



## Connectivity

### Site Accessibility

The Masterplan Site is of strategic importance and can be accessed by a range of travel modes, including sustainable modes, at present. For vehicular traffic, the Site is served by the M50 motorway which provides an orbital route around Dublin city. It is also served in an east-west direction by the N7 Naas Road (to / from the west) and the R110 Naas Road and Long Mile Road (to / from the east). In addition, to the east of the Site, the R112 Kylemore Road / Walkinstown Avenue / St Peter's Road provides a north-south orbital link; and to the west of the Site, the R113 Fonthill Road / Belgard Road also provides a north-south orbital link; providing strategic local connections to Clonburris and Liffey Valley to the north, and Belgard, Cookstown and Tallaght to the south.

In addition to the Red Cow motorway junction (Junction 9), the Site is also served by the Ballymount junction (Junction 10) a short distance south. The Nangor Road / New Nangor Road provides a connection to / from the north-west of the Site.

### Road Networks

The M50 motorway and N7 Naas Road are part of the Strategic Road Network (SRN), which are the responsibility of the National Roads Authority (NRA). The M50 has recently undergone a major upgrade as part of the National Development Plan and Transport 21 investment programme. The upgrade programme has included major investment in upgrading the existing grade-separated junction at Red Cow, whereby the Naas Road was interrupted by a signalised roundabout with slip lanes leading to / from the M50 below. In addition, the Luas Red Line tram route crossed the signalised roundabout at-grade. This existing junction has now been replaced by a fully

grade-separated free-flow arrangement, which has included full grade-separation of the Luas Red Line. A three dimensional visualisation, looking west, of the now completed free-flow arrangement at Red Cow is shown below.

The N7 provides a strategic link between the M50 motorway and Greater Dublin area; and the west and south-west of Ireland. It is a National Primary Road and is constructed to dual carriageway standard in the vicinity of the Site. It is noted that there are proposals to upgrade the existing at-grade signalised crossroads at Newlands Cross, to the west of the Site, with a grade-separated solution. This will allow east-west traffic on the N7 Naas Road to travel through the junction uninterrupted. Traffic flow on the R113 Fonthill Road / Belgard Road travelling north-south will be interrupted by traffic signals and a crossroads arrangement beneath the flyover. The proposed upgrade at Newlands Cross was the subject of an EIS.

### Local Highway Network

The SRN is supported by a network of regional and local roads that are the responsibility of South Dublin County Council or Dublin City Council. Regional roads include the R110 Naas Road (the portion of the Naas Road east of the Red Cow junction); the R112 Kylemore Road / St Peter's Road; and the R113 Fonthill Road / Belgard Road. Other local roads of significance include the Long Mile Road, which diverges from the R110 Naas Road at the 'Hamburger Junction' just west of the Naas Road's junction with Kylemore Road; the Nangor Road, which connects with the R110 Naas Road at the Hamburger Junction and provides a link to / from the north-west of the Site; Ballymount Road, which connects to the Ballymount

motorway junction to the south of the Site; and Greenhills Road, which provides a connection from the south of the Site towards Cookstown and Tallaght to the south.

### Public Transport Networks

#### Bus

There are a number of bus services that serve the Masterplan Site, the majority of which run east-west along the Naas Road. These include Dublin Bus, Bus Éireann and a number of private companies serving Dublin Airport.

#### Luas

The Red Line runs between Connolly Station in Dublin City Centre, via Abbey Street and Jervis (a short walking distance from O'Connell Street) and Heuston Station to the east; and to Tallaght via Belgard and Cookstown to the west. The Red Cow Luas stop is within the Framework perimeter. There are currently trams at four to five minute intervals between 08:00 to 09:00 hours, Monday to Friday, on the Red Line.

In addition to the recent improvements at Red Cow, the Railway Procurement Agency (RPA) has published details of a proposed branch extension of the Red Line from Cookstown to Citywest. Stops on the Luas 'Line A1' are proposed at Fettercarin, Cheeverstown, Citywest Campus, Fortunestown and Saggart; with a new P&R facility proposed at the proposed Cheeverstown stop. The branch line will terminate at the proposed Saggart Stop, east of Garter Lane.

#### Mainline Rail - Kildare Route

The Kildare line runs east-west a short distance north of the Site, north of the Grand Canal. The nearest mainline rail station to the Site is Park West. There is currently one train per hour between the hours of 08:00-09:00, Monday to Friday, calling at Park West and heading towards Heuston Station.

### Kildare Route Project

The Kildare Route Project (KRP), being undertaken by Iarnrod Éireann (IE), is a major capital investment programme designed to increase the frequency of commuter and other rail services along the key Kildare to Heuston corridor - the Kildare line; to allow a significant increase in passenger capacity. The KRP will be achieved through increasing the number of tracks from two to four along the route from Park West / Cherry Orchard to west of Hazelhatch, providing two dedicated lines for commuter services and two dedicated lines for Intercity and regional

services. Other major works covered by the KRP include the replacement or alteration of a number of existing road overbridges to facilitate the four-tracking; new and relocated stations (such as Park West); enhancement of existing stations; and associated signalling works between Inchicore and Cherryville Junction and other works.

A map showing the extent of the KRP upgrade on the Kildare line is shown on page 29.

#### Metro West

Metro West, proposed by the Railway Procurement Agency, will provide a light rail

orbital link around Dublin, linking Dublin Airport and the proposed Metro North, to the north; and Tallaght, to the south. There are proposed interchanges between Metro West and the Luas Red line at Cookstown/ Belgard Road and Tallaght. Metro West is part of the Transport 21 package of measures.

Metro West would start at the proposed Tallaght East stop on Belgard Road, close to the junction with Blessington Road. It will serve the Tallaght Institute of Technology, The Square and Tallaght town centre. The line and stops would be located in the middle of Belgard Road at this point.

Source: National Roads Authority, September 2008



Red Cow junction

Naas Road Development Framework

## Sustainable Transport Strategy

### Introduction

A Sustainable Transport Strategy has been developed by JMP, which aims to encourage the transfer of existing car-based trips onto more sustainable travel modes, such that the released highway capacity could be made available for the proposed development at the Site. However, this modal transfer would have to be focussed on additional walking, cycling and bus based trips, given the existing and expected future capacity constraints of the Luas Red Line; and distance from the Site of mainline rail services. The overall aspirations of the Development Framework transport strategy are to encourage sustainable travel within the area and mitigate the transport impacts of the proposed development. By making the Development Framework area more conducive to travel by walking, cycling and public transport a sense of community can be developed, such that the area becomes an attractive place.

### Measures

Sustainable Transport Strategy measures include:

- Providing suitable pedestrian and walking facilities including a logical, high quality walking network that encourages residents to minimise unnecessary car trips to local facilities such as education facilities and health service providers (i.e. doctors, dentists, pharmacy).
- Providing a permeable pedestrian environment within the Development Framework and good connections to surrounding areas; including providing at-grade crossings wherever practicable.
- Providing good quality walking facilities to public transport hubs and where practicable following pedestrian desire lines.
- Providing suitable cycling facilities including secure, well-lit, convenient and

covered cycle storage at stations encouraging commuters to travel to stations by bicycle rather than car.

- Providing a cycle network that is designed to connect directly with a number of cycle routes in surrounding areas to encourage travel to other areas by bicycle.
- Providing enhancements to the integrated transport network by providing high quality facilities that provide easy and efficient interchange between different public transport modes.
- Understanding the importance of integrated ticketing for rail, metro and bus services to encourage increased usage of the public transport system and helping to facilitate fast and easy interchange between modes.
- Providing commuters with reassurance when they are walking to and from the public transport stations by giving the information they need at each decision point. The information should be comprehensive without being confusing.
- Creating a new bus network through the site which would comprise of diverting and increasing headway on existing bus routes as well as development of potential new routes.
- Ensuring that bus stops are located near key destinations such as schools, public transport stations and key retail and employment centres.
- Reducing the need to travel through promoting flexible working practices including working from home; and construction of mixed-use development, with facilities located throughout the site, by its own design meaning that people have good access to key facilities and services in their local community.
- Managing and reducing car usage and implementation of the car parking strategy proposed for the Development Framework area in this overall strategy.

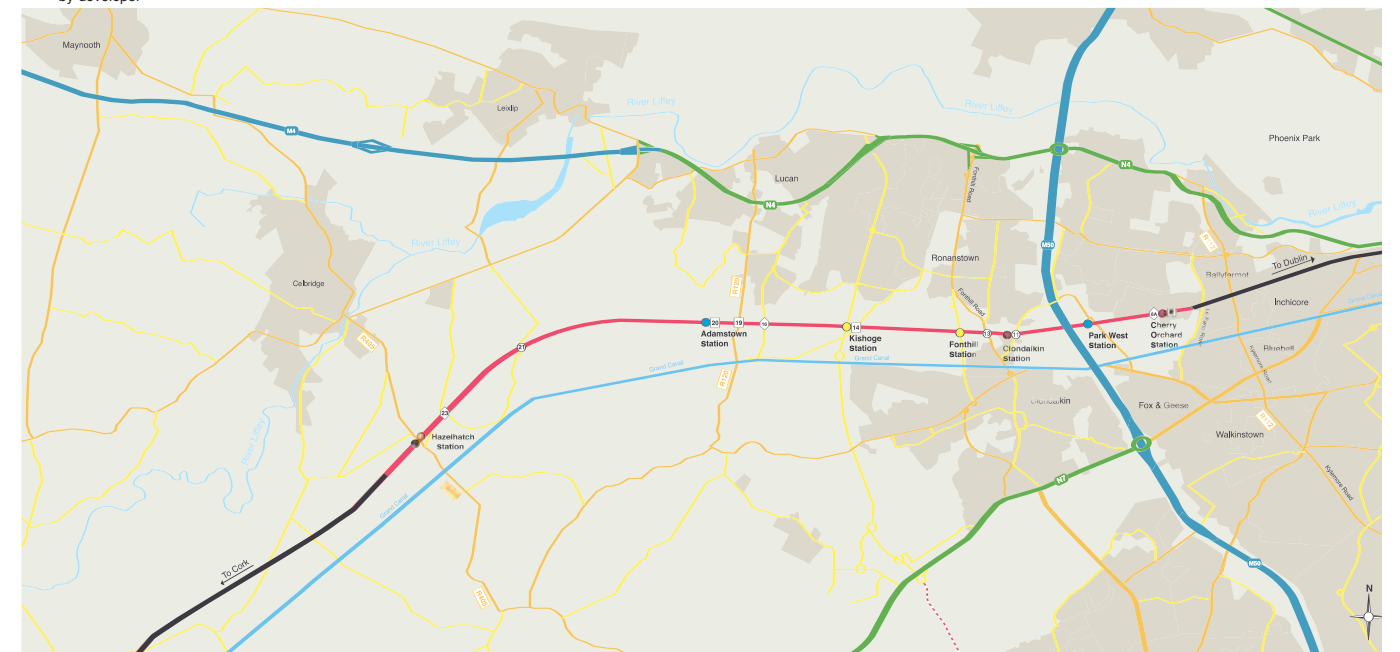
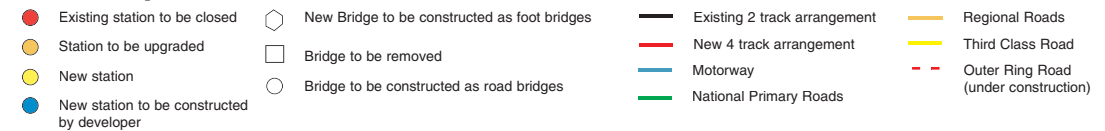
The success of the Development Framework as a sustainable urban settlement is predicated on achieving a high level of accessibility by both public transport and non-motorised modes. The accessibility of the development proposals will therefore be paramount in promoting this site as a sustainable development.

### Developing the Mobility Management Plan

Key targets and indicators for the mobility management plan have been derived to reflect the trip rates established for the zones in the Development Framework. The development density of each zone of the masterplan is closely related to accessibility, which in turn determines the level of parking to be provided. The design codes within the Development Framework support the introduction of the mobility management plan measures. Mode split targets have been derived for each land use and accessibility level. These targets relate to all transport improvements outlined within the strategy being implemented, full build out of the Development Framework to 2016 and implementation of the mobility management measures outlined below. It is noted that any changes to the Development Framework such as revised development densities or the level of transport infrastructure will affect these targets and revision would need to be made to these targets.



Source: Transport 21, March 2009



proposed main works as part of the Kildare Route Project

Naas Road Development Framework

## Accessibility objectives

### Accessibility Criteria

JMP was previously commissioned by SDCC to carry out a Transport Assessment (TA) of, and develop a Sustainable Transport Strategy / Mobility Management Framework (MMF) for, the now approved Clonburris Local Area Plan (LAP) / Strategic Development Zone (SDZ) development within the County. As part of the development of the transport strategy for Clonburris, JMP developed a set of Accessibility Criteria to determine the potential future relative accessibility for parts of the Clonburris site. Accessibility Criteria have been applied to the Development Framework in order to identify the most accessible areas where development can be concentrated.

### Accessibility Levels

In applying the accessibility criteria, which takes account of relative accessibility to key local services and facilities (e.g. education, community facilities, places of employment), as well as accessibility to public

transport provision, JMP was able to determine how accessible certain parts of the site were, on a scale of 1 to 5. Accessibility Level 1 indicates an area of lowest accessibility, and Accessibility Level 5 indicates an area of highest accessibility. These criteria were agreed at the subsequent Oral Hearing for Clonburris which took place in May 2008. In order to determine the relative accessibility of all parts of the Development Framework, JMP has applied these accessibility criteria. Accessibility criteria were developed for the Clonburris site in order to inform appropriate development density on the site as well as allowing the transport impacts of future development of the site to be appropriately assessed.

The accessibility threshold times are based on the times developed by the UK Department for Transport (2004). The indicators have been developed based on the public's need to access these services. The

quoted accessibility times would include travel by public bus services, flexibly routed bus services which are available to the general public and, where appropriate, walk and cycle modes. A hospital in this context is defined as a health-care facility which has both inpatient and outpatient services and also has an accident and emergency (A&E) department. A district centre in this context is comprised of retail outlets comprising a supermarket and/or fresh food sales as well as community facilities which would appropriately serve the local community needs. These indicators were combined with criteria based on proximity to public transport facilities to establish the five accessibility levels proposed for the Clonburris site. These accessibility levels are summarised below. It is noted that an area must satisfy all of the criteria within an accessibility level in order to achieve that ranking.

Source: JMP Clonburris Report, Table 7.2, p.48

Level of Accessibility	Number of Accessibility Indicators Satisfied <sup>(1)</sup>	Walking Distance Proximity to Public Transport Stops/Stations	Accessibility to Dublin City Centre by Public Transport
Level 1	Satisfies all lower accessibility indicators	Bus stop < 400m	< 70 minutes
Level 2	Satisfies all lower accessibility indicators	Bus stop < 400m Mainline rail station < 800m	< 60 minutes
Level 3	Satisfies all lower accessibility indicators Exceeds at least two of seven higher accessibility indicators	Bus stop < 400m Mainline rail station < 400m (or Rail & Metro station < 600m)	< 50 minutes
Level 4	Satisfies all lower accessibility indicators Exceeds at least three of seven higher accessibility indicators	Bus stop < 400m Rail & Metro station < 400m (or mainline rail station with >8 services/hr and less than 200m)	< 40 minutes
Level 5	Satisfies all lower accessibility indicators Exceeds at least four of seven higher accessibility indicators	Mainline rail station & Metro station < 200m	< 30 minutes

Table 2-Accessibility Level Criteria

Source: JMP Clonburris Report, Table 7.1, p.47

Accessibility Indicator	Lower accessibility (access time in mins)	Higher accessibility (access time in mins)
Access to primary school for all pupils of compulsory school age by public transport	30 minutes	15 minutes
Access to secondary school for all pupils of compulsory school age by public transport	40 minutes	20 minutes
Access to further education establishments for 16-19 year olds by public transport	60 minutes	30 minutes
Access to work for all people of working age (16-74) by public transport	40 minutes	20 minutes
Access to a hospital for households by public transport	60 minutes	30 minutes
Access to a GP for all households by public transport	30 minutes	15 minutes
Access to a district centre for all households by public transport	30 minutes	15 minutes

Table 1-Accessibility Indicators

## Development Proposals

### Initial Analysis (5,000 dwellings plus 5,000 jobs)

Further to initial trip generation analysis and accessibility / sustainability considerations, a quantum of development of approximately 5,000 residential units (dwellings) was initially considered appropriate for the Development Framework area in the shorter term. This would mean that, in the shorter term, development must be concentrated within specific areas of the site, in order to create sufficient density to encourage a sense of community within these areas. JMP notes that an average household occupancy of 2.5 persons per dwelling has been assumed. This would result in a total population of approximately 12,500 people. It has also been assumed that for 5,000 dwellings there would be 5,000 associated jobs, assuming one employed person per dwelling. Assuming an employee to floor area ratio

of 1 employee per 25m<sup>2</sup> Gross Floor Area (GFA), there would therefore be a total employment floor area of approximately 125,000m<sup>2</sup> GFA. This is assuming a 50/50 split between residential (5,000 dwellings) and commercial (5,000 jobs).

### Further Analysis (6,000 dwellings plus 4,000 jobs)

After further analysis, and given the proximity of the Development Framework area to existing adjacent employment areas, and therefore the more likely need for additional housing, rather than employment, in the area, it is proposed that a 60/40 split is adopted. This would result in 60% residential (6,000 dwellings) and 40% commercial (4,000 jobs). Assuming an average household occupancy of 2.5 persons per dwelling, the total population for 6,000 dwellings would be 15,000 people. Assuming the same employee to

floor area ratio of 1 employee per 25m<sup>2</sup> GFA, there would therefore be a total employment floor area of approximately 100,000m<sup>2</sup> GFA.

### Residential Split Between Houses & Apartments

The Clonburris Transport Assessment set out the proportion of houses and apartments for zones based on accessibility level. This is summarised below. It is proposed that the same proportions are adopted for the Naas Road Development Framework. It is proposed that development is restricted to areas with an existing or potential future accessibility level of at least 3. Therefore, the split between houses and apartments for new residential development would be 55% houses (equal to 3,300 houses) and 45% apartments (equal to 2,700 apartments). There should be a proportional 55%/45% mix between houses and apartments throughout areas within the whole development.

## Mode split targets

By implementing the Sustainable Transport Strategy measures and the Mobility Management Plan, the following target mode

splits for residential / non-residential land uses have been set; for development in each of the respective accessibility

level areas. These target mode splits are consistent with the Accessibility Level criteria set out before.

Source: JMP Clonburris Transport Assessment, Table 7.8, p.56

Accessibility Level	Public Transport	Vehicle Trips	Cycling	Pedestrians	Total
1	28.00%	45.00%	7.00%	20.00%	100.00%
2	32.00%	39.50%	7.00%	21.50%	100.00%
3	36.00%	34.00%	7.00%	23.00%	100.00%

### Office

Accessibility Level	Public Transport	Vehicle Trips	Cycling	Pedestrians	Total
1	34.00%	44.00%	5.00%	17.00%	100.00%
2	41.00%	35.25%	5.25%	18.50%	100.00%
3	48.00%	26.50%	5.50%	20.00%	100.00%

Residential & Office Mode splits by A. L. for Clonburris Naas Road Development Framework

Source: JMP Clonburris Transport Assessment, Table 5.3, p.34

Accessibility Level	Proportion of Houses	Proportion of Apartments
1	100.00%	0.00%
2	100.00%	0.00%
3	55.00%	45.00%
4	30.00%	70.00%
5	0.00%	100.00%

Proportion of Units for Zones Based on A. L. for Clonburris

## Street Typographies

The urban movement grid that is included in the Development Framework organises the various street types on the basis of their function in the street hierarchy. A key objective is the connectivity within the area as well as connections to surrounding networks.

All modes are considered in the development of this grid starting with the slowest – pedestrians and working through to the quickest – strategic highway routes. Street layouts have generally been designed to encourage natural surveillance by ensuring streets are overlooked by developments and that they are well used by

virtue of good design. Well connected street design allows for good access throughout the site. It creates a more easily navigable street environment, encourages more even spreading of traffic on parallel routes and also minimises travel distances. It is also important to allow the timely response of emergency vehicles as well as providing easier access for service and waste collection vehicles. Speed limits should be set on all minor roads to encourage low vehicular speeds which in turn increases pedestrian and cycling safety as well as improving the amenity of an area as a public space.

These speed limits should be supported by traffic management and natural traffic-calming measures such as speed tables, vegetation, regular pedestrian crossings, that do not significantly impact on the aesthetic quality of the street environment. Streets should be designed to ensure public transport vehicles can negotiate junctions with relative ease. Swept path analysis should be used to ensure buses and servicing vehicles can be accommodated. A number of bicycle and bus lanes are proposed through the site in the Development Framework in order to promote travel by these modes.

## Network Interventions to the East of Red Cow

Consultation with the National Roads Authority (NRA) has highlighted their concerns that the proposals for the Naas Road do not increase traffic flows or congestion on their network (i.e. the M50 and the N7 to the west of the M50). The NRA can direct refusal of proposals that have negative impacts upon their network; thus the design has to take account of their concerns.

In order to deliver environmental improvements of the eastern section of Naas Road, within the M50, sufficient highway capacity has to be maintained to ensure queues and delays are not experienced upon the NRA network. Likewise rerouting of traffic from the Naas Road onto other strategic corridors should be avoided, as this could also increase pressure on the NRA's network. To take account of the NRA's concerns a highways strategy has been developed, with key

elements shown schematically on page 43. The key aspects of this strategy are:

- Major new junction to east of Red Cow Interchange
- New north – south route linking Nangor Road and Ballymount Drive;
- Eastern extension of Ballymount Drive to Greenhills Road;
- Downgrade of Naas Road to east of Oak Road; and
- Downgrade of existing Naas Road / Long Mile Road / Nangor Road junction.

The above strategy has been developed in order to maintain capacity whilst reducing the volume of traffic on Naas Road, such that environmental improvements can be delivered. The new junction to the east of the Red Cow has been positioned such that it is more than the 240m desirable spacing specified within NRA TD 9. However it should be noted that there is a short weaving

section from the southbound M50 off slip and the new junction. It is likely that the new junction would be of a similar 'hamburger' configuration as the existing Long Mile Road / Nangor Road junction in order to accommodate the volume of turning movements that would be anticipated.

It would be expected that the new north south link would transfer strategic movements from the sections of Nangor Road / Long Mile to the east. Likewise the new east west route to the south of the Naas Road would accommodate existing movements from the Northernmost section of Long Mile Road. These two new links would result in a significant reduction in trips on Naas Road to the east of the new junction, thus allowing narrowing of the carriageway and downgrading of the existing junction with Nangor Road and Long Mile Road.

## Development Potential to the West of Red Cow

To the west of the M50 it is proposed to facilitate a limited amount of development by resolving the current substandard access to sites south of the N7 between Red Cow and Monastery Road. At present access to this area is via a left in left out junction with minimal diverging / merging lengths onto the N7. These arrangements will worsen with the construction of the grade separated intersection at Newlands Cross, whereupon the access falls immediately to the east of the diverge for Belgard Road.

To resolve this safety issue it is proposed to provide two alternative accesses into this area. To the west, it is proposed to provide a link to the Belgard Road, connecting to the proposed signalised junction. A further connection is proposed to the east, linking the area with the Monastery Road bridge. The combination of these two routes would create an additional route between Clondalkin and the Belgard Road, effectively bypassing Newlands Cross. In order to remove the potential for encouraging through movements on this route it is proposed that a bus gate be

provided, such that the through route would be available for all modes except private vehicles.

To the south west of Red Cow, a scenario doubling the level of consented development at the SDS site has been assessed. This would further exacerbate queuing on the Monastery Road roundabout, such that the queue extended back onto the M50 slip roads. In order to mitigate this impact a scheme to upgrade the Monastery Road roundabout has been developed. This scheme allows the junction to operate within capacity; however in order to deliver the upgrade land acquisition and property demolition would be required. Investigations of a further, independent development accessed via Belgard Road suggest that such a scheme could be constructed, post 2024, accessed via a new signalised junction to the south of Newlands Cross. Such a scheme could accommodate an additional 150 inbound and outbound vehicular trips during the morning peak hour. To the north west of Red Cow, the assessments have included the committed SIAC scheme of 400 residential units within the analysis.

Further development in the vicinity should be predicated on the resolution of capacity issues at the Monastery Road roundabout. Review of proposals to provide a new 'left-in left-out' ('LILO') junction to the north of the N7 suggests this would create less attractive access / egress routes than the existing situation, given the extremely short weaving distances between existing junctions.

Furthermore it should be noted that as the proposed development is close to the Park and Ride site the potential to restrain parking and control traffic generation within the scheme may be limited, due to the potential for excess parking to occur at Red Cow. Whilst parking charges apply at Red Cow it is open to debate whether these charges would be sufficient to deter local commuter parking, as they are set to encourage transfer to LUAS. Based on the above, and given the limited capacity of the transport network to accommodate further trips, it is suggested that areas to the east of the M50 are prioritised for redevelopment over areas west of Red Cow.

