



Bikes in Belfast

Examining the potential for bike sharing in Belfast City

INTRODUCTION

Modern, vibrant cities require innovative transport solutions. Active transport is key to enabling healthy citizens unlock the full potential of their city.

Bike sharing provides citizens with a low-carbon, healthy transport option. If designed to integrate with existing public transport networks, bike-sharing schemes can significantly reduce our dependence on the private car.

Bike sharing schemes are currently in operation in over 100 cities and towns across the world. Paris, Dublin, Washington DC, Montreal, Auckland and Berlin are just a few of the cities whose citizens and local environment benefit from bike sharing.

There is no "one size fits all" option when it comes to bike sharing; schemes vary in size and systems differ in design. However, all bike sharing schemes have one common theme - providing citizens with affordable, convenient and sustainable transport.



Bike sharing schemes offer a number of benefits:

- **Reduced congestion** - more cyclists means fewer car drivers.
- **Improved public health** - cyclists enjoy exercise as part of their commute. This will contribute to a fitter, more productive workforce and lower levels of absenteeism. Regular exercise also reduces rates of heart disease, strokes and cancer.
- **Reduced greenhouse gas emissions** - cyclists burn calories rather than petrol, therefore reducing vehicle emissions.
- **Affordable transport** - cycle rental schemes are low cost to the user. The first 30 minutes is usually free of charge.
- **Increased access to cycling** - users do not need to buy or maintain their own bike.

Bike sharing schemes have one common theme - providing citizens with affordable, convenient and sustainable transport



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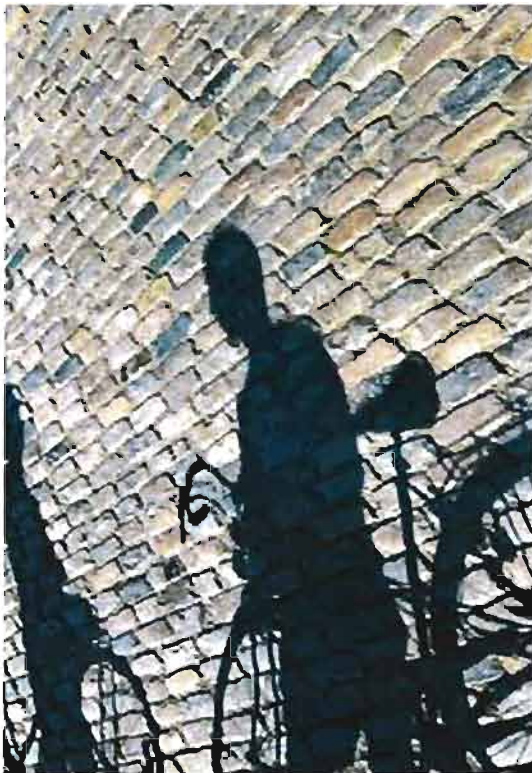
AIM OF THIS PAPER

On 1 October 2009 Belfast City Council agreed to engage with the Department for Regional Development (DRD) to examine the potential for a public hire bike scheme in Belfast.

The paper:

1) Examines the features of various existing bike hire schemes currently in operation. In depth studies of Dublinbikes, Blackpool Hire-a-Bike and the Italian Bicincittà scheme are included alongside snapshot studies of Barcelona's Bicing, Germany's Call-a-Bike and Montreal's Bixi schemes. The variety of cases examined highlights how bike sharing schemes can be adapted to cities of differing sizes and characteristics.

2) Provides evidence of public support for a bike sharing scheme in Belfast and makes recommendations regarding how a scheme could most effectively be implemented in the city.



IN DEPTH CASE STUDY NO.1

Dublin Bikes (City population 506,000¹)

The idea of a public bike rental scheme in Dublin was first proposed to Dublin City Council nearly ten years ago. Support for the idea gathered momentum and two and a half years ago Dublin City Council officially committed to Dublinbikes. The physical works commenced in February 2009 and the scheme opened on 14 September 2009.



At present there are 450 bikes distributed across 42 stations.

Since the introduction of Dublinbikes there have been approximately 306,000 rentals and 25,000 long-term subscribers.

Each bike is used approximately 10 times a day and the average journey time is 16 minutes.

To date only one bike has been stolen. It was, however, returned. Rates of vandalism are very low.

Dublin Bikes has created 21 green jobs, including drivers to distribute the bikes, mechanics to service the bikes and call centre staff to help users with any difficulties they may experience with the scheme.



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KEY FEATURES

All bikes are unisex in design and intended for use by persons over the age of 14.

All bikes feature:

- Three gear change mechanism
- Adjustable cushioned saddle
- Large front basket
- Automatic front lights which operate day and night
- Anti theft lock
- Bell



Financing

Dublin City Council operates Dublinbikes in partnership with the advertising company JCDecaux. The scheme is similar in nature to the successful Vélib scheme operating in Paris.

Dublin City Council provided finance for each station to be erected, JCDecaux provided the bikes and the software required to operate the scheme.

JCDecaux bears the risk for any bike losses and are contracted to provide replacements if bikes are stolen.

In return for bearing the financial risk of the project JCDecaux has the exclusive use of advertising hoardings and billboards throughout Dublin City. However, Dublin City Council retains dedicated use of 34 hoardings for social marketing purposes.

Membership Tariffs

Users either pay an annual membership fee of €10 or purchase three day ticket for €2.

The Dublinbikes hire tariff only charges the user after the first 30 minutes of hire.

The charge for use longer than 30 minutes is €0.50 and increases incrementally as the rental period increases.

93% of journeys are free for the user and the remaining 7% of journeys cost the user €0.50.

Hire tariffs include an integrated charge for insurance for 3rd party liability that protects Dublin City Council from litigation risks.



Additional Information

Dublinbikes plans to double the number of bikes and stations available. The intention is eventually to have 3,000 bikes extending 3km outside of the City Centre.



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IN DEPTH CASE STUDY NO.2

Blackpool Hire-a-Bike (City population 142,000")

Blackpool Hire-a-bike began in 2009. The scheme enables residents and tourists to hire bikes 24 hours a day, seven days a week from docking stations across the city.

Design of Bikes and Docking Stations

The bikes are designed by Dawes Cycles. They have a low centre of gravity and can be easily adjusted so people of different heights and sizes can ride them.

Bike features:

- 3 or 5 speed hub gears
- Hub brakes front and back
- Dynamo lighting
- Fully enclosed chain guard
- Luggage basket
- Stand
- Adjustable but not removable saddle
- Combination lock
- User instruction panel



There are currently approximately 500 bikes available for rental from 70 stations.

Stations are located either by the roadside, on wide pavements or in car parks. There has been no need to remove any car parking spaces to accommodate the bike stations.

Stations are located out of desire lines and between existing barriers to pedestrians, for example, lampposts, waste bins or benches and only where pavement width allows. Stations are permitted in pedestrianised areas.

The distance between stations varies. Along the sea front and in the town centre stations are a maximum of 500m apart. Outside of the town centre stations are located next to key destinations and in dense residential areas.

Subscribers access the system by using either a smart card or by entering a membership number into a digital keypad.

Rates of theft and vandalism are very low. Only one bike was stolen in 2009.

The system uses wireless broadband services to communicate with the central server, negating the need for the stands to be connected to mains power or communications.

An online map displays in real time the availability of bikes so that members can see if bikes are available at their chosen sites.



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Financing

The start up cost for the scheme was approximately £650,000.

Start up funding was provided by Cycling England and the Blackpool Primary Care Trust.

The scheme is owned by and under the control of Blackpool Council. Hourbike is the privately owned supplier of equipment and operator of the scheme.

Taking advantage of existing council services and of several local job creation schemes annual running costs have been kept to approx £190,000.

Anticipated revenue for 2010 is approximately £170,000.

Sponsorship of the entire scheme will be sought during 2010/11. Revenue in excess of budget will be split between the council and private operator.



Membership Tariffs

There are 3 tariffs:

- Lifetime membership - £10 joining fee. The first 30 minutes of every rental is free. After 30 minutes £1 per hour
- Day tickets £10
- Half-day tickets £6

Discounts are given for families when renting multiple bikes.

The membership target for 2010 is 5,000 residential members and 18,000 day tickets sold. Blackpool had 12M visitors in 2009.

At peak times in 2009 every bike was being used simultaneously. The average hire time is 2 hours.

The overall rate of cycling as a commuter option in Blackpool is 2.8%.

Integration with Public Transport

There are bike hire stations installed at every train station (3 in Blackpool), and Northern Rail promotes the availability of the bikes. Bikes are also located at Blackpool bus station.

Every park & ride car park will soon have bike hire stations.

Benefits of the Scheme

The scheme brings the following benefits to Blackpool:

- The bikes are a visitor attraction and an added value service for hoteliers
- The ability to make every visitor attraction in Blackpool cycle-linked
- Reduced traffic congestion
- An increase in activity levels for residents
- A visible indication of the council's support for cycling

User Endorsements

No formal user satisfaction surveys have yet been undertaken. However feedback provided to the operators has been very positive.

User comments:

"Many thanks for providing a great service"

"I am very happy with the areas serviced. Many thanks for a great service, I will be using it again very shortly"



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Additional Information

The majority of cities operating Bicincittà schemes initially start with a small number of stations, although most cities expand the number of stations and bikes following successful uptake by users

Participating cities are provided with the flows of data from the usage of the scheme, including the characteristics of the users, number of trips made by each user, as well as which stations are most frequently used. This information enables the operators to plan further development of the scheme within the city.

Vandalism has not been a major issue and can be effectively tackled by installing CCTV cameras at bike stations.

The Bicincittà scheme recently introduced in Lausanne allows students to use their university student card to rent the bikes, making the scheme easily accessible to students.



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SNAPSHOT STUDIES

Bicing, Bixi, Call-a-Bike

Bike sharing schemes operate in over 100 cities worldwide. However, schemes vary significantly in design and operation. This section highlights the key features of the Bicing, Bixi and Call-a-Bike schemes.



Bicing
Barcelona

- Bicing is run in partnership by Barcelona City Council and Clear Channel Advertising.
- The Council pays Clear Channel a fixed sum to implement, maintain, operate and expand the scheme. Funding is raised through car parking charges and finance generated through the scheme (one third overall).
- The scheme comprises 429 Stations and 6,000 bikes distributed every 300 meters situated close to transport hubs and points of social attraction.
- Since it was launched in May 2007 Bicing has had 26 million journeys and 190,000 subscribers who have traveled 70 million km.
- The average journey is 3km which equates to a saving of 480g of CO₂ emissions compared to the same journey made by car.
- The scheme has accounted for an overall saving of 4176 tonnes of CO₂.
- 57% of Bicing journeys are to commute to work.



Bixi
Montreal

- Bixi operates for 3 seasons of the year, May to November.
- The Bixi scheme is operated by the city's parking authority Stationnement de Montreal and was included in the transportation plan for the city, which aimed at encouraging active means of transportation.

- Users guarantee \$250 on a credit card and long-term subscribers are issued with a Bixi key. The first 30 minutes of use is free.
- Bixi provides the system and everything pertaining to customer service, technical support and supply of parts.
- As of 12 August 2009 Bixi had 8,419 long terms subscribers and 77,070 occasional users who have traveled a total of 3,612,799.
- As a result green house gas emission have been reduced by 909,053 kg.



Call-a-Bike
Berlin, Frankfurt, Cologne, Munich, Stuttgart, Karlsruhe

- Call-a-Bike is operated by Deutsche Bahn, the German national railway company.
- There are a total of 120,000 customers.
- Call-a-Bike requires no financial commitment from the city authority.
- The system does not require docking stations. Users register online, then use their mobile phone to call the number printed on the bike they wish to use. They are provided a code which releases the security lock on the bike. Once the trip is finished the user leaves the bike at a junction and locks it.
- The rental tariff is €0.08 per minute, with a daily tariff cap of €15 and a weekly tariff cap of €60.



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INTRODUCING BIKE RENTAL IN BELFAST

Belfast is well suited for a public hire bike scheme. The city centre is compact and largely flat, is adequately served by cycle lane infrastructure and has a temperate climate. However, if the scheme was to be extended beyond the city centre, further cycle lane development may be required.

An online survey conducted in February 2010 of over 200 individuals indicated that more than 50% of people living or working in Belfast would use a public hire bike scheme if one were implemented in the city.

It is recognised that public hire bike schemes are most suitable for medium to large cities with populations of at least 200,000 inhabitantsⁱⁱⁱ. Belfast's population of 268,000 exceeds this threshold of viability.

Currently 3% of workers in Belfast commute by bike^{iv}. We believe the introduction of a public hire bike scheme would have considerable potential as a door opener to further promote city cycling and change people's travel behaviour.

Interconnectivity with Public Transport

A bike sharing scheme in Belfast should be designed to interconnect with existing public transport services. Location of bike docking stations at train stations and bus stops is essential.

The Translink Metro Service currently operates only arterial routes into and out of Belfast city centre. This requires commuters to make two separate bus journeys if they wish to travel across the city. A bike hire scheme would enhance choice by enabling public transport users to disembark their bus at any stop in the city centre and use a hire bike to reach their final destination.

In Barcelona, 28% of trips made using the *Bicing* bike scheme are made in combination with other public transport modes. In Lyon, 94% of *Vélo'v* bike scheme users also use public transport. 57% take the bus, tram or train daily or at least once a week^v. Public bikes can therefore help to augment existing public transport services and provide citizens with more options and greater freedom.

The city of La Rochelle has further enhanced the integration of its bike hire scheme with public transport services by designing the bike scheme to operate using a smart card that can also be used to pay on public transport services^{vi}.



Location of Bike Docking Stations

We suggest that a bike hire scheme should initially be limited to the city centre with boundaries at the University of Ulster School of Art and Design at the Northern end of the City Centre and the Queen's University Science Library at the Southern end of the City Centre. The scheme would reach no further East than the Odyssey Complex and Belfast Central Station and no further west than Belfast City Hospital and Belfast Metropolitan College Millfield Campus.

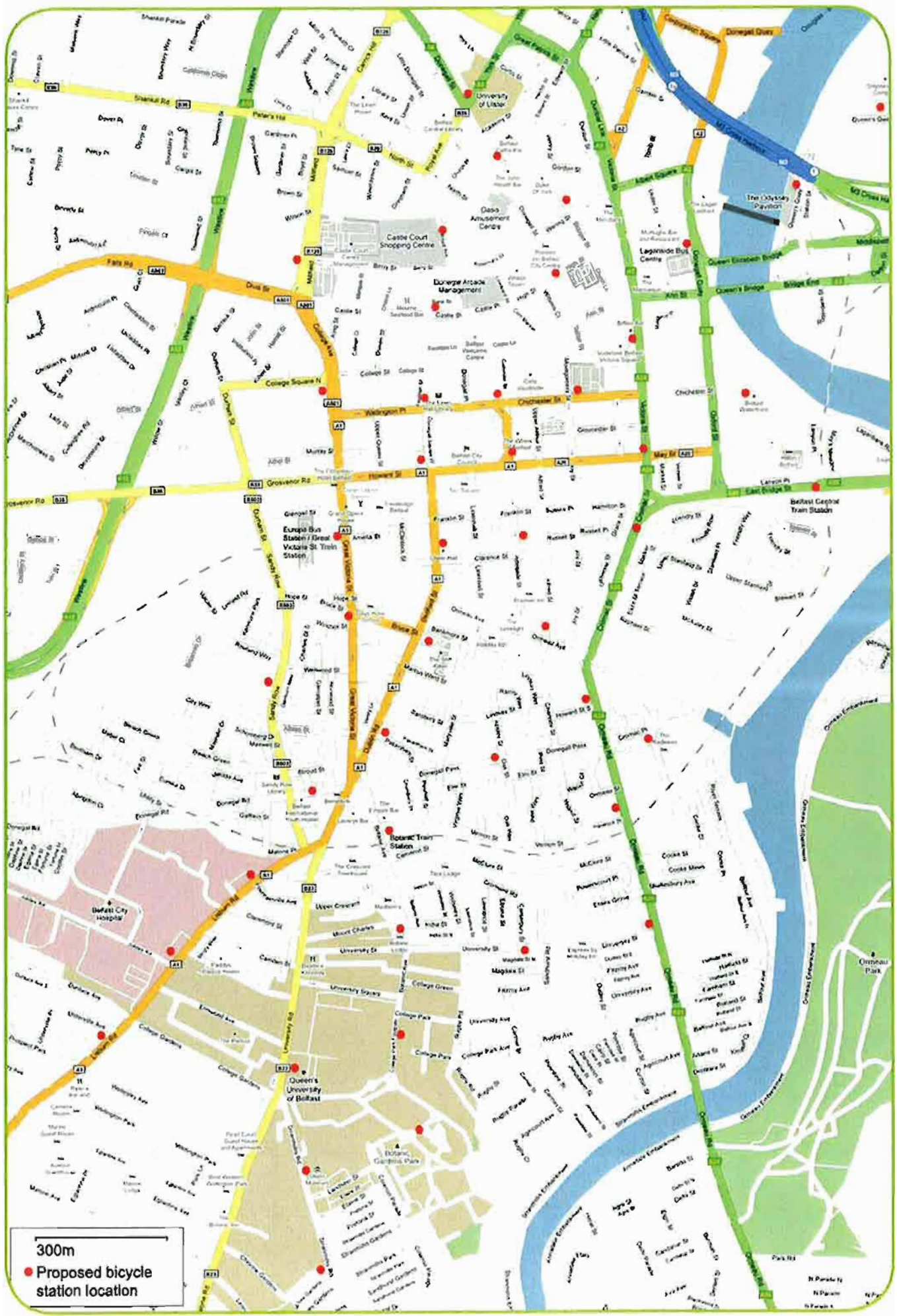
Bike stations should be located no more than 300 metres apart to ensure that users do not have to walk far to rent a bike or after returning one.

The real time locations of docked bikes should be provided on an online map to enable users to identify where bikes are available for rental.

The following map identifies 46 suggested locations for bike docking stations.



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300m

● Proposed bicycle station location

N.P. 10/11
N.P. 10/12
N.P. 10/13

RECOMMENDATIONS

Scheme Design:

- **There should be plenty of bikes available at regular intervals** – Bikes need to be available not only at public transport stations and key attractions, but at intervals frequent enough to make it possible to easily access a bike if one is not available at the first choice location. We suggest that stations should be no more than 300m apart.
- **24/7 availability** – Bikes should be available at all times. Restricted availability has been shown to limit user uptake on other schemes.
- **Bike tracking is essential** – Users should be able to check the location of docked bikes online to identify stations where bikes are available for rental. Users should also be able to reserve an empty space at their destination using the interactive terminal. This will enable users to better plan their journeys.
- **A high profile docking location can help market the scheme** – locating bike stations in and around Belfast City hall will serve as a reminder of availability of the bikes and help legitimise cycling in general.
- **Install CCTV cameras at locations where bikes are collected** – these will prevent vandalism and increase the success of the scheme.
- **Consider adapting Translink Smartlink cards and student cards to the bike sharing scheme** – this would make the scheme easily accessible to commuters, and students.

Bike Design:

- **Bikes should be designed with city use in mind** – they should be safe, easily adjustable, comfortable and unisex in design.
- **A non-standard bike design is preferable** – Bikes should clearly be designed to be recognisable as part of a hire scheme to deter theft.
- **Bikes should be lockable** – Users should be able to hire a bike and lock it to street furniture other than the bike docking stations.

Cost to Users:

- **Low cost rental** – Investigation of various bike rental schemes identified that lower cost schemes have proven to be more successful than schemes with high rental or subscription costs.
- **The first 30 minutes of each hire should be free of charge.** This will make the scheme attractive for commuters.
- The following suggested subscription and rental charges have been informed by the findings of our online survey.



SUBSCRIPTION CHARGES

	Adult	Student	Senior Citizen
Annual Subscription	£10	£8	£8
3 Day Ticket	£3	£2	£2
1 Day Ticket	£2	£1	£2

£100 will be deducted from the user's bank account/credit card, if the bike is not returned within 24 hours.

RENTAL CHARGES

	Adult	Student	Senior Citizen
Up to 30 minutes	FREE	FREE	FREE
30 minutes to 1 hour	£0.40	£0.30	£0.30
1 - 2 hours	£0.80	£0.60	£0.60
2 - 3 hours	£1.30	£1.00	£1.00
3 - 4 hours	£1.80	£1.50	£1.50
4 - 5 hours	£2.50	£2.20	£2.20
5 - 6 hours	£3.00	£3.00	£3.00
>6 hours	£2 per hour	£2 per hour	£1 per hour

Supporting Factors:

- **Scheme operators should seek support from businesses** – support from the business community is important to ensure buy-in from a large number of potential users. Business use also enhances the credibility of a bike hire scheme.
- **Both Local and Central Government must demonstrate a strong commitment to the promotion of cycling** – The scheme should be run in conjunction with initiatives to increase the total number of cyclists in Belfast city. Research indicates that increases in the number of cyclists leads to a reduction in the number of cyclists injured in traffic accidents^{vii}. Support for cycling in general should include provision of bike parks for non-rental scheme bikes and
- a good standard of bike infrastructure to enable safe and convenient cycling.
- **Education for all road users** – Central Government should operate a regional education campaign to ensure mutual respect between cyclists, pedestrians and car drivers.
- **20 miles per hour speed limit** – DRD should introduce a 20 mph limit in Belfast city centre to reduce the danger to cyclists posed by drivers.



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NEXT STEPS FOR DRD/BELFAST CITY COUNCIL

We recommend DRD and Belfast City Council should build on this research by:

- Conducting an in depth scoping study to fully examine the viability of a public hire bike scheme in Belfast. This should comprise detailed market research to ascertain the optimum scale and boundaries for a bike rental scheme in the city.
- Consulting with existing scheme operators to identify barriers to implementation of a bike rental scheme and seek further information on the potential costs and benefits.



Challenge Europe is the European element of the British Council's global climate programme. It is a three-year campaign that aims to make a definite and lasting impact on the climate change debate across Europe.

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- ¹ Population of area controlled by Dublin City Council in 2006 2001 Census
 - ² 2001 Census
 - ³ Midgley, Peter (2009) The Role of Smart Bike-sharing Systems In Urban Mobility, Journeys
 - ⁴ DRD Roads Service Travel Survey for Northern Ireland 2006-2008
 - ⁵ BDrhmann, Sebastian (2008) Bicycles as public-individual transport - European Developments
 - ⁶ Midgley, Peter (2009) The Role of Smart Bike-sharing Systems in Urban Mobility, Journeys
 - ⁷ Valuing the Benefits of Cycling: A Report to Cycling England (2007)



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