PT3 – Bus Priority

Amendments:

Bus Priority

Bus priority measures (lanes and/or selective detection) are a key policy for the City of Edinburgh Council, with the aim of ensuring that bus travel is as convenient, rapid and reliable as possible.

Design considerations

Bus priority measures:

- should be the default option whenever there is a benefit to bus journey times and/or reliability.
- should be considered in conjunction with provision for pedestrians and cyclists.
- can also be part of an urban traffic strategy, such as parking reviews.
- might not always be as quick and reliable as improving the flow of all traffic (e.g. At key junctions).
- should consider impact on residual traffic, particularly upstream buses.
- can achieve maximum success when integrated with a wider program such as real-time passenger information, improved waiting environments and more frequent services.

Options:

Bus-lanes

These allow bus services to bypass traffic congestion and are restricted to bus use at certain days or times. This should be enforced to ensure appropriate usage.

With-Flow Bus Lane

The City of Edinburgh Council

Contra-Flow Bus Lane

Julian Walker, 2013

Bus-only streets/bus-ways

These segregated bus routes provide advantages to bus journey times and route permeability. Other users, including taxis, cycles and emergency vehicles, can also be granted use of unguided busways and bus only streets.

Busways (Guided / Unguided)

Richard Webb, 2005

Bus Only Streets / Gates

The City of Edinburgh Council

Signal priority and Traffic management/calming

Buses can access quicker routes by being allowed to make otherwise banned movements, or being prioritised by selective signals.

Banned Turn Exemption

The City of Edinburgh Council

Relevant Factsheets:

Buses Priority and Traffic Management/Calming (PT3)
Bus Lanes (PT3)
Signal Priority (PT3)

Bus Lanes

Bus lanes should be considered where congestion and delay on the network impacts upon bus services.

Factors to consider:

- Number of buses/users that will benefit from the bus lane
- Significance of the priority/benefit delivered by the bus lane
- Impact on pedestrians
- Impact on potential for segregated cycle provision
- Impact upon general traffic and route capacity
- Use of bus lane by cyclists
- Use of bus lane by other vehicles (e.g. taxis, emergency services, motorcycles)

Bus lanes are generally provided with a designated kerbside to serve bus stops, but this may be located in the centre of the carriageway if necessary.

A Traffic Regulation Order (TRO) is required to delineate the extents, operating hours and relevant exemptions for each bus lane.

Operational hours

Most Edinburgh bus lanes currently operate Monday to Friday during peak hours of:

- 7.30-9.30
- 16.00-18.30

Note that these times are currently under review and may be revised following consultations.

Contra-flow bus lanes, bus gates and bus only roads operate all day.

Lane widths

- Desirable width is 4.5m which can permit 1.5 m mandatory or advisory cycle lane.
- Normal minimum width is 3.25m, absolute minimum width is 3.0m, but the wider the better for cycle safety.
- It is not acceptable to have 3.0m lane widths at locations buses are expected to pass one another as a 6.0m carriageway does not allow sufficient space for this.

Waiting restrictions

Parking and loading within bus lanes should be prohibited during operating hours.

Parking and loading may be permitted outside bus lane operating times, however the risk of over-staying vehicles may obstruct the bus lane operation.

Signs and road markings

Relevant signing and lining requirements are set out in the Traffic Signs Regulations and General Directions.

The location and configuration of required regulatory signage and its impact upon the street environment and clutter should be considered when deciding the precise extents of the bus lane.

Cycle lane markings should be considered within wide bus lanes.

Bus lanes will generally be constructed with coloured surfacing (red chipped asphalt), which will continue through side road junctions and crossings (although statutory markings will not).

Contra-flow bus lanes

Contra-flow bus lanes allow buses to avoid unnecessary diversions and maintain an efficient route.

Contra-flow lane widths

- <4.5m should be avoided when accounting for overtaking cyclists.
- 4.0 to 4.5m is generally suitable if the speed limit is 20mph, although a risk assessment should be undertaken on a site-by-site basis.
- <4.0m is not desirable but may be acceptable for short lengths/low traffic flows. A risk assessment should be undertaken.

Cyclists

Cyclists should always be permitted to use contra-flow bus lanes, unless there is an overwhelming safety reason not to. Sufficient width should be provided to enable cyclists to overtake comfortably at bus stops.

Relevant Factsheets:

Cycle Lanes (C2)
Bus Only Routes (PT3)
Buses Priority and Traffic Management/Calming (PT3)
Signal Priority (PT3)

Signal Priority

Traffic signals can be controlled to benefit bus services, or facilitate bus priority measures.

Signal priority for buses can be installed on a case by case basis but will be more effective as part of a wider strategy.

Signal priority for buses should be the default option where:

- There is any potential to reduce bus delays
- Average pedestrian/cyclist delays will not increase by more than the bus delay will reduce (take account of approximate numbers of users of all 3 types).

See signal priority factors table.

Signal priority options

- Signal timings
- MOVA / TRANSYT / SCOOT – variable signal timings and coordination between junctions.
- Selected Vehicle Detection (SVD)
- Advance areas
- Queue holding
- Virtual bus lanes

New or renewed signalised junctions should make use of these features to avoid delays to bus routes, which should be demonstrated when assessing the operation of a proposed arrangement.

Signal priority options can be considered in conjunction with the Council's Public Transport and Signals team.

Cyclists

The needs of cyclists at bus priority measures should be considered, and appropriate priority benefits should also be given to cyclists.

Automatic cycle detection or a push-button for cyclists may be required if signals do not detect cyclists.

In some cases, a cycle by-pass of the bus priority signals may be preferred.

Signal Priority Factors

Issue	Explanation
Bus frequency	The higher the frequency, the more likely it is that prioritising one bus will delay another.
Conflicting bus movements	Conflicting bus movements make it more likely that prioritising one bus will delay another. Less likely to be an issue at lower frequencies.
Which service to prioritise	Reliability is more important the less frequent the service is.
Interaction with pedestrian and cyclist delays.	Overall average delay per individual bus passenger/pedestrian/cyclist should be reduced. If not, signal priority should not be employed.

Relevant Factsheets:

Bus Lanes (PT3) Bus Only Routes Bus Priority and Traffic Calming (PT3)

Bus Priority and Traffic Management / Calming

Traffic management and calming can be used in two ways:

- To ensure bus-only infrastructure is just used by buses, and
- To moderate traffic speed whilst maintaining access for buses and passenger comfort.

Traffic management

Banned turn exemption

Allowing buses to make movements forbidden to other vehicles gives buses an advantage.

Physical measures to restrict movements by other vehicles will usually not be possible, restrictions should instead rely on signs and lines for communication.

Enforcement cameras

Cameras can be used to enforce against inappropriate use of bus lanes, bus gates and bus only streets.

Developers may be required to install cameras at relevant locations.

Cameras must be of a type and model approved by Department for Transport (DfT) for enforcement purposes.

Liaison with The City of Edinburgh Council will be required to ensure the camera is compatible with existing back-office systems.

Width restriction

Width restrictions should only be used if cyclists can bypass the restriction, otherwise a hazardous 'pinch point' can be created.

Because of the size of buses, width restrictions by themselves are unlikely to effective.

Traffic calming

Due to effects on passengers vertical traffic calming measures are not considered suitable on key bus routes with significant bus movements.

Traffic calming measures will generally only be appropriate on bus routes on 20mph local or secondary streets, with fewer than 10 buses each way per hour and in one or more of the following circumstances:

- Pedestrian/cyclist crossings
- Clear evidence of non-adherence to speed limit in absence of measures
- High pedestrian activity

Exceptionally, traffic calming may be justified on key bus routes where there are large numbers of cyclists and pedestrians, and there is desire to prioritise pedestrian and/or cycle movement.

Design considerations:

Where traffic calming is considered appropriate, bus-friendly designs should be used:

- All vertical traffic calming measures to be a maximum 75 millimetres high;
- All speed cushions to be 2.1m overall width including 0.55m side slopes on each side and 3m long;
- Waiting restrictions to protect each side of speed cushion for a minimum of 15m.
- Speed table/flat top humps to have 1.8m long ramps with a minimum 9 metre long plateau, including at side road entry treatments where side road is a bus route, or frequently used as a diversion route;

Relevant Factsheets:
Speed Reduction and Traffic Management (G6) Bus Routes (PT1) Carriageway Widths (G2)

Image References

Bus Priority

With-Flow Bus Lane: The City of Edinburgh Council

Contra-Flow Bus Lane: Julian Walker 2013 [ONLINE]. Available at: https://www.flickr.com/photos/wirewiping/11453043776/ [Accessed 02 February 2017]. Licensed for reuse under the Creative Commons Licence: https://creativecommons.org/licenses/by-nc-nd/2.0/legalcode.

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Bus Only Streets / Gates: The City of Edinburgh Council

Banned Turn Exemption: The City of Edinburgh Council

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