operating costs | 2,599 | 7,038 | 15,719 | 19,325 | 19,775 | 19,775 | 19,775 | 19,775 | 19,775 | 19,775 |
| | | | | | | | | | | |
| Driver | | | | | | | | | | |
| Basic Licences: Provisional, moped, Compulsory Basic Training | 38,171 | 99,596 | 169,796 | 183,602 | 183,222 | 183,222 | 183,222 | 183,222 | 183,222 | 183,222 |
| | - | 0 | 0 | 0 | 0 | | | | | |
| Cost for new drivers | 38,171 | 99,596 | 169,796 | 183,602 | 183,222 | 183,222 | 183,222 | 183,222 | 183,222 | 183,222 |
| | - | 0 | | 0 | 0 | | | | | |

**Clackmannanshire e-Moped Employability Initiative**
**10 Year Financial Appraisal**

| | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 | Year 7 | Year 8 | Year 9 | Year 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | |
| Marketing incl web site at start up | 5,200 | 0 | 0 | 0 | 0 | | | | | |
| Professional Fees | 2,500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 | 500 |
| Evaluation | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 | 10,000 |
| Staffing Costs | 56,500 | 95,440 | 126,875 | 155,582 | 160,250 | 160,250 | 160,250 | 160,250 | 160,250 | 160,250 |
| Overheads | 4,238 | 7,158 | 9,516 | 11,669 | 12,019 | 12,019 | 12,019 | 12,019 | 12,019 | 12,019 |
| Staffing and Overheads | 78,438 | 113,098 | 146,890 | 177,751 | 182,769 | 182,769 | 182,769 | 182,769 | 182,769 | 182,769 |
| | - | 0 | 0 | 0 | 0 | | | | | |
| | - | 0 | 0 | 0 | 0 | | | | | |
| **Total Cost** | 957,780 | 1,471,982 | 1,310,980 | 767,178 | 781,266 | 761,491 | 761,491 | 761,491 | 761,491 | 761,491 |
| | - | 0 | 0 | 0 | 0 | | | | | |
| **Net Income** | -834,967 | -1,136,888 | -688,900 | -70,449 | -84,536 | -64,761 | -64,761 | -64,761 | -64,761 | -64,761 |
| | - | 0 | 0 | 0 | 0 | | | | | |
| **Cumulative Income** | -834,967 | -1,971,855 | -2,660,756 | -2,731,204 | -2,815,741 | -2,880,502 | -2,945,263 | -3,010,024 | -3,074,785 | -3,139,546 |
| | - | 0 | 0 | 0 | 0 | | | | | |
| **Funded by** | - | 0 | 0 | 0 | 0 | | | | | |
| Capital Funding | 786,600 | 1,111,500 | 664,200 | 0 | 0 | | | | | |
| Funding for CBT Licences | 38,171 | 99,596 | 169,796 | 183,602 | 183,222 | 183,222 | 183,222 | 183,222 | 183,222 | 183,222 |
| Working Capital Loan/Grant | 15,000 | 0 | 0 | 0 | 0 | | | | | |
| **Total Project Funding** | **839,771** | **1,211,096** | **833,996** | **183,602** | **183,222** | **183,222** | **183,222** | **183,222** | **183,222** | **183,222** |
| | | | | | | | | | | |
| **Funding gap in year** | 4,804 | 74,208 | 145,096 | 113,153 | 98,686 | 118,461 | 118,461 | 118,461 | 118,461 | 118,461 |
| **Funding Gap cumulative** | **4,804** | **79,012** | **224,108** | **337,262** | **435,947** | **554,408** | **672,869** | **791,330** | **909,791** | **1,028,252** |

# F. Management case – preliminary project management timetable

# Transport for Employment

**Project Management Timetable**

| Task | | Year 1 | | | | | | | | | | | | Year 2 | | | | | | | | | | | | Year 3 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Month 0 | Month 1 | Month 2 | Month 3 | Month 4 | Month 5 | Month 6 | Month 7 | Month 8 | Month 9 | Month 10 | Month 11 | Month 12 | Month 1 | Month 2 | Month 3 | Month 4 | Month 5 | Month 6 | Month 7 | Month 8 | Month 9 | Month 10 | Month 11 | Month 12 | Month 1 | Month 2 | Month 3 | Month 4 | Month 5 | Month 6 | Month 7 | Month 8 | Month 9 | Month 10 | Month 11 | Month 12 |
| Strategic Business Case | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Funding Application | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Funding Award** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Establish Advisory Group and Meet** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **emoped hire** | | Mobilisation | | | | Operations, management and monitoring | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Finalise and Complete Grant Offer | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Formation of Trading Subsidiary | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Appoint Project Manager | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Tender for emopeds | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Identify premises | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Establish Staffing Team | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Establish contracts, insurance, paperwork | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Launch programme | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Appoint Team | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Project management | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Evaluation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **Ebike Share** | | Mobilisation | | | | | | | | | | | | Operations, management and monitoring | | | | | | | | | | | | | | | | | | | | | | | | |
| Finalise and Complete Grant Offer | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Appoint Project Manager | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Tender for ebike share operator | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Establish contracts, insurance, paperwork | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Identify sites for docking stations | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Install Docking stations and ebikes (over 6 months from contract award) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Launch programme | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Project management | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Evaluation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Activity path
Key timescales

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