

## E-Cargo Bike Trial Status Report

### 0 Purpose of Report

The purpose of this report is to provide information on progress towards using Transport Scotland funding under the Low Emission Zone funds to procure and manage a series of electric cargo bikes as part of a pilot scheme providing an alternative to vans for local deliveries. The report will also provide early results and analysis of any lessons learned from the project to-date.



### 0 Background

In line with the Scottish Government's Programme for Government, Aberdeen City Council have reviewed options for a Low Emission Zone (LEZ) in Aberdeen, originally to be phased in from late 2020. Due to poor air quality in the city centre, any LEZ would be most likely to be focused on this area. A report on the proposed LEZ was considered by the City Growth & Resources Committee at its meeting on 6 February 2020.

To complement the introduction of a Low Emission Zone in the city centre, Aberdeen City Council received grant funding in the Financial Year 2019/20 from Transport Scotland to implement an electric cargo bike pilot

scheme with businesses in the city centre, to the value of £25,000. This scheme was planned to be run with multiple businesses currently operating vehicles within the city centre, with the intention of replacing at least one vehicle with an e-cargo bike.

Following agreement with Aberdeen City Council and Transport Scotland, Nestrans took the lead on the procurement and management of the project, due in part to the project complementing the actions contained within the Nestrans' Freight Distribution Strategy, which formed part of the Civitas Portis project that Nestrans was a partner in.

The grant funding covered the cost of six electrically-powered cargo bikes, a five-year maintenance plan and all related spare parts and accessories. Training was planned to be organised through Sustrans and would have been covered by Civitas Portis funding as part of the realisation of the Distribution Strategy.

The aim of this project is to demonstrate that electric cargo bikes can be a viable alternative to small vans, and to demonstrate the significant impact that even a small fleet of bikes can have on emissions in Aberdeen.

This report details the outcomes of the project along with any challenges and successes that have been observed within the first six months since procurement. Following the first year of the pilot, reporting will consider the benefits both to businesses and the environment and consideration given as to future years' use, depending on the success of the pilot and the bikes remaining in good condition.

It should be noted that at its outset this project was the first of its kind in Scotland, although short-term trials of cargo bikes were available through Sustrans. As such, this has been a valuable learning opportunity given the limited range of examples that could be used to benefit the project and the requirement to critically assess the practicalities of what is a relatively new mode of cargo transport in the UK.

## ○ Procurement

Before procurement could proceed there was a level of understanding that needed to be gained regarding the options for cargo bikes and the strengths and weaknesses of different models. Whilst Sustrans were invaluable in providing advice regarding different models and cargo bike styles, the specification sheet was intentionally open so as to encourage companies to quote for options that they felt would best suit our needs. It was decided that this was the best course of action given our limited experience versus the experience of the companies building and supplying the bikes. This led to a wider variety of options for consideration than we would have necessarily considered on our own, including options that were eventually chosen.

Given the small pool of electric cargo bike dealers that could feasibly deliver to the specification requested, it was decided that Nestrans would directly approach companies rather than have an open call for applications. This was also due to the niche nature of the request not necessarily suiting the open tender process. The majority of the companies approached were those recommended by Sustrans, although others were added. Nestrans approached 12 companies for quotes and received 11 returns.

The bikes quoted included a mixture of three-wheeled trikes and extended length cargo bikes of varying sizes and configurations. Much of the process involved identifying what specification would best suit the needs of the project, given that the bikes needed to be suitable for a range of different purposes. Due to the variety in quotes, it was difficult to make direct comparisons between them, given that there were few options that were like-for-like. However, it was possible to compare groups of specification. The quotes were split into

‘extra-large’, ‘three-wheeled trikes’ and ‘two-wheeled bikes’. It was determined that a mix of three-wheeled trikes and two-wheeled bikes would represent best value for money whilst also providing versatility for use.

Whilst Nestrans led on the procurement of the bikes, ownership of the bikes has remained with Aberdeen City Council.

There were a number of risks that were considered prior to procurement taking place. Whilst most were mitigated, the impact of Covid was not fully appreciated prior to the project beginning.

One of the key challenges in undertaking procurement was that the business operating models of the cargo bike suppliers were not always compatible with public sector processes. Due to this there was a limited pool of companies that could be used due to many smaller businesses requiring payment upfront to fund the construction of the bikes. This was due to some of the suppliers who also manufactured the bikes, particularly prevalent in mainland Europe, building bikes to order rather than having a stock available for sale.

Due to the ‘built to order’ nature of cargo bike suppliers, this also led to challenges with ensuring that the timescales for the procurement could be met. With the funding secured in January, it was found that the time-period between January and the end of March was tight to be able to procure and take delivery of the bikes. Whilst this was taken into consideration and the ability of companies to be able to deliver the bikes by the end of March was a factor outlined in the specification, by the time Nestrans and Aberdeen City Council had fully researched and considered all of the models available, waitlists had become an issue for some suppliers, meaning that they could no longer be considered. This was likely the biggest constraint in procurement and did affect decision-making in which suppliers to work with for the project.

The impact of coronavirus further complicated the procurement process as delays to orders and the closure of manufacturing in mainland Europe led to the suppliers chosen for the project being unable to deliver the bikes within the required timescales. Whilst an extension to the timescales was requested given the unprecedented situation, this was not granted given that the funds needed to be spent by the end of the financial year. It had previously been agreed that Nestrans would purchase the bikes and charge the cost back to Aberdeen City Council, who had received the funding from Transport Scotland. However, given the delays to procurement caused by the impact of the coronavirus and the inability to extend the funding beyond the end of the financial year, it was decided that the funding would be awarded on the evidence of the purchase order, with Aberdeen City Council transferring the awarded funds to Nestrans before Nestrans had received the bikes or the invoices.

This has proven to be problematic as, whilst the bikes were eventually received and in order, not all items from the order have been able to be delivered due to continuing issues with manufacturing from the suppliers. This is primarily for spares that were procured along with the bikes so as to reduce the need for further spending in future years. In addition, once the bikes were received it was discovered that some of the items included in the purchase order were not compatible with the bikes and so had to be changed. Both of these have led to a discrepancy between what Nestrans has paid for and what Aberdeen City Council was funded for. If there had been some flexibility in the procurement arrangements due to the impact of coronavirus, these issues could have been mitigated.



## 0 Application Process and Marketing

A number of businesses and business organisations were approached prior to the launch of the application period to determine interest in the pilot scheme. The application process was launched in March along with an accompanying web page for advertising the pilot through the Nestrans website. The Federation of Small Businesses (FSB) and Aberdeen Inspired helped to advertise the pilot more widely through their members to encourage interest in the scheme. Whilst there was positive feedback from companies interested in applying to be part of the project, Covid appears to have had a significant impact on the success of the scheme in 2020.

Limited interest in the scheme was identified as a significant risk to the project during procurement. To mitigate this, two types of bike were made available to increase the versatility of the bikes as well as offer an option that would be less daunting for riders not used to the two-wheeled cargo bikes. In addition, interest in the scheme was gauged through the procurement process and both FSB and Aberdeen Inspired were approached for their advice regarding which styles of bike would be of most use to businesses in Aberdeen. The pilot was also advertised before the application process was opened so that interest could be gauged. Before lockdown it looked likely that the project would have a good variety of applications and may have been oversubscribed. To accommodate for this, the application questions were designed to help assess which applications would best meet the needs of the project, with companies rated accordingly depending on if they were planning on replacing a vehicle with a bike, planned to use the bike regularly and did not already have use of a cargo bike.

Businesses taking part in the pilot have the opportunity to trial one or more e-cargo bikes for a period of up to one year. They are not expected to cover any costs relating to the routine maintenance or use of the cargo bike, but are to be responsible for the safety and security of the bikes, users and cargo. Businesses are also expected to complete monthly monitoring returns relating to their use and experiences of using the bikes. All of this is made clear within the guidance made available to businesses before they apply.

One of the original aims of the project was to encourage businesses taking part in the trial to consider purchasing their own e-cargo bikes if it was deemed suitable for their business needs.

One of the key considerations of the project was the development of the terms that would constitute the agreement with businesses. It was determined that this should be comprehensive but not onerous. Whilst there were no direct comparisons that could be used as a basis, the terms of agreement used by Sustrans for their business trials, and by Home Energy Scotland for their e-bike trials were used to shape the content of the agreement and understand what should be included. As the agreements were initially made on a short-term basis due to Covid-19, learnings from the early stages of the project were used to further refine the terms for the long-term agreements.

In addition, a monitoring sheet was developed to track the usage of the bikes and details users' experience of them. This was also revised following initial feedback on the project.

## **0 Impact of Covid-19 on Success of the Project**

As noted above, Covid-19 has had a significant impact on the process and has affected each stage of the project to-date. It is anticipated that this will continue to be a risk into 2021 and could present further risks to the viability of the project moving forward. As such, it has been important to remain flexible with the project to meet the objective.

Whilst procurement was not initially affected by Covid-19, the closure of manufacturing in mainland Europe impacted on delivery times as both types of cargo bike were delayed due to issues in the supply chain. Due to this disruption, whilst the bikes were delivered, they were unable to be delivered before the cut off date for funding. Due to this and following agreement from Transport Scotland, Nestrans was required to invoice and receive funds from Transport Scotland, via Aberdeen City Council, before the items were received. This has led to ongoing issues due to some items having never become available since the lockdown and therefore have never been received. These have not been invoiced for by the suppliers, but do remain outstanding between Nestrans, Aberdeen City Council and Transport Scotland.

In addition, due to the lockdown it was not possible to offer training on the use of the bikes. This was originally due to be a prerequisite to ensure that riders were confident and safe in their use of the bikes. However, this does not appear to have proven a deterrent in businesses using the bikes as all who have agreed to pilot the bikes have found them to be quick to master.

One downside of not being able to offer the training is that the 'coaster braking' system on the trikes is unusual for most bike users in the UK. One company using this style of bike have potentially caused excess wear of the front brakes due to an overreliance on the front brake, rather than using the coaster brake in the pedals. This could be due to limited confidence in the use of the coaster brake system, however whether this would have been mitigated through training is unknown given that multiple riders use that bike.

The UK lockdown coincided with the launch of the pilot, taking place within a week of the application window opening. This had significant impacts on the success of the project to-date. The rules regarding usage of the bikes being restricted to Aberdeen city centre were relaxed and agreements were made on a rolling monthly basis to encourage uptake from businesses that were unable to make long-term decisions.

In the early period of lockdown, there was increased interest in the bikes as a delivery vehicle for companies who were unable to stay open, including cafes and restaurants in particular. However, given the uncertainty

surrounding the pandemic and the lockdown restrictions, the translation from initial interest to completed applications was low. This was particularly evident when hospitality businesses were able to change their practices to allow for increased outdoor space, reducing the need for a dedicated delivery system and reducing the space that could be used for storing the bike.

Whilst there has been a slow uptake for the bikes, those who received a bike during the height of lockdown, to cope with the challenges lockdown had created, remained eligible and willing to keep the bike for the full year of the trial once lockdown had started to lift.

Another impact due to Covid-19 has been the management of the project. Due to competing demands as a result of the pandemic, support for the project has been a challenge. Storage of the bikes has also been a challenge due to the bikes taking longer to be loaned out.

## ● Project Challenges

Whilst many of the challenges that have been faced so far in this project have been as a result of Covid-19, Nestrans have also faced challenges both in the management of the project as well as with the bikes themselves:

- With regards to management, as this was a first for both Nestrans and Aberdeen City Council, it took time to arrange the responsibilities for the project with regards to ownership, maintenance, storage and overall management. Whilst Nestrans would have been willing to take full responsibility for the project, this was not possible. Due to this, whilst Nestrans manages the project, Aberdeen City Council remain the owners of the bikes. This has caused some complications with regards to communication and associated responsibilities regarding different aspects of the pilot.
- Regarding the bikes, there have been additional challenges due to the majority of cargo bikes being European models. When choosing a model of bike and supplier, height was proven to be a consideration, with several bike brands not being suitable for shorter riders. In addition, upon receipt, the cargo trikes were discovered to utilise a 'coaster brake' system where the rear brakes are controlled using the pedals on the bike. This is not a common system used in the UK and posed an additional complication for encouraging new riders to the bikes. This braking system was not detailed in the quote as part of the procurement process so was unexpected. With hindsight, details of both the front and rear the brakes would be required for any further bikes that may be procured so as to avoid similar issues in the future.
- Similarly, issues with maintenance of the cargo bikes has surfaced, due to the European model of bike utilising a front brake system that is unfamiliar to the company that is maintaining the bikes. Whilst there are no issues with the braking system, in order to be able to get the bikes serviced locally, all bikes of that model will need to have their front brakes replaced, which will need to be at an additional cost to Nestrans.

## ● Project Successes

Despite the challenges experienced due to Covid-19, there have been a number of successes in the project:

- Partly due to the impact of the lockdown, businesses who would have not otherwise considered a bike are now using one and can see this becoming a long-term addition to their business.

- All feedback from the users of the bikes has been overwhelmingly positive, with rider experiences detailing the joy they have felt being on the bikes and that, with regards to the trikes, some riders prefer them to the other options available for deliveries.
- Within the first three months of the project, which has utilised only three of the six bikes:
  - Over 30kg of CO2 has been saved compared to using a small van for the same journeys;
  - Over £51.00 of fuel has been saved compared to using a small van for the same journeys; and
  - 575 miles has been ridden on the bikes, which may have otherwise been done in a motorised vehicle.



## ○ Current Status of Project and Projections for 2020/2021

Since May, three of the bikes have been in regular use, with two being loaned in May and one in June. The companies using the bikes are:

- CFINE, who are using the Christiania e-cargo bike for food bank deliveries. They have multiple riders and average 87 miles a month;
- Poldinos, who are using the Riese and Muller e-cargo bike for 'cook at home' restaurant deliveries. They currently have one rider who averages 35 miles a month. This has reduced from 60 miles in the first month due to injury and a change in operating practices, so may not be representative of actual use moving forward; and
- Fargo's Cargo, who are using the Rise and Muller e-cargo bike for grocery deliveries on behalf of other companies. They have one rider who averages 105 miles a month.

As of September, the Aberdeen City Council Countryside Rangers have been given loan of a Christiania e-cargo bike for use as a multi-purpose vehicle. This will be used to supplement and replace journeys otherwise done using their van or pick-up truck and will primarily be used for transport between sites, the transport of maintenance equipment and for school events.

As of September, one of the Christiania e-cargo bikes is not in use due to an issue with the brakes following servicing and potential overuse. This bike was on loan to CFINE, who are currently using another Christiania in the interim. One Christiania is still in storage at Tullos Depot.

Due to the requirement to replace the brakes on the Christianias so that they can be serviced locally, some bikes will require additional spend without ever having been used.

Whilst efforts are being made to find companies interested in trialling the two remaining bikes, it is becoming increasingly unlikely that this will happen before 2021 due to the move into autumn and winter. In addition, as long as Covid-19 remains a risk, the long-term viability of ensuring there are willing companies able to use the bikes is in question. This is disappointing as early indications suggest that the bikes are suitable for use in Aberdeen, are shown to have benefits and provide enjoyment for riders, and have significant potential for environmental and economic benefits.

It may be possible to mitigate this risk if the bikes were able to be offered on a one-year basis to businesses outside of Aberdeen.

## ● Lessons Learned

- Procurement of bikes would be easier with more flexibility in procurement processes, particularly due to the majority of the suppliers and manufacturers of electric cargo bikes being based in mainland Europe.
- Whilst it was anticipated that the two-wheeled cargo bike would be more difficult for companies to familiarise themselves with and would therefore be more difficult to encourage interest in, the opposite proved to be true. The learning curve for using the bikes was not seen as being a barrier to use by companies, whilst the larger size of the Christiania trikes has been a barrier to multiple companies due to difficulty in storage. Due to this, there has been more interest in the Riese and Muller bikes than the Christianias. If this project were to be repeated, it would be recommended that focus be placed on providing adequate two wheeled cargo bikes in a higher number than any larger model.
- Due to the challenges in gaining interest in the bikes, it would be recommended that any project start with a smaller number of bikes if possible and increase following an understanding of demand. Whilst there were encouraging levels of interest during the procurement process, throughout the project interest has often not translated into eligible applications. Whilst part of this is due to the impacts of Covid-19, it is understood that there will also be other barriers to businesses being willing or able to try a cargo bike, even when it is at no cost.
- Whilst dedicated training has not proven to be necessary to the project, following issues with the use of the Christiania, a full demonstration of the braking systems along with the opportunity for all users

to practice will be required for the current users of the Christiania and will also be undertaken with other companies using the Christiania so as to avoid repeat issues in the future due to overreliance on the front brakes. Following this experience it is recommended that any future schemes ensure that all riders are familiar with the bikes before use through a practical demonstration.

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