

MITCHAM'S CORNER

Reviving a key district centre within an improved transport network

V.02

Introduction

These brief notes follow on from a site visit and one-day workshop held in the Guildhall, Cambridge, on February 9-10th 2016. The purpose of the visit and meetings was to review the options, opportunities and constraints for future modifications and plans for Mitcham's Corner in the context of the emerging proposals for Milton Road in Cambridge. The discussions built on a number of recent events with stakeholders to analyse and gather views, ideas and to understand the context and local objectives for long-term planning and development in the area.

The workshop included senior officers from both the County and City Councils, as well as consultants and specialists involved in the City Deal transport proposals. The need to establish a set of principles and preferred options is prompted by the public review and timetable for the key elements of the City Deal transport investment for Milton Road, and the commitment to prepare a master plan for the district centre based around the intersection of Milton Road with Victoria Avenue and Chesterton Road on the northern edge of Cambridge City Centre.



Mitcham's Corner looking east

Initial observations

Mitcham's Corner serves as one of two district centres in Cambridge City Centre, providing a mix of residential, retail, commercial and leisure uses. The current traffic arrangements consists of an elongated two-three lane, one-way gyratory introduced in

the 1960's. The resulting layout includes five junctions, three of which are signal-controlled in addition to puffin and zebra crossings. From a transport infrastructure perspective, the gyratory results in an unusually long length of heavily trafficked roadway. The stop-start vehicle movement patterns result in perceptions of high traffic speeds.

The immediate impression of Mitcham's Corner is of a highly confusing layout for drivers and pedestrians. Extensive signing at key intersections is confusing and orientation difficult, with lane selection and changes required at speed. For pedestrians and (in particular) cyclists, the confusion of routes is compounded by the complex crossing arrangements. Pedestrian footways are very narrow at a number of locations, compounded by the need for shared contra-flow cycle provision along several lengths.



Signage arrangements – Mitcham's Corner West



The most striking observation arising from the gyratory arrangement is the resulting fragmentation and incoherence of the area. A small Co-Op foodstore to the east on the north side of Chesterton Road is physically and perceptually isolated from the small shops and businesses on the south side, which in turn have no connection with the retail provision on the south-east end of Milton Road. It is evident that the district centre is underperforming, given its location and the surrounding population densities. Although renovation and new developments are taking place, it is apparent that growth opportunities and investment potential is being lost as a result of the poor streetscape environment. Above all, Mitcham's Corner is striking in large areas of underused space, and in the notable absence of any clear, identifiable sense of place.

Objectives

The current outline proposals for the Milton Road corridor have not been extended further than the southern end of Milton Road, at the intersection with Victoria Road. In order to support such investment, it is essential to determine a broad approach to future arrangements in the Mitcham's Corner area. Given the commitment to prepare a long-term master plan for the district centre, it is essential that any such plan can be successfully combined with the traffic and streetscape arrangements. The objective of the workshop was to explore the potential options and implications of alternative arrangements that would

- Maintain sufficient capacity and flows through and around the area
- Maintain and improve access and connectivity to residential and business areas
- Enhance the spatial quality of the public realm to promote investment
- Improve safety and comfort for all modes, especially pedestrians and cyclists
- Provide opportunities for business expansion and development
- Create a more coherent, permeable and distinctive district centre

In broad terms, the transport and movement needs of the area do not appear to be broadly incompatible with the wider planning, conservation and urban design objectives consistent with the aspirations of local stakeholders.

Constraints

Any broad proposals for Mitcham's Corner are constrained by the timescales and likely available resources. Whilst the City Deal investment is set within a defined (and challenging) programme, it is likely that the regeneration of Mitcham's Corner will take place over many years and will require the implementation of a longer-term vision. It is therefore essential that, as far as possible, immediate transport measures take account of likely or potential future changes to the gyratory arrangement.

In addition, there remain a number of uncertainties concerning other related city centre transport proposals that may influence the network. Such changes may increase traffic pressure on certain routes such as the east-west Chesterton Road. However, whilst overall volumes may vary, it is reasonable to assume that the key set of intersections contained within Mitcham's Corner will need to continue to cope with around 20-25,000 vehicles per day (vpd), with peak hour flows of close to 2,500.

As with any urban centre, Mitcham's Corner streetscapes have to respond to a wide range of uses. In addition to accommodating buses and flows of through-traffic, the streets require space for kerbside services such as waste collection, short-term parking associated with shops and businesses, services and utilities, trees and street furniture. The wide dimensions of most of the carriageways do not unduly constrain such requirements, but the demand for space has implications for design speeds and space allocation.



Significant areas of underused space and wide carriageway dimensions

Key design principles

In seeking ways to reconcile efficient traffic movement with the broader objectives for revitalising Mitcham's Corner, a number of broad principles are likely to be helpful. Such factors have been successfully designed in other urban areas with similar challenges. It is worth briefly noting down some of these key elements.

Firstly, the preferred or intended speed of traffic (the "design speed") is central to all related decisions for street design, and can serve as an essential starting point. The design speed should not be confused with speed limits. The latter may be helpful in achieving the appropriate design speed, but the appropriate speed is more likely to be established through the combination of street elements. Carriageway widths, turning geometries, sight-lines, crossing arrangements and junction controls are all determined by design speeds, along with materials, lighting requirements and many other factors. For most complex urban areas, design speeds of between 15 -21 mph would appear most effective in achieving the most efficient and safe use of streets.

Achieving an appropriate speed environment depends upon establishing definitive and recognizable transition points between the higher-speed, more segregated external highway, and the lower speed, more integrated context of a city centre. It is notable that Mitcham's Corner location suggests itself as an appropriate general transition point on the edge of the City Centre. In addition, distinctive transition points can help modify driver expectations and speeds close to the boundaries of a defined area such as Mitcham's Corner. The discussions identified a number of potential transition points relating to both Chesterton Road and Milton Road, and these should be recognized and emphasized in any detailed design proposals.

The reduced carriageway widths associated with lower speeds are essential in maximising pedestrian and bicycle crossing opportunities, and in minimising the interference of such crossings with traffic flows. Keeping crossing widths down to the

absolute minimum to permit the flow of buses and large vehicles is central to achieving low-speed, smooth flowing traffic patterns.

A number of other elements can be deployed to foster a speed environment compatible with greater integration of traffic with pedestrian movement and cycling, and is particularly important for more vulnerable pedestrians and people with disabilities. Such elements include visual narrowing (reducing the apparent width of carriageways), and the use of “edge friction” such as vertical elements in the drivers’ peripheral vision. The use of central median strips can likewise be deployed to improve crossing arrangements and to influence driver speeds.

It was noted that extensive one-way systems are rarely compatible with lower-speed environments. As a general principle, we would strongly recommend seeking ways to return streets to two-way operation wherever possible. None of the principle streets in the Mitcham’s Corner area are too narrow for two-way traffic operation.

Above all, an emphasis on the spatial qualities of place-making can not only add quality to the public realm. It also appears to be itself a critical factor in determining driver speeds and responses. Highway elements such as road markings and excessive signs are rarely compatible with place-making, and should therefore be reduced wherever possible. For an area whose identity and spatial qualities have been so disrupted over the years by the gyratory arrangements, re-establishing a coherent and distinctive focal point and urban space is likely to have benefits both for the development value of the area and for the patterns of traffic movement.



Extensive one-way flows can be counter-productive in achieving the objectives

Likely options

The workshop and meetings reviewed a wide range of potential arrangements for traffic flows. In full review of such options is recorded separately. The overriding preference emerged supported the principles of directness, legibility and simplicity in redefining the streetscape pattern. Two variations on a preferred option, illustrated below, would appear to offer the optimum opportunity for achieving a balance of objectives.



The preferred options would allow for a simplified two-way movement on all streets. They require the design and configuration of two interlinked junctions (one could be in the form of a compact roundabout) at the intersection of an extended Milton Road with Chesterton Road, and at the junction with Victoria Street. The arrangement results in a sequence of three intersections spaced along Chesterton Road. The lower the overall speed context, the greater the potential offered for simpler, free-flowing and less-managed junctions at such intersections.

The options allow for the opportunity for creating a coherent public space facing the Portland Arms, and would allow part of Victoria Road as well as a large area at the junction of Springfield Road and Milton Road to be adapted for local uses.

Precedents

There are several precedent schemes that may have some relevance in demonstrating the potential for reconciling significant volumes of traffic with complex mixed-use environments. Three in particular were considered as having elements that may be helpful for the further development and redesign of Mitcham's Corner.

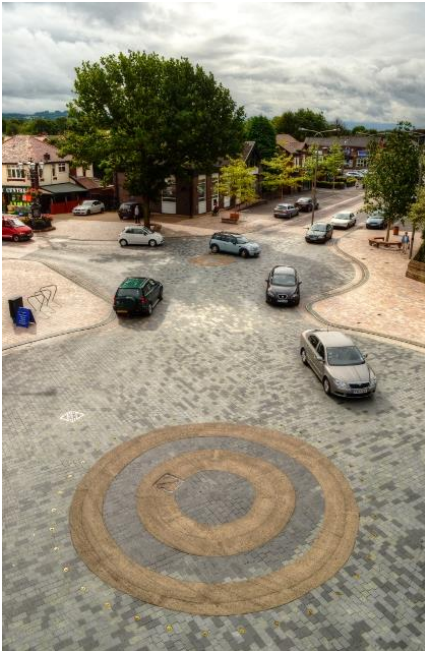
The first of these is Fishergate in Preston, Lancashire. The connection between a number of converging busy traffic routes at the head of Preston's High Street, Fishergate, has involved careful attention to pedestrian desire lines and movement patterns, and the establishment of a low-speed, free-flowing traffic environment to cope with the c. 20,000 vpd., which includes heavy bus use. The first phase was completed in 2014.



Fishergate, Preston. A busy off-set crossroads

A second scheme considered in more detail is the regeneration of the centre of Poynton in Cheshire. This scheme was designed to cope with over 26,000 vpd, with an overall design speed of between 16 and 17 mph. The scheme relies heavily on place-making and

clear transitions combined with carriageway narrowings to re-establish an attractive and permeable public realm whilst minimising congestion and delays. The scheme was completed in April 2012.



Fountain Place, Poynton, Cheshire.



The third scheme reviewed was the more recent rearrangement of Frideswide Square in Oxford, completed in 2015. Located at a critical entry point at the west of the City, the space has to accommodate around 37,000 daily movements as well as very large volumes of bicycles and pedestrians, particularly from the adjoining railway station. Again an arrangement of low-speed, free-flowing arrangements has succeeded in maintaining traffic flows whilst establishing clearer and simpler pedestrian routes across the space, returning a distinctive square to Oxford's West End.



Frideswide Square, Oxford

Modelling & Assessment

Highway engineering models have long been used to try and assess capacity and flows of varying junction arrangements such as signals and roundabouts. Most such models are based on algorithms built around assumptions concerning gap acceptance, signal timings and the interface between vehicles at given speeds. Whilst such models have proved helpful for predominately controlled and managed highways, they have been less successful in complex urban environments where pedestrian and bicycle traffic is more significant and unpredictable, and speeds are lower. Although important progress has been made in refining and combining various types of modelling, a high degree of caution is required in drawing conclusions about capacity, delays and patterns of flow.

As noted, the actual speed and driver expectations are critical to the way in which different street users interact. The perceived and actual crossing distances for pedestrians are also highly critical, particularly to the all-important “yield rate”, the proportion of drivers who will pause to allow another party to cross in front of them. The “interference” factor (the delay caused by such an interaction) can also be highly sensitive component of any algorithms upon which models are based.

For an area such as Mitcham’s Corner, it is likely that some form of combination micro-simulation modelling, such as Vissim and Paramics will be employed to predict the implications of differing arrangements. Users of such models should be very aware of the sensitivity of such models, particularly to pedestrian patterns and changing driver behaviour. It may be likely that a more sophisticated set of inputs and assumptions will need to be developed through on-site observations and trials to allow any models to be adequately calibrated and refined. A range of outputs to explore a range of vehicle speeds, yield rates and flows may have to be carried out in order to refine the eventual arrangements. This may require a different approach to the models used for the broader transport network for the City.



Informal crossing, Poynton

Conclusions

Adapting the streetscapes and spaces of Mitcham's Corner in response to forthcoming changes in the surroundings calls for a long-term overall strategy and masterplan. The configuration of routes and volume of traffic presents a significant challenge. It is one that requires clear community and political consensus to be established and maintained over a long period of time in order to guide both private and public investment in the area.

From the visit and workshop there appears to be broad support for exploring further options that would unpick the existing gyratory and establish a simpler and more legible layout. We would strongly recommend further development of the options identified, together with an exploration of the related design principles touched on above. We would be pleased to assist with the review and assessment of options as the masterplan develops.

A number of additional factors will need significant further work. These include the need to develop appropriate modelling techniques as described above, and to ensure that these are calibrated to predict the dynamic relationship between many different street users, and the very different outcomes that low, steady speeds can generate.

Secondly, a great deal of work is required to ensure that the needs of pedestrians, and particularly vulnerable pedestrians, as well as cyclists, can be accommodated in any scheme. A lower speed context is an essential underpinning to such reassurance and confidence, but the potential pitfalls and scepticism should not be underestimated.

Finally, the balancing of priorities and requirements of such complex schemes requires very determined and committed long-term political support. This is never easy with multiple stakeholders and interest groups, and requires innovative working arrangements amongst the many professionals and organisations involved. It requires a willingness to test unfamiliar concepts, and to absorb lessons and experience from a wide range of precedents. The future arrangement for Mitcham's Corner will have its own distinct characteristics and features, but it presents an opportunity to combine ambitious transport proposals with the best examples of streetscape design and place-making emerging from European towns and cities in recent years.

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Ben Hamilton-Baillie is the founding director of Hamilton-Baillie Associates, a Bristol-based practice specialising in movement and street design. The practice has researched and developed new approaches to complex junction design through greater understanding of driver behaviour and pedestrian / cyclist interaction. Ben was lead designer for the Poynton Regeneration project, and contributed to the production of "Manual for Streets 2".