

# **Appendix 1**

## **North Laine Cycle Permeability Review**

## Executive Summary



Contraflow cycle lanes allow cyclists to travel in the opposite direction to vehicles in one-way streets. This paper sets out a proposal for the installation of a basic Contraflow network in the North Laine to facilitate and encourage more cycling in the study area. Contraflow cycling is already common in the North Laine with many cyclists opting to Contraflow as opposed to following more elongated routes through the area (see above). Contraflow is common across most of Northern Europe e.g. in Brussels it is mandatory to have Contraflow lanes in all roads wider than 2.6m. Evidence from MVA's study on Contraflow suggests that the safety of cyclists is not compromised and that different road users generally co-ordinate themselves well.

# North Laine Permeability Review

The Permeability review consisted of five steps;

- Stage 1: Desktop Research and Findings
- Stage 2; Assessment of the Existing Layout
- Stage 3; The 'Brussels' Test
- Stage 4; Identifying a potential network
- Stage 5; Recommendations

## 1.0- Desktop Research and Findings

This section introduces the key findings from the desktop based research which reviewed existing domestic and international legislation and literature on contraflow cycle lanes. The aim is to collate examples of good practice, design requirements/standards and any supplementary research findings.

### 1.1 Key Findings

- **Contraflow safety;** MVA consultancy has completed the most comprehensive review of contraflow lanes to date in the UK. Most importantly the study found no proof that contraflow lanes are unsafe, the evidence suggested that different users co-ordinated themselves well with no evidence of friction amongst different modal groups; "Interactions between users (i.e. cyclists & vehicles) were generally infrequent, if an interaction took place, generally neither party needed to take action. 98% of motorised vehicles performed a smooth manoeuvre when accessing a one-way street; most cyclists performed a smooth manoeuvre when encountering a vehicle at the one-way entrance". Safety discussions seem to refer exclusively to conflicts between cyclists and vehicles, there is limited guidance/evidence regarding pedestrians and how they interact with contraflow cyclists. The interaction between cyclists and pedestrians is particularly pertinent to the North Laine, given how high levels of footfall are in the area compared to vehicle and cycle volumes.
- **Cyclists' behaviour;** The evidence from MVA's research suggested that there was a positive relationship between the introduction of contraflow lanes and cyclists' positioning in the highway. The study found a 25% increase in the number of cyclists positioning themselves on the contraflow lane area, when previously they'
- **Contraflow design;** The DETR recommends that "where the 85<sup>th</sup> percentile speed is less than 25mph and traffic flows are below 1,000 vehicles a day, or where the street forms part of a 20mph zone; it may be possible to dispense with any marked cycle lane". It is therefore unlikely that vehicle speeds or volumes in the North Laine will warrant the installation of mandatory cycle lanes.
- **Contraflow Signing-** As of November 2011 Local Authorities will be able to use the combined sign 'no entry except cycles' where they considerate appropriate. Previously local authorities had to apply to the DfT for permission, which made the application process expensive and slow.
- **The importance of entry/exit features;** "European experiences suggest that where cyclists are involved in accidents while cycling in the Contraflow direction, this is more likely to occur at the entrances and exits to the street than along the link" (TRL report 358). Research conducted in Strasbourg (2000) found that all 5 incidents between 1997-99 involving cyclists in contraflow lanes took place at the junction. Researchers in Brussels concluded that the relatively low accident risk in contraflow streets is mainly located at crossroads/junctions.

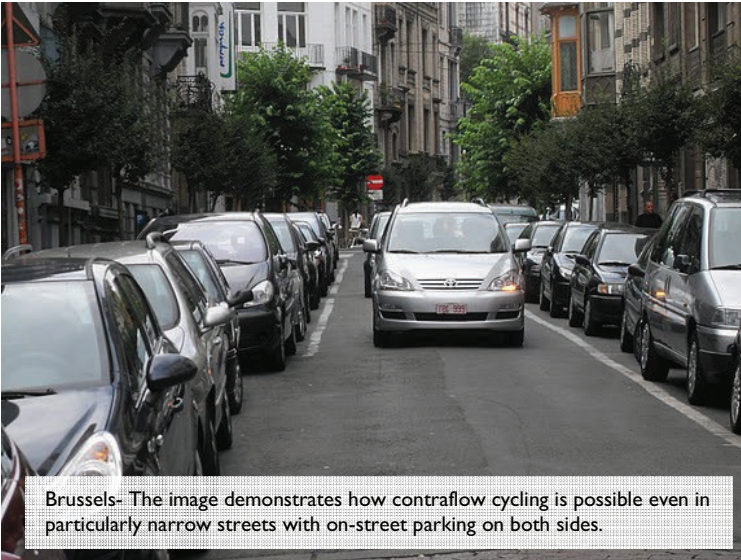
- The above evidence confirms that particular attention should be given to the design of entry/exit features (where possible) to raise awareness of potential contraflow cyclists and to help aid cyclists' navigation. TRL report 358 recommends that "segregation for cyclists at the entry to and exit from a one-way street should always be provided if there is sufficient space to do so".
- **Additional Materials;** Additional materials should be used to raise awareness of any changes. City of London recently used temporary "look both ways" stickers on pavements to encourage pedestrians to look both ways when crossing.



- **Brussels Guidance**, the above image is of a typical contraflow lane in Brussels, it exemplifies how simple and 'soft' measures can be. It is compulsory to allow contraflow cycling in all one-way streets in Brussels, unless local circumstances dictate otherwise. Local officers have found that "it is clear that the implementation of limited one-way streets does not constitute a road safety problem but rather a road safety solution for the road manager". The guidelines below set out where contraflow lanes are to be used in the city.

Brussels Contraflow standards					
Road Width	<2.6m	2.6-3m	3-4.6m	4.6-5m	>5m
Contraflow Restriction	Forbidden	Allowed	Mandatory	Mandatory	Mandatory
Parking Restriction	Impossible	Impossible	Impossible	Possible	Possible

## 1.2 Gallery



Brussels- The image demonstrates how contraflow cycling is possible even in particularly narrow streets with on-street parking on both sides.



Non-segregated contraflow entry in Kensington and Chelsea



Contraflow signage in the Netherlands



Segregated contraflow entry in Kensington and Chelsea



Example of road markings in Brussels, RBKC and Southwark; raising awareness of contraflow lanes



Munich- Example of softer segregation at junctions just using road markings



Southwark

City of London used temporary stickers to raise pedestrians' of potential contraflow-ing cyclists



## 1.3 UK research and designs

### Bristol City Council

- John Ritchfield (who led on Bristol's contraflow facilities) recommended line markings throughout the course of contraflow streets, if there are no segregated facilities. Based on his experiences, John felt that basic markings help overcome drivers' concerns that cyclists were cycling in the 'wrong direction'.

### CTC - Contraflow guidance

- One of the reasons why contraflow cycling is rarely used in most UK LA's stems from concerns over safety. Safety audits of such schemes need to take into account the broader considerations of convenience and safety that influence cyclists' choice of route, and choices of mode. They should consider the exposure to risk of cyclists using the alternative routes alongside any concerns over the safety of a proposed contraflow scheme.
- A strategy to encourage more cycling must include making the cyclists' journey easier and more advantageous than for motorised modes, and two-way cycling on one-way streets can provide valuable benefits for cyclists. There should be presumption in favour of a standard exemption for cyclists along one-way streets.

### DETR (1998) "Contraflow cycling"

- "Where the 85<sup>th</sup> percentile speed is less than 25mph and traffic flows are below 1,000 vehicles a day, or where the street forms part of a 20mph zone; it may be possible to dispense with any marked cycle lane".
- "Cycle entry (and exit) points segregated from the opposing flow are recommended, but they are not essential. In some cases segregation may not be possible.
- "Where Contraflow lane markings are meant to be largely absent, a short section of lane with colours surfacing at each of the road will help alert drivers and pedestrians to the possibility of encountering cyclists travelling in Contraflow"

### DfT (2011) "Signing the Way"

- The recent Traffic Signs policy paper has made it significantly easier for Local Authorities to use 'no entry except cycles' where considered appropriate. Previously authorities had to apply directly to the DfT for authorisation but they are now able to authorise the signage themselves.

### Contraflow cycle schemes in (the town of) Leighton-Linslade (2010)

- The council trialled four contraflow lanes on experimental TRO orders (which last 18 months), this paper reviews the first six months of the schemes and is felt useful as it might raise practical issues relating to the implementation of lanes.
- The appraisal is useful because it records all objections to the trials and also how the Council dealt with the objections. The main issues related to misinterpretation of the 'flying motorbike' signage, vehicles parking in the contraflow lane and also concerns regarding narrow carriageways.
- The recommendations of the appraisal are mixed; on one street they advise the use of additional markings, on another street they advise that sections of the contraflow are removed and in two streets they recommended that the temporary TRO is made permanent.

### MVA (2010) "No entry except Cycles"

- There was an increase in the number of cyclists travelling in Contraflow following installation of the 'no entry except cycles' sign combination, suggesting a greater understanding of the 'no entry except cycles' signing regime than that of the 'flying motorcycle' sign.
- There was no significant association between the signing changes and number or severity of interactions
- Contra-flow cyclists behaved and positioned themselves similarly regardless to the signing present at one-way streets
- The analysis indicates that, for the sites studied, the safety concerns raised about the 'no entry except cyclists' combination are not supported by the evidence. Indeed, the

improved compliance by motorised vehicles is likely to result in a net risk reduction to all users’.

- Some collision analysis was undertaken as part of the localised implementation (1983 to 2000) and generalisation to all one-way streets in 2000 of Strasbourg’s contraflow schemes. From 1997 to 1999, out of 1,677,000 trips on all modes, 4,004 road collisions occurred of which 11.3% involved a cyclist. Out of these 452 collisions, only 1.1% occurred whilst a cyclist was going contraflow. All of the five collisions occurred at junctions (Heran, F., Asencio S. and Giess Y., CADR, 2006).
- 95% of cyclists performed smooth manoeuvres to enter a one-way street, 98% did not hesitate or slow to interpret/ read the signing.
- If the cycle-lane was blocked cyclists would opt to cycle in the carriageway around the obstruction.
- “Interactions (when a cyclist encountered a vehicle) between users were generally infrequent, if an interaction took place, generally neither party needed to take action. 98% of motorised vehicles performed a smooth manoeuvre when accessing a one-way street, most cyclists performed a smooth manoeuvre when encountering a vehicle at the one-way entrance”

#### **City of London- Jez McKascill**

- Apparently the installation of two-way cycling was almost self-promoting because so much counter cycling was already taking place in the converted streets.
- City of London has installed lanes with a minimum 1.5m width but would have preferred wider lanes according to Jez.
- City of London also used temporary stickers on kerb lines to raise pedestrians’ awareness of cyclists coming in both directions.

#### **Bermondsey Street, Southwark (Roger Stocker)**

- We liked the borough’s approach of minimal line markings and signage in Bermondsey Street. Roger didn’t feel that markings were necessary assuming that the speed limit was being obeyed, although he recommended demarcation of exit and entry points to increase the visibility of cyclists.

#### **TfL “London Cycling Design Standards”**

- Where traffic pressures are low then an advisory lane or no lane marking may suffice. The effective carriageway width may be as little as 4m for an advisory lane to work. Diagram CCE/B15 seems to be the best suited to what we’ve spoken about so far.

#### **TRL Report 358 “Contraflow Cycling”**

- “Cyclists interviewed perceived Contraflow cycle lanes as a particularly helpful feature. So even where traffic conditions suggest a lane might not be strictly necessary, it may be preferable to provide one wherever practical”.
- An advisory lane might be suitable when “oncoming vehicles need occasionally to encroach into the cycle lane, for example to pass parked vehicles on the opposite side or to pass cyclists travelling in the with-flow direction... this situation will limit the benefit of the lane for cyclists. A highway authority will need to be satisfied that this form of provision will not unduly compromise the safety of cyclists along the link”.
- Lane width minimum should be at least 1.5m but 2m is preferred. The width will depend on traffic volumes and speeds, and the proportions of large vehicles using the route.
- Segregation for cyclists at the entry to and exit from a one-way street should always be provided if there is sufficient space to do so.
- “European experiences suggest that where cyclists are involved in accidents while cycling in the Contraflow direction, this is more likely to occur at the entrances and exits to the street than along the link.
- “Where no cycle lane is provided along most of the length, it is advisable to provide a short section of cycle lane (4-5m) with a coloured surface at the point of entry. This would highlight to cyclists where they should position themselves, and alert motorists that they should expect to meet cyclists in the Contraflow direction”.
- Applications will need to take into account of vehicle flows and speeds, type of traffic, % large good vehicles, parking turnover and duration, junction turning movements,

vehicle swept paths, gradient, net width of carriageway, visibility at entrances and exits, visibility when entering and leaving, private accesses, approach sight lines, accident record and comparative safety on alternative route”.

### **International Guidance**

#### **Dupriez, B “Counterflow cycling in the Brussels region”**

- Since July 2004 all the signals indicating a one-way street must be supplemented by a signal authorising a Contraflow movement for cyclists, except if local circumstances, justified, are opposed to it.
- This quick analysis might be extended to be more significant. Nevertheless, it is clear that the implementation of limited one-way streets does not constitute a road safety problem but rather a road safety solution for the road manager.
- For the cyclists, the limited one-way network represents an important part of the whole urban road network (15 to 21%) that enlarges their freedom of movement in urban areas.
- The quite low accident risk in limited one-way streets or crossroads is mainly located at crossroads, where markings and road design can improve traffic safety.
- Only vertical signage is necessary to implement a limited one-way street. But the Brussels region decides to employ additional road markings e.g. cheviots.

#### **Luxembourg City “Cycling Traffic as a concept”**

- To preserve the cyclists from making a detour, avoidable obstacles are being removed through the opening of one-way streets in zones with a speed limit of 30km/h without special measures, and on other selected sections of the cycling routes with special protection measures to be analysed for each case.
- The first stage opened 9 streets in a 30km/h zone of the city.

#### **Munich Contraflow**

- Munich has opened 122 one-way streets to Contraflow cycling.

#### **Road Directorate (2000) “Collection of cycle concepts”**

- With a special contraflow area for cyclists, these cyclists will perhaps get to their destination a little faster. A question still left to be answered is whether such separate areas improve the safety of cyclists as cyclists will be less alert whereas the one-way motor traffic will be more conscious of contraflow cycling. In addition, motor vehicles passing parked vehicles may create problems for the contraflow cycling.
- In one-way streets with few cars it is not necessary to have a special area for contraflow cyclists. In streets with more traffic, a cycle track or cycle lane may be established for contraflow cyclists. The cycle track should be at least 1.7m wide, while the cycle lane should be 1.5 wide. If there is car-parking just outside the cycle facility, this should be at least 2m wide. It is a good idea to give the cycle facility a different pavement.
- In order to avoid illegal or undesirable parking the solution in narrow streets may be the setting up of bollards. There should be no kerbs in these streets so that cyclists find it easier to get round vehicles obstructing their way. These streets may be signed to 15kph.
- In one-way local streets that are located next to arterials and boulevards contraflow cycling is not desirable. Here speeds and/or traffic volumes are often too high.
- At junctions with lower speeds, signing, change in pavement and bollards may be sufficient if this in itself can prevent parking close to junctions and thus create good visibility.
- “(Promotion) contraflow cycling in one-way streets clearly awards preferential treatment by giving them a shorter route than motorists. At the same time contraflow cycling, which takes place everyday, irrespective of any prohibition, is legalised.





## **2.0- The existing layout**

The purpose of the first stage of fieldwork was to produce a map which recorded the existing road widths and configuration details i.e. direction of operation of all vehicles, existing carriageway widths, pedestrian 'tweens' etc. The results have been mapped (Refer to Appendix 1: The existing street configuration).

N.B. All roads in the Study area apart from Cheapside form part of a 20mph zone therefore marked cycle lanes wouldn't be necessary according to the DETR's standards.

### 3.0- The Brussels test

Brussels City was the only example found of a municipal authority which had developed a single model for a whole city to assess the feasibility of installing contraflow cycling. The Brussels model was applied to all streets in the study area to assess where in theory (context permitting) contraflow lanes could be installed in the North Laine.

Brussels Contraflow standards					
Road Width	<2.6m	2.6-3m	3-4.6m	4.6-5m	>5m
Contraflow Restriction	Forbidden	Allowed	Mandatory	Mandatory	Mandatory
Parking Restriction	Impossible	Impossible	Impossible	Possible	Possible

Only Cheltenham Place was found to be unsuitable for contraflow on the basis of the Brussels Guidance. It was only unsuitable in a short stretch of Cheltenham Place where on-street parking reduces the carriageway width to 2.1m, in this instance we could recommend that cyclists dismount if a vehicle is oncoming.

## 4.0- The potential layout

The second stage of fieldwork qualitatively assessed the North Laine for potential installation of contraflow. Each street was assessed against the criteria below, scoring ranged from -1 to +1. (-1=Poor, 0=Average. +1=good)

*Visibility-* How visible would a cyclist be if they contraflowed in the street? Would a cyclist be able to see well ahead of themselves?

*Maintenance-* Is the hypothetical contraflow area well maintained i.e. are there any potholes, obstacles?

*Comfortable-* Would it be comfortable for a cyclist to pass a vehicle? There might be sufficient width but this doesn't necessarily mean it's comfortable for the cyclist to pass a vehicle.

*Contra-Entry-* How comfortable (hypothetically) is it entering a contraflow road?

*Contra-Exit-* How comfortable (hypothetically) is it exiting a contraflow road?

*Network-* Would the road form part of a coherent contraflow network if implemented?

*Markings-* What is the extent of existing road markings in the hypothetical contraflow lane? It's assumed that some basic markings would be used as reminders for users, but are there other road markings which might need removing?

*Traffic-* What is the current level of traffic in the area? This test was based on DfT advisory note and Danish guidance which recommends that non-segregated contraflow provision is not installed in streets with high vehicle volumes or high speeds.

*Parking-* Ideally contraflow would be located away from parked vehicles, thus avoiding the possibility of drivers opening doors into the contraflow or having to manoeuvre themselves across the lane to park.

## **5.0- Recommendations**

### **5.1 Policy Recommendations**

- Consider adopting a similar model to Brussels which provides a quick and easy measure to hypothetically assess streets' potential. It is then at the officer's discretion to assess the wider context and whether the road is still suitable for conversion.

### **5.2 Design Recommendations**

- Agree a minimum design specification for all contraflow facilities in the city to ensure consistency in approach and design.
- The North Laine forms part of a 20mph zone and therefore segregated cycle lanes aren't necessary based on DETR's standards. The recommendation therefore is to replicate the design standards of Campbell Road, where minimal signage and demarcation has been used.

### **5.3 Network Recommendations**

- Develop the first set of Green routes as identified in the table below; consider developing yellow/red routes at a later stage on the basis of the contribution that these streets could make to enhancing the Contraflow network.

Green Routes	
Street	Report Score (Max Score= +10)
Church Street (missing section)	9
Gloucester Road (western section)	9
Gloucester Road (middle section)	9
Kensington Street	7
Gloucester Road (eastern section)	6
Kensington Place	6
Tidy Street	6
Foundry Street	5
Robert Street	5
Trafalgar Street (eastern section)	5
Kemp Street	5
Over Street	5
Queens Gardens	5
Gloucester Street (East)	5
Yellow Routes	
Gloucester Street (west)	4
Portland Street	3
Pelham Square	3
Regent Street	2
Frederick Street	1
Windsor Street	1
Tichbourne Street	1
Cheapside	0
Red Routes	
Upper Gardener Street	-1
Gardener Street	-1
Sydney Street	-3
North Road	-4
Bond Street	-5

#### 5.4 Other Recommendations

- Use supplementary materials to help raise pedestrians' and drivers' awareness of Contraflow. For example City of London used temporary stickers on kerbs which advised pedestrians 'to look both ways', Southwark Borough used local residents' papers to inform them of the installation of Contraflow lanes.

## **6.0 Appendices**

### **6.1; Existing Street Configuration**

The map recorded;

- Existing carriageway widths
- Speed limits
- Directions of operation

### **6.2: Trial Runs**

- The trial runs compared the speed and comfort of four journeys in the North Laine, each journey was cycled legally and then using a hypothetical contraflow route.
- The findings show that all journeys were quicker on average by 96 seconds, using the contraflow route rather than the legal route. But there was also less traffic on the contraflow routes, vehicles were slower and visibility was above average, all these factors meant that not only was contraflow quicker but it was also more comfortable than the traditional routes.
- For example on route 2, using Gloucester Road and Sydney Street felt safer and was more comfortable than using North Road and York Place.

### **6.3: Recommended Layout**

- The figure presents the scores from the first and second stages of the fieldwork. It outlines green routes which are recommended for contraflow (albeit with some minor issues), yellow routes which are also recommended for contraflow (but with some larger issues) and red routes which are requiring further consideration because of the amount of works they could potentially require.

### **6.4: Potential Manoeuvre Conflicts**

- The figure identifies areas within the hypothetical network that would merit specific design interests because of potential conflicts between cyclists and vehicles that contraflow could incur. For example contraflow cyclists leaving Portland Street would have to cross traffic in Church Street, if they were to continue eastwards.

