

# eCycle: an Electrically Assisted Shared Bicycles Scheme

Speaker:

Jamie Pearson, Environmental Sustainability Manager,  
Edinburgh Napier University



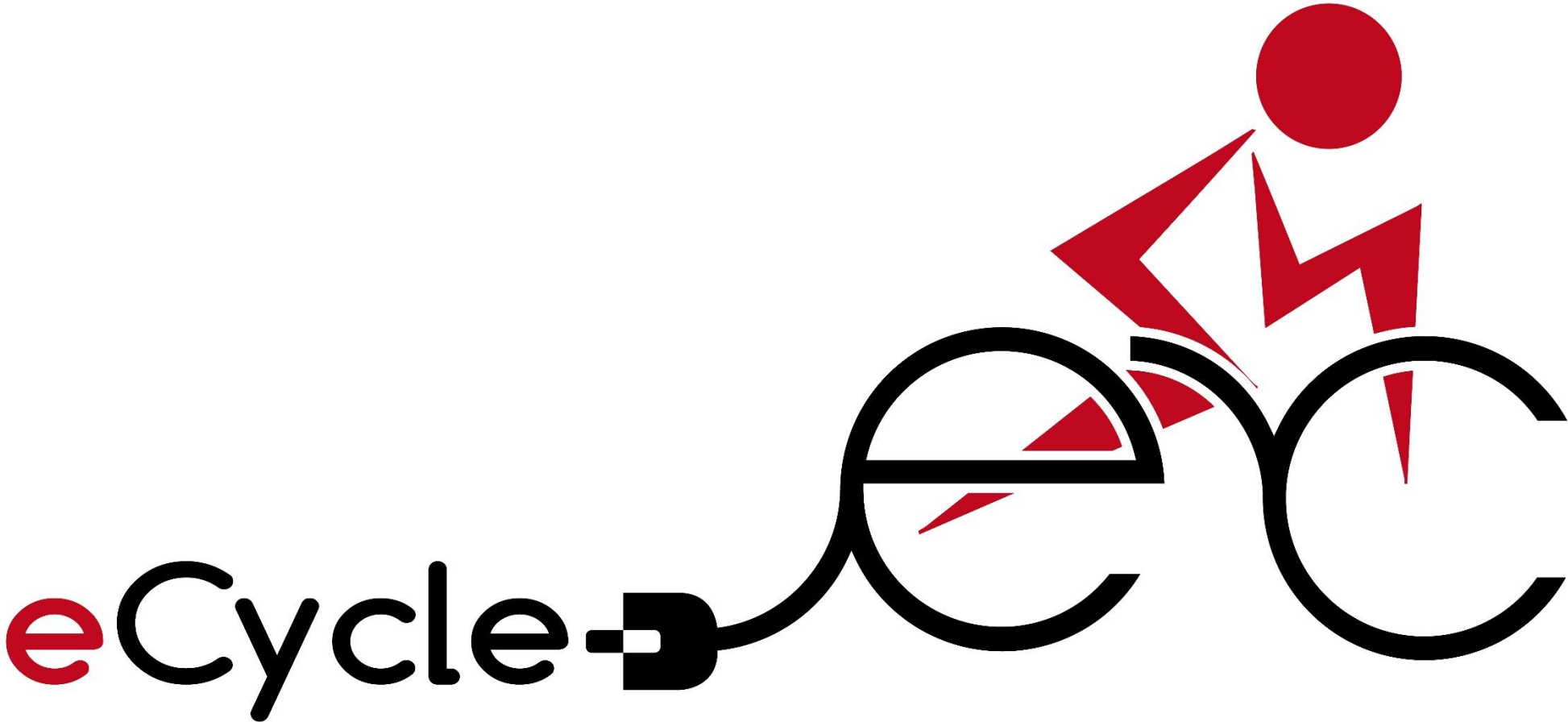
**LIFE Framework: Travel and Transport**

Wednesday 07 October 2015, 12:00 – 13:00

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[www.sustainabilityexchange.ac.uk](http://www.sustainabilityexchange.ac.uk)



# Edinburgh Further and Higher Education Transport Group (EFHETG)

Member  
Institutions



Project  
Partners



# 28 EAPC 's





# Background Review



### 3.2 Detailed Requirement

#### 3.2.1 Detailed specification of the electrically assisted pedal cycles (30 marks)

Demonstrate how you would meet or exceed each element below A through O for the 22 EAPC's requested.

Please feel free to propose better and where you do illustrate why your solution is better.

Ensure you address the quality of the EAPC's as a whole and their components given the shared usage of the EAPC's and thus the need for them to be sufficiently robust and durable.

Please supply relevant photos, drawings or other evidence to show compliance with the criteria listed below.

- A 36V motor.
- B 250W motor.
- C Motor positioned at pedal height.
- D Step-through unisex frame (or a type that would be suitable for the majority of male and female cyclists).
- E EAPC with a weight range of 20 to 25Kg (including the battery, when in position)
- F Puncture resistant tyres.
- G Tyre width conducive to city commuting.
- H Brakes conducive to city commuting.
- I Number of gears no less than nine.
- J Flat, clip-less pedals.
- K Easily adjustable seats and handlebars.
- L Integrated front and rear lights.
- M Integrated rack, allowing for a wide range of panniers to be fitted.
- N Integrated stand.
- O Integrated front and back mud-flaps, providing maximum protection to the EAPC user.

#### 3.2.2 Detailed specification of battery (15 marks)

Demonstrate how you would meet or exceed each element below A through J for the 22 EAPC's batteries requested.

Please feel free to propose better and where you do illustrate why your solution is better.

Please supply photos, drawings or other evidence to show compliance with the criteria listed below:

- A Durable Lithium Ion battery.
- B Secure and lockable battery.
- C Battery that is easy to remove from the EAPC frame.

- D Battery that is easy to charge.
- E Integrated (fixed) or detachable display/panel shows the charge or battery remaining.
- F Demonstrate the usability of the display/panel.
- G Average mileage expected from a full charge, in a city commuting environment.
- H Time taken between flat and full charge.
- I Estimated lifetime of the battery, for average daily distances in a city commuting environment.
- J Advice on charging techniques to elongate the lifetime of each battery.

#### 3.2.3 Detailed specification of accessories (5 marks)

Demonstrate how you would meet or exceed each element below A through E for the 22 EAPC's accessories requested. Please feel free to propose better and where you do illustrate why your solution is better.

Please supply photos, drawings or other evidence to show compliance with the criteria listed below:

- A 44 panniers, each with a volume of 18 to 22 litres.
- B Panniers that fit the racks provided on the EAPC.
- C 30 gold standard d-locks, with cables of sufficient length to secure the EAPC in at least two locations on a standard Sheffield stand.
- D 30 bicycle helmets, adhering to British Standards, with fully adjustable straps.
- E 30 lightweight high visibility vests with Velcro attachments.

#### 3.2.4 Detailed specification of maintenance and warranty (10 marks)

Detail the overall warranty cover of each element below, including any restrictions, of each aspect requested:

- A EAPC.
- B Battery.
- C Panniers.
- D Gold standard d-locks.
- E Bicycle helmets.
- F High visibility vests.

In addition Illustrate the expected maintenance requirement, over two years, of the EAPC's and batteries required, assuming average use (in a bike share scheme) encompassing journeys principally comprising of city commuting to assist in ensuring the safe operation of the EAPC.



# Cost: 22 EAPC's & Accessories

## Section 3.3

Reference: ITQNU- 09072014 (EAPC)

### Pricing

#### 3.3.1 Price for 22 EAPC's Total (delivery and set up incl.)

22no Giant Prime E+2 EAPC's £1290.00 ea. 28380.00

#### 3.3.2 Price for Battery

22no. Giant Prime E+2 EAPC's (incl)

#### 3.3.3 Price for Accessories

22no. Avenir Waterproof Panniers sets (pairs) £45.00 ea 990.00

30no. Kryptonite Evolution Series 4 long shackle U-lock £28.00 ea 840.00

30no. Kryptoflex 1.2m cable lock £5.00 ea 150.00

30no. Lazer Cyclone Flash Yellow Helmet £19.00 ea 570.00

30no. Madison Hi-Viz Reflective Vest £7.00 ea 210.00

22no. Park Tools PMP3 Mini Pumps £12.00 ea 264.00

22no. M Part 8 function premium quality multi tool (incl)

44no. Schwalbe Marathon Plus 700x35mm tyres (incl)

#### 3.3.4 Price for Maintenance

88no. Standard Services £25.00ea 2200.00

#### 3.3.5 Summary price for all elements and total (ex vat)

£33604.00

Vat (no vat on helmets)

£6280.80

Grand Total

£39884.80

Electric Cycle Company Limited

133 Granton Road

Edinburgh

EH5 3NJ

0131 552 0999



# Safety & Visibility





# Accessories & Security



1	1	1	1
1	1	2	2
2	2	2	2
3	3	3	3
3	4	4	4





The oomph!



**HANDLE WITH CARE**

**FRAGILE**

**IF DAMAGED, REPORT IMMEDIATELY TO YOUR ECYCLE CONTACT. DO NOT PLUG IN. DO NOT BRING INDOORS.**





## ELECTRICALLY ASSESTED PEDAL CYCLES: RISK ASSESSMENT FORM

SCHOOL/SERVICE: Environmental Sustainability, Property & Facilities    LOCATION: All Campuses and Accommodation Sites    DATE: 22/12/14 (v2)

No.	Hazards identified	People at risk from hazards	Existing control	Risk			Further action / recommendations	Action by whom	Action by when	Completed
				H	M	L				
1	<b>Injury resulting from incorrect setup and/or faulty parts, including repair</b>	Employee Student Public	<p>eCycle procured from trained professional and a reputable company through a rigorous invitation to quote process following University Procurement procedures.</p> <p>Six-week check carried out by a trained professional on all new eCycles procured.</p> <p>Management and maintenance programme in place, including robust six-monthly checks carried out by a trained professional.</p> <p>Competent University staff to check each eCycle on at least a monthly basis using guidance from Sustrans.</p> <p>Competent University staff to provide training to each user to ensure they themselves are competent and using the eCycle.</p> <p>eCycle users to complete an 'M-check' before using the eCycle each time. Users will also be provided with a physical laminated information guide, specific to the eCycle used. Both documents to be housed at <a href="http://www.bit.ly/ENU-SO11">www.bit.ly/ENU-SO11</a></p> <p>Users, through their individual Users Agreement, will be informed that they must make no attempt to repair any part of the eCycle, including repairing a puncture. All repairs will be carried out by a trained professional, as part of the two year maintenance contract</p>			L	A film will be produced, visually demonstrating how to complete an effective M-check on the eCycle. The film will also show new users how to use every aspect of the eCycle, as a supplementary back-up to mandatory one-to-one training.	Jamie Pearson	Ongoing	Ongoing

# Risk Assessment

## Bike Insurance

I (Jamie Pearson) have attempted to consider all eventualities although there may be some obvious scenario's not listed.

Wish to avoid personal insurance cover, where possible, including users buying their own insurance for using the bikes for business and personal travel.

Scenario	Current Insurance Cover	Required Insurance Cover	Insurance Considerations	Notes - Jamie Pearson	Notes - David Campbell
Unlocked bike stolen (any location)				Assume no cover	
Locked[1] bike stolen from University property					
Locked[1] bike stolen from street or within a storage compound owned by another organisation					
Locked[1] bike stolen from personal property[3]					
Accessories[2] stolen from University property - not securely stored				Assume no cover	
Accessories[2] stolen from University property - securely stored					
Accessories[2] stolen from within a storage compound or area owned by another organisation					
Accessories[2] stolen from personal property[3]					
Bike[4] damaged by users - during use					
Bike[4] damaged by users - whilst stored					
Bike[4] damaged by person other than users - during use					
Bike[4] damaged by person other than users - whilst stored					
Accessories[2] damaged by users - during use					
Accessories[2] damaged by users - whilst stored					
Accessories[2] damaged by person other than users - during use					
Accessories[2] damaged by person other than users - whilst stored					
Accident - whilst bike is in use - fault of user - impact to user					
Accident - whilst bike is in use - fault of user - impact to other parties[5]					
Accident - whilst bike is in use - fault of user - impact to bicycle[4]					
Accident - whilst bike is in use - fault of user - impact to accessories[1]					
Accident - whilst bike is in use - fault of other party - impact to user					
Accident - whilst bike is in use - fault of other party - impact to other parties[5]					
Accident - whilst bike is in use - fault of other party - impact to bicycle[4]					
Accident - whilst bike is in use - fault of other party - impact to accessories[1]					
Accident - whilst bike is in use - fault of user - no impact to anyone or anything other than user					

[1] Users will be provided pictorial evidence on the most effective way to securely lock the bikes.

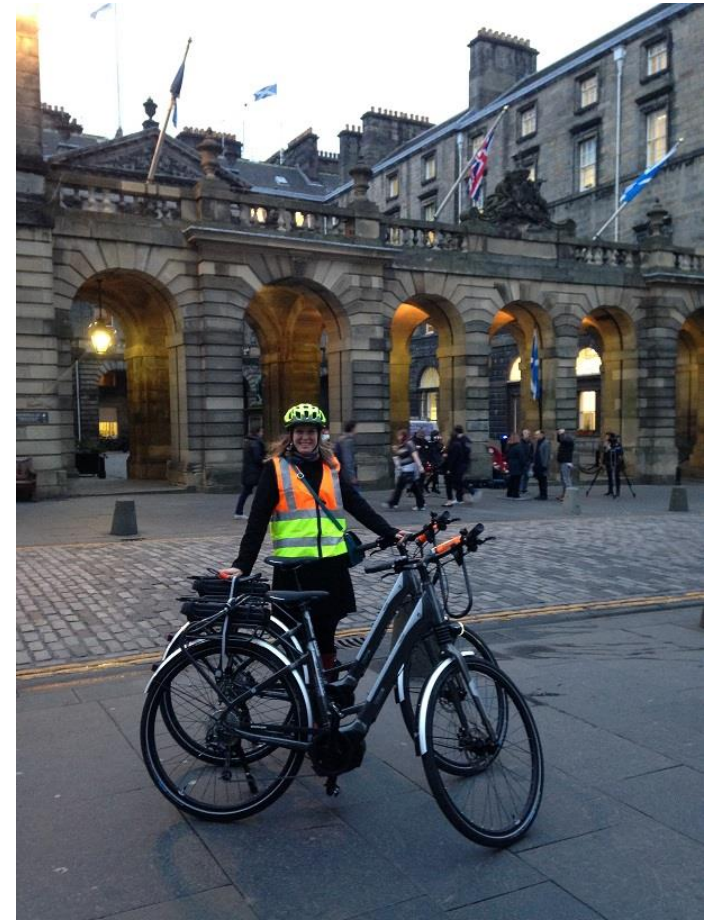
[2] Current accessories include: helmet, high visibility vest, panniers, pump.

[3] Before storing on personal property, users will be asked to assess the availability and appropriateness of the storage area available.

[4] Including battery.

[5] All parties including those in or on any vehicle or any pedestrian.

# Initial Testing & Communication





# Promotional Images



# Maintenance Checklist

## eCycle 1

Edinburgh Further and Higher Education Transport Group



### ELECTRICALLY ASSISTED PEDAL CYCLE PROJECT CHECKLIST

DATE OF DELIVERY:				
DATE OF CHECKUP:				
<b>ELECTRIC BIKE</b>		<b>YES</b>	<b>NO</b>	<b>ISSUES</b>
<b>Model</b> Giant prime E+2 2015 model, Hybrid cycling technology (pedal assist)				
<b>Size</b> Small (16")	Any there any scratches or dents?			
<b>Frame</b> ALUXX- grade aluminum			X	
<b>Fork</b> SR Suntour NEX 63mm Travel	Any there any scratches or dents?		X	
<b>COMPONENTS</b>		<b>YES</b>	<b>NO</b>	<b>ISSUES</b>
<b>Handlebars</b> Aluminium Trekking bar	Are they well attached?	X		
	Are the ends plugged?	X		
<b>Stem</b> Aluminium adjustable	Any issues?		X	Scratches and small dents on adjustable wheel area
<b>Seatpost</b> Alloy suspension	Any issues?		X	
<b>Saddle</b> Selle Royal Ariel	Is it well attached?	X		
<b>Pedals</b> Aluminium anti-slip	Do the pedals spin easily?	X		
<b>Nuts and bolts</b>	Are all nuts and bolts tight on the bike?	X		
<b>DRIVETRAIN</b>		<b>YES</b>	<b>NO</b>	<b>ISSUES</b>
<b>Gears</b> Shimano Nexus 9, 9 speed	Do all the gears change?	X		
<b>Brakes</b> Shimano M422 V brakes	Do they work?	X		
	Are the brakes tight?	X		
	Are the cables free from fraying?	X		
	Do the levels pull tight?	X		
<b>Brake levers</b> Tektro	Do the levels pull tight?	X		
<b>Cassette (holds the chain)</b> Shimano 18T	Any issues?		X	
<b>Chain</b> KMC Z610HX	Is it lightly oiled?	X		
	Does it have any rust?			Some on back left brake disk
<b>Crankset (holds the pedals)</b> Giant aluminium	Any issues?		X	
<b>Bottom bracket</b> PedalPlus BB sensor, cartridge	Any issues?		X	

# eCycle

## DAMAGE CHECKLIST

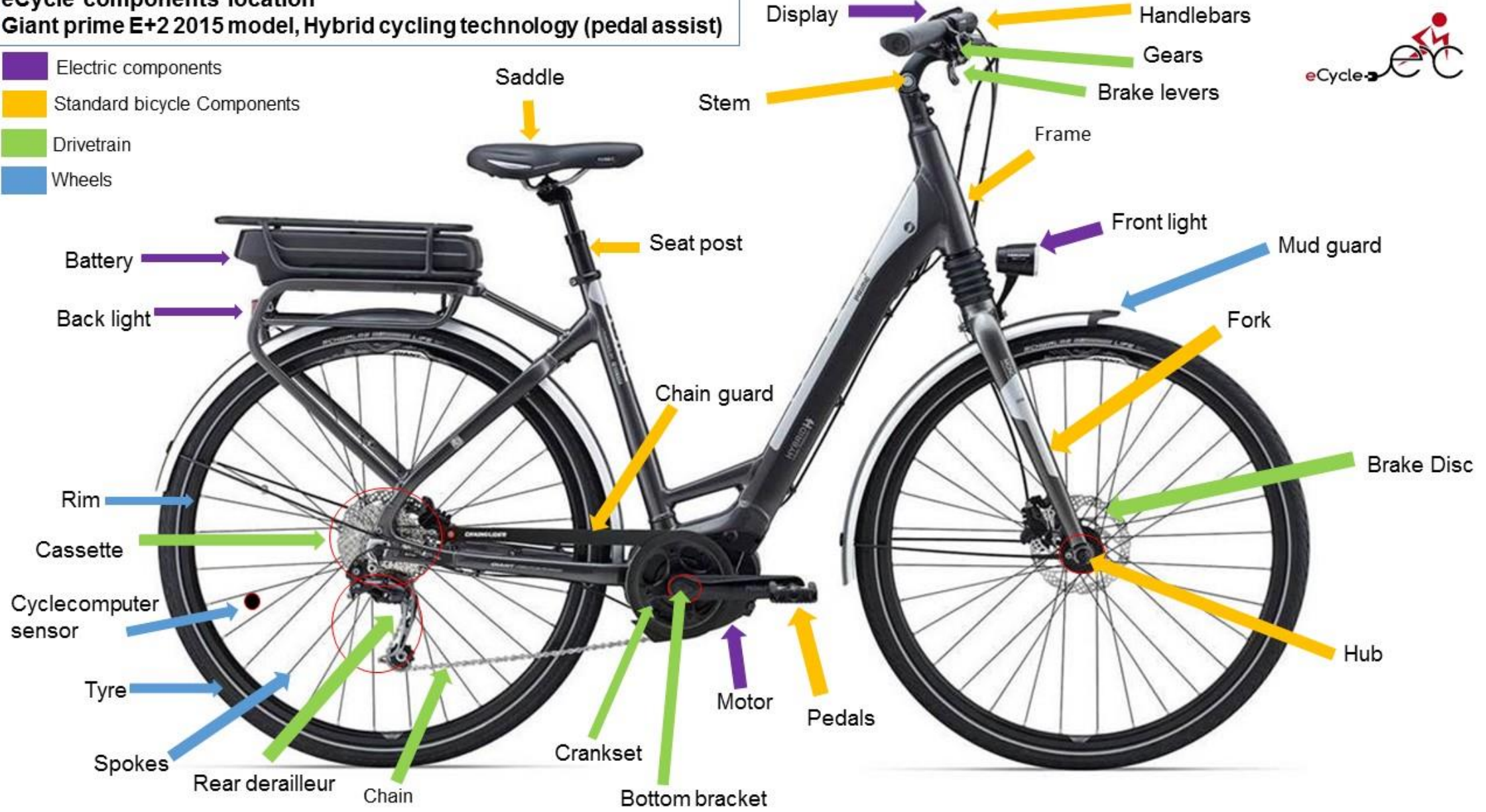
Details of damage and associated photos should be provided on the next tabs

Date	Time of incident	Location of the incident	User name	Bike #	Police Reference #	Details of the damage	Does the issue need attention immediately?	Can the issue be fixed immediately?	Is it a warranty issue?	Is professional help needed?	Remedial action, future risk (if applicable)	Cost of repairs (if applicable)	Date repaired
13/11/2014		Edinburgh Napier University Merchiston Campus	Jamie Pearson	EN2		Mudguard attachment to wheel popped off on the user's right hand side. Also minor scratches on the frame.	No	Temporarily, yes		If it comes out again then yes	The kickstand needs to be used. However, should a new kickstand be considered to be more suited to such a heavy bike?		13/11/2014 (for mudguard attachment)
04/03/2015	19:00	Scottish parliament	Kasia Janik	EN1		Battery disengaged itself without reason even though it was pushed in firmly before the start of the ride during cycle ride but did not fall off bike. Was able to push it back in and continue use.	It could have been a fault of the user.						
02/04/2015	8:30am	22/5 Duff street Edinburgh hallway	Kasia Janik	EN2		Scratches on monitor and brake lever. Bicycle fell over onto a wall due to being top heavy and kickstand not being engaged.	No, it is more an aesthetic issue than a functional problem. Bike still works fine.	No	Not sure	Not at the moment	The kickstand needs to be used. However, should a new kickstand be		
06/04/2015	Time bicycle was locked: 4:45PM Time bicycle was picked up ~8:30pm	Annandale St Ln bike barrier	Loic Pellizzari	EN2		Vandalism (Rear mudguard reflector torn off; carrier/rack holder pulled off; scratches on frame; deflated tyres (potentially slashed); extensive damage to	Yes	Unknown	No, it was an accident, not a bicycle fault.	Yes	Contact police to record the incident. Take photos of the		
23/04/2015	10:00	Edinburgh Napier University	Martin Jamieson	EN1		Same issue with EN1 that happened on 04/03/15. Should have this issue examined. Battery difficult to remove but has a tendency of popping out during the ride- this is a risk as it can fall off the bike.	Yes		Yes	Yes	Not to use EN1 until mechanic has had a look.		



**eCycle components location**  
**Giant prime E+2 2015 model, Hybrid cycling technology (pedal assist)**

- Electric components
- Standard bicycle Components
- Drivetrain
- Wheels



# User Guidance

- Mandatory Induction
- Information leaflet in every pannier
- User guidance booklet
- YouTube: [Introduction](#), [accessories](#) and [m-check](#)
- [www.bit.ly/ENU-eCycle](http://www.bit.ly/ENU-eCycle)



# User Agreement



## User Agreement and Registration Form Edinburgh Napier University

All users of the eCycle scheme are required to complete and sign this form. A manual will be supplied during the induction which details the operation of the eCycle. This form only needs to be completed once. Please use block capitals.

### PERSONAL DETAILS

Name: \_\_\_\_\_

Staff/Matriculation Number: \_\_\_\_\_

Department/School: \_\_\_\_\_

Home Address  
(term-time for students): \_\_\_\_\_

Phone: \_\_\_\_\_

Email: \_\_\_\_\_

Emergency contact information  
(Name/Phone number): \_\_\_\_\_

### CYCLING EXPERIENCE

I confirm that I am a **confident and competent cyclist** (circle below as appropriate).  
If no, you will be required to attend a cycle training course before using an eCycle:

Yes                      No

If you answered yes to the question above, **how often do you usually cycle**  
(circle below as appropriate):

Infrequently (once per month)    Occasionally (once bi-weekly)    Often (weekly)

### TERMS AND CONDITIONS

Please read the following terms. Your signature will signify you agree to the terms.

- I am a student or a member of staff at Edinburgh Napier University.
- I confirm that I have the necessary experience and competence to ride an eCycle safely and will ride in a matter within my competence.
- I will abide by the Highway Code <https://www.gov.uk/rules-for-cyclists-59-to-82> and will follow good cycling practice <http://think.direct.gov.uk/cycling.html>
- I acknowledge that I am responsible for my own safety.
- I have attended an induction. I have read and accept the Risk Assessment for the use of an eCycle. I am aware of the user manual and film available at [www.bit.ly/ENU-SO11](http://www.bit.ly/ENU-SO11)
- I certify that, to the best of my knowledge, I do not have a medical condition which might have the effect of making it more likely that I be involved in an incident which could result in injury to myself or others e.g. other road users.
- I will take all reasonable precautions to prevent loss of the eCycle that including always using the D-lock and cable to fix the eCycle itself to an immovable object (ideally a cycle stand), and within secure cycle stores where available.
- If using the eCycle for personal commute or personal travel, I will ensure there is an appropriate and safe place at home to store the bike securely overnight.
- I will not allow any other persons to use the eCycle whilst I have it in my possession.
- I will consider required precautions, including wearing a high visibility vest and helmet.
- I will carry out an M-check on the bike before use, every journey, and report any faults immediately to the Property & Facilities Helpdesk at 0131 455 5000. I will not cycle in the knowledge that a fault is present and not dealt with.
- I will not carry out any work to the eCycle to rectify faults which appear during use. If I use an eCycle with a known fault I accept I am using the eCycle at my own risk.
- I undertake that the eCycle or associated equipment, including accessories will not be used improperly and that it will be returned to Edinburgh Napier University in the same condition as it was received (save for ordinary wear and tear) at the agreed location.
- I will report theft immediately to the Property & Facilities Helpdesk at 0131 455 5000.
- I will assist the University with monitoring and evaluation of the eCycle scheme.

Edinburgh Napier University shall not be liable for any injury or loss whatsoever in relation to use or loan of an eCycle, except in relation to personal injury or death arising from the University's negligence. Any injury or loss resulting from or arising in connection with the reckless, careless or improper use of an eCycle by a user shall be borne by such a user. Users have a duty to report any damage or faults to the eCycles immediately, so that they can be maintained in a roadworthy condition.

I agree to the terms and conditions.

Signed: \_\_\_\_\_ Date: \_\_\_\_\_

Application Accepted by Edinburgh Napier University.

Name (print): \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_



Launch: 31<sup>st</sup> March 2015



Press Invite 31st March: MSPs Get on Electric Bikes to [Launch](#) eCycle - Green Transport Initiative by Edinburgh's Colleges and Universities

26<sup>th</sup> March, 2015

**Event: MSPs Launch eCycle – Universities & Colleges in Edinburgh Initiative**

**Date: 10.00 am Tuesday 31<sup>st</sup> March.**

**Location: Roundabout at Top of Calton Hill, Edinburgh**

**Press Invitation: Embargoed 10.00 am Tuesday 31<sup>st</sup> March**

You are invited to the roundabout at the top of Calton Hill to join Alison Johnstone MSP (Scottish Green Party), Sarah Boyack MSP (Scottish Labour Party), Jim Eadie (SNP) with Cllr Russell Imrie (Chair of SEStran) on their electric bikes as they officially launch an eco-friendly cycle sharing scheme for Edinburgh's Colleges and Universities.

The eCycle initiative involves six of the City's leading Colleges and Universities, together with key partners. The bike sharing scheme, with added battery power, is one of a number of projects the group is investigating as it seeks to lessen the environmental impact of travel around their various campuses and offices across Edinburgh.

The Edinburgh Further and Higher Education Transport Group (EFHETG) is focussed on all aspects and modes of travel linked to their sector. Edinburgh College, Edinburgh Napier University, Queen Margaret University, Scotland's Rural College, Transition Heriot-Watt and The University of Edinburgh are institutional members, representing a community of over 130,000 people. SEStran and Sustrans provide strategic support to the Group.

EFHETG has bought 28 electrically assisted bicycles (plus an electric cargo bike) to form the innovative eCycle Scheme. Utilising the eCycles, the group will encourage members of the further and higher education community to consider cycling as an alternative to single car occupancy or public transport for personal and business journeys. The eCycles will be managed locally at each institution and will be available on a shared basis with training provided if required. Users will be provided with locks, panniers, a high visibility vest and a helmet.

The project is supported by a generous grant of £25,000 from SEStran with match funding by the Group. Chair of SEStran, Cllr Russell Imrie noted

"SEStran is proud to support the Edinburgh Further and Higher Education Transport Group's eCycle scheme. The Scheme is a great example of what working in partnership can achieve. Cycling for shorter journeys is great exercise, and helps tackle traffic congestion on the region's roads and to reduce our carbon footprint. Electrically assisted cycles are also a great way for those who are new, or those returning to cycling, to give it a go".

Alison Johnstone, Co-Convenor of the Cross-Party Group in the Scottish Parliament on Cycling says:

"Cycling should be an easy and attractive option for a wide range of people, and I'm convinced that electric bikes are going to have a much bigger role in the coming years. I'm delighted that our universities and colleges are leading the way again and this project will see many benefits for individuals and the city."

Jamie Pearson, Environmental Sustainability Manager at Edinburgh Napier University, noted:

"I'm delighted with the financial support SEStran and our own institutions have provided towards the eCycle Scheme. Through travel surveys and discussions within our sector we're very aware that many members of our community would be willing to try cycling, or cycle more, with a bit of additional resource and support. Users will still have to physically pedal the eCycles but the motor and battery

attached will boost confidence, add support to increased mobility and, from personal experience, make going up hills an absolute breeze!"

The Scheme will act as a test-bed to provide more information on cycling within the further and higher education sector. It will aid local and national strategies to increase cycling and, as part of institutional travel plans, support the reduction of carbon emissions associated with personal and business travel in and around Edinburgh.

**Notes for Editors:**

SEStran is the South East of Scotland Transport Partnership.

- For more information on the Scheme, visit each institutional website.
- All users of the eCycles must register at their home institution.
- Membership varies at each institution but members must commonly be a staff member or student.
- The Scheme is not open to members of the public.
- The eCycles were procured through a formal 'invitation to Quote' process.
- The Scheme gained support and knowledge exchange from the team at Sustrans, specifically through the e-bike project within the Cairngorms National Park.

**ENDS**

**Issued by:**

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# Institutional Responsibility

Accessibility  
Storage

Booking

Cleaning

Communication

Day-to-day Maintenance

Insurance

Management

Loan Conditions

Risk Assessments

Security

Training

User Agreement





# Future Development

- The project started as an experiment.
- University of Edinburgh have developed a new scheme, procuring 50 regular bicycles at Pollock Halls of Residence.
- Edinburgh Napier, through a new student accommodation site and associated Section 75 agreement have six additional regular bikes.
- Abellio Trains (Scotrail contract) and JCDecaux
- Ongoing study by The City of Edinburgh Council into a city wide bike share scheme.
- Ensuring the eCycle network keeps developing...

