



Passenger Transport Infrastructure Best Practice Report November 2007

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Passenger Transport Infrastructure Best Practice Report

November 2007



Executive Summary

EXECUTIVE SUMMARY

Passenger Transport Infrastructure Best Practice

This report was commissioned as part of the project to identify best practice in respect of Passenger Transport Infrastructure Strategies, insofar as they support the development and provision of a high quality passenger transport system as set out in the draft Worcestershire Integrated Passenger Transport Strategy. The Infrastructure Strategy will form a vital input to the definition of the Integrated Passenger Transport Strategy. It will also provide the evidence base required to underpin funding bids to external bodies (such as the Department for Transport) for enhancement of the Worcestershire passenger transport network.

Increasing traffic volumes and its associated adverse impacts on congestion, air quality and carbon emissions is a key problem in Worcestershire and elsewhere in the UK. The situation is likely to continue to deteriorate, as long as the private car remains the dominant mode of travel choice, even for short journeys. In addition, the impact of the proposed growth in travel demand arising from the Regional Spatial Strategy puts further emphasis on the need to provide a sustainable and realistic alternative to the car for certain types of journeys.

Addressing the issue of travel demand solely through large-scale road construction is neither a viable nor a sustainable option as the impact on our local communities would be huge in terms of the environment, land take, property demolition and isolation. We must, therefore, find other solutions that can meet peoples' desire to travel, by creating an attractive alternative that will encourage greater use of passenger transport, cycles and walking and reduce the reliance on the car.

There is clear evidence that enhancing passenger transport infrastructure has a major role in supporting balanced and integrated transport strategies seeking to improve the quality of passenger transport. Investment in the provision and maintenance of high quality infrastructure for passenger transport users and providers can help to ensure that passenger transport (and walking and cycling) can offer a realistic and sustainable alternative to the private car, whilst supporting economic prosperity and an improved environment for residents and visitors alike.

This report sets out passenger transport infrastructure best practice and draws from examples in the UK and elsewhere. The research was focused on the three broad areas considered pertinent to be included within any Passenger Transport Infrastructure Strategy for Worcestershire:

- Road Based Passenger Transport Infrastructure (Bus)
- Rail Passenger Transport Infrastructure
- Passenger Transport Interchanges

Best practice in respect of bus priority infrastructure is dealt with in a separate document.

The term 'best practice' is used to describe excellence in terms of strategies which:

- Provide clarity and parameters on the standard and quality of passenger transport infrastructure that can be expected from a transport authority.
- Set out a delivery process for the County Council to apply best practice working across Worcestershire.

- Detail the criteria by which infrastructure schemes will be monitored and evaluated on their performance and quality.

Examples of Best Practice

The following strategies were chosen as examples of Best Practice:

- Cheshire County Council Public Transport Policy - Infrastructure on the Highway
- Cheshire County Council Public Transport Policy - Interchange Strategy
- Oxfordshire County Council - Bus Strategy
- Cambridgeshire County Council - Bus Strategy
- City of York Council - Bus Strategy
- Transport for London - Accessible Bus Stop Guidance
- Transport for London - A Rail Strategy for London's Future
- Suffolk County Council - Rail Strategy
- Warwickshire County Council - Rail Strategy
- Warwickshire County Council - Interchange Strategy
- West Midlands Local Transport Plan - Interchange & Integration Strategy
- Staffordshire County Council - Passenger Transport Infrastructure Strategy

Recommendations

It is recommended that, wherever possible, the Worcestershire Passenger Transport Infrastructure Strategy should:

- Provide a minimum and preferred standard for all specified categories of infrastructure installations and interchange sites
- Not contain site-specific information
- Be constructed such that the County Council is sufficiently prepared to apply a consistent approach to all passenger transport interchange and infrastructure projects across the county
- Seek to meet the aims and ambitions of District, Town and Parish Councils wherever possible

There are, necessarily, a significant number of detailed recommendations in respect of passenger transport infrastructure. The key recommendations are:

- To establish a "Worcestershire Standard" for each broad category of passenger transport infrastructure
- To develop a hierarchy of infrastructure, each with its own standard of infrastructure (grading)
- To provide clear guidance on the "outcomes" to be delivered by the passenger transport infrastructure
- That a full countywide audit is completed of ALL passenger transport interchanges, roadside bus infrastructure and rail infrastructure to provide the baseline data to support further enhancements to the quality of facilities

- **That all bus stop infrastructure installations on the premium and core networks is owned and operated by the County Council.** In locations where bus stop usage does not warrant County Council infrastructure installation, it is proposed that the County Council operates a purchasing scheme, to allow parishes, town and district councils to take advantage of the County Council's economies of scale when purchasing, and to ensure that **ALL** bus stop infrastructure conforms to the Worcestershire standard
- **Interchange Management Partnerships be established.** These groups will meet at least twice a year, and are to be made up of delegates of key interest parties. These delegates will sign a binding, interchange-specific management contract, which will clearly define responsibilities for the effective management of the interchange to the Worcestershire Standard.
- **Quality Partnerships (Statutory and/or Voluntary as appropriate) be established to plan, fund and manage road based passenger transport infrastructure.** The Transport Act 2000 provides scope for transport authorities to develop Statutory Quality Partnerships on core routes to ensure, amongst other things, optimum quality bus services and value for money. The Statutory Quality Partnership model defines investment according to specific requirements along a bus route, and so will act to prioritise funding, where user benefits will be maximised.

The proposed standards for passenger transport interchanges, rail infrastructure and road based passenger transport are provided in Recommendations 1 - 4, overleaf. Recommendation 5 summarises the proposed grading of the local bus network. Recommendation 6 summarises the quality expected for roadside bus infrastructure. Recommendations 7 - 9 summarise some of the detailed key proposals in respect of bus stop infrastructure.

Recommendation 1 - The “Worcestershire Standard” for Interchanges - Gold Standard

The Gold Standard (Main Rail & Main Bus Stations):

- **ADEQUATE CAPACITY FOR ALL SERVICES:** Sufficient bus bays/platforms/layover facilities to accommodate existing levels of service with sufficient capacity/space for future expansion.
- **PRIORITY ACCESS & EGRESS:** Priority access to and egress from interchanges for bus and other road based passenger transport services
- **FULLY DDA COMPLIANT ACCESS:** All interchange facilities.
- **KISS & RIDE / TAXI FACILITIES:** Segregated drop-off/pick-up space close (within 400 metres) of the terminal building.
- **SAFE WALKING & CYCLING ROUTES:** Safe walking and cycling routes to interchanges.
- **SIGNAGE:** To promote safe use of interchange facilities.
- **RETAIL & REFRESHMENT FACILITIES:** Encourage retail facilities into interchanges, to increase the viability and attractiveness of interchange environment.
- **SECURE CYCLE PARKING:** Secure cycle parking facilities
- **PROXIMITY TO OTHER MODES:** Interchanges will only be deemed to be truly multi-modal if the different modes (primarily cycle, bus, rail and car) are situated no more than a 400-metre walking route away from each other
- **WAITING ROOM/SHELTER:** To be dry and lit.
- **LIGHTING:** All interchanges to be brightly lit for security and safety reasons.
- **INFORMATION DISPLAYS:** See Marketing & Information Best Practice Report
- **CCTV:** Installed with localised control, to promote safety and security.
- **RAISED KERBS & TACTILE PAVING AT BUS STOPS:** To provide step free access to buses and to minimise dwell times.
- **TOILETS:** Self-cleansing or warden monitored toilets to ensure quality.
- **CLEANLINESS:** Windows clean, paintwork fresh and no litter/dust/filth.
- **DDA COMPLIANT PARKING SPACES:** At least two to be provided at each interchange where applicable, located close to the bus stop or platform.
- **INCREASED CAR PARK CAPACITY:** Where existing car parking capacity is not adequate to meet Park & Ride demand, the council must actively seek to increase car park provision at stations and/or improve bus links where constraints prohibit increasing parking capacity (e.g. the Worcester Stations.)

Recommendation 2 - The “Worcestershire Standard” for Interchanges - Silver Standard

The Silver Standard (Minor Rail and Minor Bus Stations):

- **ADEQUATE CAPACITY FOR ALL SERVICES:** Sufficient bus bays/platforms/layover bays to accommodate existing and future levels of service
- **PRIORITY ACCESS & EGRESS:** Priority access to and egress from interchanges for bus services
- **FULLY DDA COMPLIANT ACCESS:** To/from/between all interchange facilities
- **KISS & RIDE / TAXI FACILITIES:** Segregated drop-off/pick-up space close (within 400 metres) of the terminal building.
- **SAFE WALKING & CYCLING ROUTES:** Safe walking and cycling routes to/between interchanges and facilities
- **SIGNAGE:** To promote safe use of interchange facilities
- **SECURE CYCLE PARKING:** Secure cycle parking facilities
- **RETAIL OPPORTUNITIES:** Encourage retailers to locate close to interchanges
- **PROXIMITY TO OTHER MODES:** Interchanges will only be deemed to be truly multi-modal if the different modes (primarily cycle, bus, rail and car) are situated no more than a 400-metre walking route away from each other
- **WAITING ROOM/SHELTER:** To be dry and lit
- **LIGHTING:** All interchanges to be brightly lit for security and safety reasons
- **INFORMATION DISPLAYS:** See Marketing & Information Best Practice Report
- **CCTV:** Installed with localised control, to promote safety and security
- **RAISED KERBS & TACTILE PAVING AT BUS STOPS:** To provide step free access to buses and to minimise dwell times
- **CLEANLINESS:** Windows clean, paintwork fresh and no litter/dust/filth
- **DDA COMPLIANT PARKING SPACES:** At least two to be provided at each station, located close to the facility to minimise walk distances
- **INCREASED CAR PARK CAPACITY:** Where existing car parking capacity is not adequate to meet Park & Ride demand, the council must actively seek to increase car park provision at stations and/or improve bus links where constraints prohibit increasing parking capacity (e.g. the Worcester Stations.)
- **FREE CAR PARKING:** For passenger transport ticket holders and bona fide bus/rail users. All rail stations are to be treated as Park & Ride sites

Recommendation 3 -The “Worcestershire Standard” for Rail Infrastructure

The Worcestershire Standard for rail infrastructure has as its primary objective, to promote increased sustainable and safe use of rail stations as key multi-modal interchanges. The Worcestershire Standard will develop the principles outlined in the Worcestershire Rail Strategy, which forms part of the Local Transport Plan 2 Document 2006-2011. This will be achieved by upgrading rail facilities to the following standards:

- **KISS & RIDE / TAXI FACILITIES:** Segregated drop-off/pick-up space close to ticket office/station platforms
- **DDA COMPLIANT SPACES:** At least two to be provided at each station, located close to the platform
- **SAFE WALKING & CYCLING ROUTES:** Safe walking and cycling routes to stations
- **SECURE CYCLE PARKING:** Secure cycle parking facilities
- **A GOLD STANDARD BUS STOP:** To be located within 100 metres of the rail station, and to be served by at least one express/core service, and as many other low frequency services as possible, to maximise inter-modal travel opportunities
- **SIGNAGE:** To promote inter-modal travel, including walking, cycling, bus and car
- **FREE CAR PARKING:** For season ticket holders and proven rail users. All rail stations are to be treated as park & ride sites
- **INCREASED CAR PARK CAPACITY:** Where existing car parking capacity is not adequate to meet Park & Ride demand, the council must actively seek to increase car park provision at stations and/or improve bus links where constraints prohibit increasing parking capacity (e.g. the Worcester Stations.)
- **WAITING ROOM/SHELTER:** To be dry and lit
- **CCTV:** Installed with localised control, to promote safety and security

Recommendation 4 - The “Worcestershire Standard” for Bus-Based Park & Ride Interchanges

PARKING CAPACITY: To meet forecast demand but to be a minimum of 500 spaces. These to be 2.4 metres wide, of which 12% should be 3.6m wide to cater for parents and children and the mobility impaired. Sites should be constructed with the potential to expand capacity, if required.

LAYOUT, DESIGN & OPERATIONAL FACILITIES - Layout should be designed so that it:

- Minimises conflict between pedestrians and motorised vehicles
- Minimises conflict between buses and cars within and on the approach to the facility
- Minimises walk distances to/from the bus stops, 150m maximum walk distance
- Has dedicated (3.6m wide) parking bays for parent and children and mobility impaired users
- Provides two bus stands (one for alighting and one for boarding) capable of accommodating 18m long articulated low-floor buses
- Provides layover stand(s) capable of accommodating at least one 18 metre long articulated low-floor bus, the layover stand must be accessible from the alighting stop and should, ideally be located BETWEEN the alighting and boarding stops, thereby minimising bus manoeuvres at the site.
- Has a high quality waiting, information and ticket issuing facility for passengers
- Is well lit and meets the latest design standards.
- Has CCTV installed with a control facility provided in the Park & Ride operational office
- Kassel Kerbs & Tactile Paving should be used to provide level boarding/alighting.

TICKETING & BARRIER CONTROL: The Park & Ride site must be designed so that access to and egress from the Park & Ride car park will be barrier controlled. The car park entrance barrier system must:

- Be capable of issuing tickets to drivers
- Be located such that vehicles queuing to access the car park do not block vehicular access to other facilities
- Have a sign displaying available parking capacity (real time display)

In addition, the Exit barrier system must:

- Be integrated with the entrance barrier in terms of ticketing and car park capacity reporting
- Have a ticket reader system, which allows cars to depart the site only on tendering of a valid ticket (whether issued at the entrance barrier or by on-site ticket machines)
- Be located such that cars can depart the car park safely and with minimal conflict with Park & Ride buses

PASSENGER & STAFF FACILITIES: The following facilities should be provided at any Park & Ride Site in Worcestershire:

- A heated and lit passenger waiting area, located adjacent to the bus-boarding stop.
- A passenger information counter
- Toilet facilities
- Operations room (including CCTV control)
- Site staff mess room
- Secure parking facilities for cyclists
- Up to three ticket vending machines
- Up to two real time information screens (one in the building and one adjacent to the boarding stop)

The location and design of the facility should be such that Park & Ride users progress from the car park, through the building and past the ticket vending machines and information screens to the bus boarding point.

- **SIGNAGE:** To promote safe use of interchange facilities

Recommendation 5 - Bus Route Grading Structure for Prioritisation of Bus Infrastructure Investment

	PRIMARY AND CORE ROUTES				OTHER (FEEDER) BUS ROUTES	
	PARK & RIDE	URBAN EXPRESS	INTERURBAN EXPRESS	URBAN CORE	URBAN LOW FREQUENCY	RURAL ROUTES
DESCRIPTION	High frequency (at least 6bph in both directions) express routes, limited stops	High frequency (at least 6bph in both directions) express routes, limited stops	Medium frequency (at least 3bph in both directions) express routes, limited stops	Medium frequency (at least 3bph in both directions) express routes, limited stops	Low frequency routes (<2 bph per direction) with regular stops and request stops	Low Frequency routes with mostly request stops (unmarked and Custom & Practice Stops)
BUS STOP LOCATION	Limited stops serving only key trip attractors en-route to/from City Centre of Park & Ride Site	Minimum 400, maximum 750 metre distance between stops	Distance between stops 400-750 metres when passing through urban areas. Limited stops in rural areas	Minimum 400 metre distance between stops	Minimum 400 metres distance between registered stops, some request stops	Published route with timing points, most stops are by request
BUS STOP INFRASTRUCTURE	Bus Stops will be graded according to 'The Worcestershire Standard for Roadside Bus Infrastructure' (See recommendation 6)	Bus Stops will be graded according to 'The Worcestershire Standard for Roadside Bus Infrastructure' (See recommendation 6)	Bus Stops will be graded according to 'The Worcestershire Standard for Roadside Bus Infrastructure' (See recommendation 6)	Bus Stops will be graded according to 'The Worcestershire Standard for Roadside Bus Infrastructure' (See recommendation 6)	Bus Stops will be graded according to 'The Worcestershire Standard for Roadside Bus Infrastructure' (See recommendation 6)	Bus Stops will be graded according to 'The Worcestershire Standard for Roadside Bus Infrastructure' (See recommendation 6)
BUS STOP INFORMATION	Real time information, otherwise timetable displayed at all stops	Timetable displayed at all stops	Timetable displayed at fixed (non-request) stops only	Timetable displayed at fixed (non-request) stops only	Timetable displayed at fixed (non-request) stops only	Timetable displayed at fixed (non-request) stops only
BUS STOP OWNERSHIP	Bus Stops are managed & maintained as part of the Park & Ride contract/ Statutory Quality Partnership by the County Council	Bus Stops are managed & maintained by County Council, possibly as part of Statutory Quality Partnership	Bus Stops are managed & maintained by County Council as part of Statutory Quality Partnership	Bus Stops are managed & maintained by County Council as part of Statutory Quality Partnership	Bus Stops are managed & maintained by County Council	Bus Stops are managed and maintained by County Council. Bus Shelters will be provided according to the Worcestershire Standard
VINYL FLAG	See Marketing & Information Strategy	See Marketing & Information Strategy	See Marketing & Information Strategy	See Marketing & Information Strategy	See Marketing & Information Strategy	See Marketing & Information Strategy

Recommendation 6 - The “Worcestershire Standard” for Roadside Bus Infrastructure

The Gold (High Use) Standard (In excess of 500 users a week)

- **BUS SHELTER** - Of mainly glass construction, with seating, preferably provided by a shelter advertising company. (See full specification)
- **SHELTER LOCATION** - Preferably located as close to the boarding point as possible.
- **POLE & FLAG** - Flag to be clearly visible from the roadside and should be integral to the bus stop, to minimize unnecessary street clutter (the design and contents of the flag is covered in the Passenger Transport Marketing & Information Strategy for Worcestershire).
- **RAISED KERBS** - To provide level access for buggies and wheelchairs
- **ROAD MARKINGS** - Comprising of yellow bus-stop clearway markings, sign and red or green surfaced carriageway box.
- **TIMETABLE INFORMATION** - For all routes serving the stop.
- **CROSSING POINT** - A safe place to cross the road within 50 metres of the bus stop, to include dropped kerbs and tactile paving where appropriate.
- **DDA COMPLIANT** - Fully accessible for disabled people
- **DOUBLE LENGTH BUS STOPS** - Where Gold Standard bus stops are located on Premium Routes, it may be necessary to provide double length bus stops, to permit express services to overtake stopping services.

The Silver (Moderate Use) Standard (250 to 499 users a week)

- **SHELTER LOCATION** - Preferably located as close to the boarding point as possible.
- **POLE & FLAG** - Flag to be clearly visible from the roadside and should be integral to the bus stop, to minimize unnecessary street clutter (the design and contents of the flag is covered in the Passenger Transport Marketing & Information Strategy for Worcestershire).
- **RAISED KERBS** - To provide level access for buggies and wheelchairs
- **ROAD MARKINGS** - Comprising of yellow bus-stop clearway markings, sign and red or green surfaced carriageway box.
- **TIMETABLE INFORMATION** - For all routes serving the stop.
- **CROSSING POINT** - A safe place to cross the road within 50 metres of the bus stop, to include dropped kerbs and tactile paving where appropriate.
- **DDA COMPLIANT** - Fully accessible for disabled people
- **BUS SHELTER** - A bus shelter will be provided where funding allows. Of mainly glass construction, with seating. (See full specification)

The Bronze (Low Use) Standard (less than 249 users a week)

- **POLE & FLAG** - Flag to be clearly visible from the roadside. (the design and contents of the flag is covered in the Passenger Transport Marketing & Information Strategy for Worcestershire).
- **HARDSTANDING** - Paved waiting area

Recommendation 7 - Roadside Infrastructure Standards

Bus Stop Locations

Bus stops must be located to allow passengers to board and alight safely and conveniently and should also be safe for other road users and pedestrians. The layout of the bus stop should permit buses to stop parallel and as close to the kerb as possible, to allow effective use of bus facilities (such as ramps). Key considerations for bus stop locations are:

- Safety e.g. avoiding bends and crests in the road
- Visibility for road users (in both directions) when buses are stopped
- Driver and intending passengers are clearly visible to each other
- Where there is adequate unobstructed footway width
- Where there is space for a bus shelter
- On-street parking arrangements
- Close to (and at the exit side of) pedestrian crossings
- Sited to minimise walking distance between interchange stops
- Close to main junctions without affecting road safety or junction operation
- Close to local facilities e.g. shops, offices, pubs, residential areas
- Located to minimise likely objections from nearby residents

Consideration should be given to the routes taken by passengers to and from the bus stop. Locating stops near pedestrian crossing facilities, and in particular at junctions, is convenient and helps passengers complete the rest of their journey safely. In making a bus stop accessible to wheelchairs (and pushchairs), consideration must be given to the accessibility of routes to and from the bus stop. It may also be necessary to provide additional dropped kerb crossings and/or crossing facilities in the vicinity of the stop as part of any bus stop improvements. A Bus Stop Site Visit Checklist is provided in Appendix A.

Bus Facilities in New Developments

It is essential that passenger transport user and operator needs are taken into account during the planning of new developments (e.g. housing, health, business, education, retail and leisure). Sites for new or relocated bus stop facilities must be identified and located such that they are integral to a new development. Walking distances to the bus stops should be minimised and the occupiers of the developments should, ideally, be within a 250m (approximately 2.5 minutes) walk of a bus stop and certainly no more than a 400m walk. It is important that the stops are established during construction before the occupation.

Bus Stop Poles

It is recommended that, in order to improve the image of bus travel, an effective and user-friendly bus stop pole design be provided. The latest bus stops poles are a 'modular' design with the two main suppliers being Trueform Ltd and Bissell Ltd.

- *Trueform 'Elite' Bus Stop Pole (Patented System)* - This is a modular design pole and can be seen at all bus stops in London. It is designed to enable the addition of telecommunications cables for lighting and real-time information displays.

- *Bissell 'Desire' Bus Stop Pole* - The Bissell 'Desire' pole is similar in design to the Trueform Elite post except that it is narrower and not as obtrusive on the footway. The cost is significantly lower than the Trueform 'Elite'.

Illumination at Bus Stop Poles

To ensure that timetable information can be easily read in the dark, it is recommended that Gold and Silver Standard bus stops served by regular evening and late night bus services and those at passenger transport interchanges are illuminated. Consideration should be given to illuminating timetable cases using solar panels. The use of solar power means there is no need for mains connection and is a strong message in promoting renewable energy and sustainable travel.

Bus Stop Signs (Flags)

The content of the Bus Stop Sign (or flag) is provided in the Marketing and Information Strategy. It is recommended that two styles are specified: one that is compatible with the new modular pole (Bissell 'Desire' and Trueform 'Elite') and one that retains brackets for banding.

Bus Boarding Kerbs

Level access (by kneeling or use of a ramp) at the boarding point usually requires installation of raised kerbs. It is recommended that a kerb height of 160mm be provided at bus stops to provide the best compromise between ease of level access and reduced damage to the bus. It is also recommended that where raised kerbs are provided at bus stops, the following minimum lengths should be applied:

- 4m at lightly used or alighting bus stops
- 7 or 8m (depending on shelter configuration) at single bus stops where only one bus is scheduled to arrive at any one time and a shelter is provided
- 16m at a double bus stop
- 26m at a double bus stop used by standard 12 metre length buses and articulated buses

Bus Shelter Design Guidance

The needs of users are of paramount importance when deciding on shelter design/type. As a minimum, users should expect a facility that is clean, safe, accessible & comfortable, contains timetable & route information (unless this is provided on a separate bus stop pole) and, most importantly, provide protection from the elements. It is recommended that Worcestershire bus shelters should meet the following standards:

- **Clean:** The shelters should be constructed of robust materials and finishes that are easily cleaned and minimise vandal damage. Suitable cleaning arrangements should be in place, to ensure the shelter remains in a clean condition. A litter bin must be provided, and emptied at regular intervals.
- **Safe:** The shelter to be constructed with robust and long-lasting materials and have maximum glazing, so that passengers can see and be seen while waiting in the shelter. The shelter should have internal courtesy lighting (mains or solar power) for added comfort and safety. Suitable maintenance and fault reporting arrangements should be in place. At locations where anti-social behaviour has occurred the introduction of CCTV may also be considered either integral with or adjacent to the bus shelter.

- **Comfortable & Accessible:** The shelter to be an attractive place in which to wait with seating (where space permits) that is located and designed so it is comfortable for all users. The shelter and its associated infrastructure need to be accessible by all users and, in particular, for those with limited mobility such as the elderly, those travelling with young children and wheelchair users.
- **Timetable Information:** The shelter should include an integral timetable display and bus stop flag. It is important that timetable display units are located so that all users, including wheelchair bound, are able to access the information provided. New shelters should be future-proofed to permit the retrospective installation of Real Time Information Systems.
- **Weather Protection:** The shelter must provide optimum protection from the elements. The design to incorporate enclosed and semi-enclosed configurations and should have a suitable water displacement system so that users are protected in the rain.

In addition to the above consideration must be given to the marketing effect the shelter will have i.e. the shelter should enhance the image of bus travel. The infrastructure that Worcestershire provides should support and advertise the commitment of the County to improve bus travel and to addressing user needs. The visual appearance of the shelter should complement (as much as it is possible) and even enhance, the local surroundings.

Bus Shelter Glazing

To promote personal safety and assist the bus driver, it is recommended that bus shelters be constructed with a maximum of transparent material. Unless a location is particularly prone to vandalism, toughened glass is recommended as the main glazing option. Glass maintains its clear transparency in the long term and is less expensive than the more robust alternative of polycarbonate. However, bus shelters and the glazing in particular, are subject to vandalism and where this is a problem anti-graffiti polycarbonate is recommended as the main glazing option.

Bus Shelter Illumination

For the comfort and personal security of intending passengers, it is recommended that shelters be lit during the hours of darkness. Shelters can be lit using either mains or solar power and the choice of power source will depend on a number of factors. Whatever choice of power is chosen it is recommended that shelters are installed with movement detector sensors to avoid shelters been lit overnight when not in use.

Where street lighting or mains supply is available nearby, it is recommended to specify mains power, as connection costs are likely to be significantly lower than the cost to provide a solar unit. It is important that the 'owner' of the shelter is made aware of arrangements for bill paying, fault reporting and electric test arrangements. In locations where connection to the mains supply is not easily accessible, it is recommended to specify solar lighting.

Bus Shelter Seating

For the comfort of users, particularly those less mobile, it is recommended that seating should be provided where possible. This seating should be in the form of a bench, platform or horizontal rails to rest against, at a height of approx. 580mm. To be clearly visible, seating should be in a contrasting colour to the main shelter and, if not undercover, should be designed so that rainwater does not collect on it.

Where seating is provided within the shelter, sufficient covered area should be available for a wheelchair user i.e. if a 4m length shelter is specified, the seating should be a maximum of 3m length, to allow 1m free for a wheelchair, ideally opposite the shelter exit for ease of manoeuvring. Experience from the demonstration stop in Cheshire highlighted that older or less mobile users preferred bench seating with hand rests. If space is not available for bench seating the shorter perch seating should be specified.

Bus Shelter Timetable Information

To avoid the need for the installation of a bus stop pole and minimise street 'clutter', it is recommended that shelters are equipped with integral information display cases and a bracket for banding a bus stop flag. It is also recommended that a standard timetable display case be specified in all shelters. It is recommended that the bus shelters be equipped with a double-crown size landscape display case (747mm wide x 500mm depth), which provides sufficient space for timetable information as well as route maps, if available. Where the shelter is situated away from the bus stop, a separate bus stop pole may be required to advise intending passengers and bus drivers of the bus stopping location.

Bus Shelter Maintenance

To ensure that the quality image of bus stop infrastructure installations is maintained, it is vital that an agreed maintenance programme is in place, to ensure that Bus Stops are attractive and comfortable for users. It is recommended that district-wide, bus stop specific cleaning contracts are devised, in partnership with all interested parties, to ensure that bus stops meet the Worcestershire Standard.

Where newly installed shelters come under the ownership of a third party such as a Parish Councils, the 'owners' must be made aware of the suppliers maintenance and cleaning advice. This is especially important for the safe and effective functioning of lighting.

Guidance on the Relocation or Removal of Roadside Bus Infrastructure

It is recommended that, following the completion of the bus stop audit, bus stop relocation will only be considered by Worcestershire County Council if the requester pays the full cost of relocation and reconstruction of bus stop facilities, and is able to propose a site which is no less convenient and safe for both the buses and stop users and is fully agreed by all relevant parties and frontage owners.

Passenger Transport Infrastructure Best Practice Report

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Introduction

1. INTRODUCTION

- 1.1 This report was commissioned as part of the project to develop the Passenger Transport Infrastructure Strategy for Worcestershire. It sets out passenger transport infrastructure best practice and draws from examples in the UK and elsewhere. The Infrastructure Strategy will form a vital input to the definition of the Integrated Passenger Transport Strategy.
- 1.2 The *Methodology* in Section 2 outlines the aims of this research project. The *Examples of Best Practice* are sought from the results of the Best Value Performance Indicators. Local Transport Authorities that have performed well in relation to their management of Passenger Transport Infrastructure have been chosen for scrutiny in this report.
- 1.3 *Road Passenger Transport Infrastructure* is covered in Section 3, primarily including examples of best practice relating to bus infrastructure. This section provides examples of where quality infrastructure installations have been used to enhance the quality and image of Road Passenger Transport.
- 1.4 *Rail Passenger Transport Infrastructure* is outlined in Section 4. This section covers examples of best practice in rail infrastructure, primarily at rail stations, as these are the main passenger interface for this mode of transport.
- 1.5 *Passenger Transport Interchange Infrastructure* is detailed in Section 5. This section gives various examples of best practice with regard to the management and design of quality passenger transport interchanges, which facilitate easy inter-modal use.
- 1.6 A Summary of the *Existing Passenger Transport Infrastructure in Worcestershire*, together with the processes established to manage and improve it is provided in Section 6.
- 1.7 The *Recommendations* are collated in Section 7. These are taken from the examples of best practice provided in this report, and are proposed for inclusion in the Passenger Transport Infrastructure Strategy for Worcestershire.

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Methodology

2. METHODOLOGY

2.1 A research plan was generated by the project team, with the aim of identifying the research topics that were considered pertinent to be included within any Passenger Transport Infrastructure Strategy for Worcestershire. The research plan was condensed into three topics:

- *Road Based Passenger Transport Infrastructure (Bus)*
- *Rail Passenger Transport Infrastructure*
- *Passenger Transport Interchanges*

Bus Priority Infrastructure will be dealt with separately in the bus priority strategy for Worcestershire.

2.2 A series of Bus Strategies, Local Transport Plans, Infrastructure Strategies and related documents were collated from a multitude of domestic and international passenger transport authorities. These documents were then scrutinised and relevant information was extracted for analysis.

2.3 Where cited, the term 'best practice' is used to describe excellence in terms of strategies which:

- Define clear parameters, providing clarity on the standard and quality of passenger transport infrastructure that can be expected from a transport authority.
- Set out a delivery process for the County Council to apply best practice working across Worcestershire.
- Detail the criteria by which infrastructure schemes will be monitored and evaluated on their performance and quality.

2.4 Examples of Best Practice

2.4.1 Best practice in passenger transport infrastructure in the United Kingdom has been sourced from documentation supplied by the highest-ranking transport authorities from the Best Value Performance Indicators (BVPI).

"Best Value Performance Indicators (BVPIs) are gathered and submitted by the [national] Government as part of a national set of performance measures for the range of local government services. There are currently 94 BVPIs that have to be included in Best Value Performance Plans, providing the public and local and central government with a means of monitoring, analysing and comparing the achievements of local authorities."¹

The Best Value Performance Indicators that have been used to identify passenger transport best practice in this report are as follows:

- BV103 - Satisfaction with local provision of public transport information
- BV104 - Satisfaction with local bus services

¹ <http://www.idea.gov.uk/idk/core/page.do?pageId=1089961>

- E14 CPA Indicator - Satisfaction with local provision of public transport information (users last 12 months)
- E15 CPA Indicator - Satisfaction with local bus services (users last 12 months)

2.4.2 The following strategies were chosen as examples of Best Practice, as a result of their high passenger transport BVPI scores. Examples of their contents are included within this report:

- Cheshire County Council Public Transport Policy - Infrastructure on the Highway
- Cheshire County Council Public Transport Policy - Interchange Strategy
- Oxfordshire County Council - Bus Strategy
- Cambridgeshire County Council - Bus Strategy
- City of York Council - Bus Strategy
- Transport for London - Accessible Bus Stop Guidance
- Transport for London - A Rail Strategy for London's Future
- Suffolk County Council - Rail Strategy
- Warwickshire County Council - Rail Strategy
- Warwickshire County Council - Interchange Strategy
- West Midlands Local Transport Plan - Interchange & Integration Strategy
- Staffordshire County Council - Passenger Transport Infrastructure Strategy

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Road Based Passenger Transport Infrastructure

3. ROAD BASED PASSENGER TRANSPORT INFRASTRUCTURE

3.1 Many of the Bus Strategies that were collated have been omitted, as it was considered that they did not provide sufficient detail to deliver best practice. However, a list of the strategies examined is provided in Appendix D. Two strategies that were particularly outstanding in their level of detail and method of assessment were:

- Cheshire County Council's 'Public Transport Policy - Infrastructure on the Highway'²
- York City Council's 'Local Transport Plan, Annex D - Bus Strategy (Sections 7 & 8)'³.
- Oxfordshire County Council's 'Local Transport Plan -Bus Strategy'⁴.
- Transport for London's 'Accessible Bus Stop Design Guidance' Document.⁵

These are summarised below.

3.2 Cheshire County Council - 'Public Transport Policy - Infrastructure on the Highway'

3.2.1 The Cheshire County Council document is excellent, in that it provides clear definition of the local authority's aims and objectives for passenger transport infrastructure in the county. The document includes:

- a. An outline of the County's existing bus infrastructure portfolio, detailing the total number of bus stops, both with and without shelters.
- b. An explanation in terms of passenger and community travel needs and the impact of the provision on roadside infrastructure.
- c. A detailed description of "The Cheshire Standard", which sets out an expected quality and standard for all roadside bus stop infrastructure in Cheshire. (See Figure 3.1)
- d. A description of items such as DDA compliance, kerb specifications, shelter specifications, road crossing provision and clear signage.
- e. A detailed specification for the implementation of 'The Cheshire Standard', which includes consultation, a safety audit and engineering compliance.

² <http://www.cheshire.gov.uk/roads/Policies/PublicTransportPolicy.htm>

³ http://www.york.gov.uk/content/45053/64877/64891/Local_transport_plan/119635/Annex_D_Bus_Strategy

⁴ http://portal.oxfordshire.gov.uk/content/publicnet/council_services/roads_transport/plans_policies/local_transport_plan/Itp2/Itp-bus-strategy2.pdf

⁵ http://www.tfl.gov.uk/assets/downloads/businessandpartners/accessible_bus_stop_design_guidance.pdf

Figure 3.1 - The Cheshire Standard for Bus Stop Infrastructure



3.2.2 In addition to the above points, the Cheshire Passenger Transport Infrastructure Strategy gives some guidance as to how funding should be allocated. For example:

- *“There are some bus stops, which are lightly used, but they are important to those people who do use them. With limited funding it is not really practical to upgrade all of these to the standards described above [Appendix A]. Therefore the minimum facilities to be provided in these circumstances are a safe hard standing area off the carriageway, a modern bus stop pole and flag and an up to date timetable.*
- *Local factors influence what is needed and what can be provided at each individual bus stop. Therefore what is provided at each location will vary according to the actual circumstances.*
- *While this is the County Council’s Standard for new stops, some shelters are provided by other organizations, over which the County Council has little or no control”⁶.*

3.2.3 Cheshire County Council recognise the importance of proper maintenance agreements for bus shelters. This cannot be overstated in the context of improving the bus stop environment. It is crucial that if investments are made in high quality shelters and bus stops, that they are maintained and kept at a high standard.

3.2.4 Cheshire County Council own and maintain most bus stop infrastructure installations in the county, to ensure that consistent standards are maintained. As part of the maintenance of these standards, where new shelters and bus stop poles are installed, they are included within an agreed maintenance contract.

⁶ See Appendix 1, Cheshire County Council, Bus Infrastructure Strategy

3.3 York City Council's 'Local Transport Plan, Annex D - Bus Strategy

3.3.1 The City of York Council Bus Strategy, is similar to the Cheshire County Council Strategy, in that it details a standard that all bus stops will be required to meet, however, the York Strategy also states that bus shelters will only be provided where practical:

*"...using a formulaic approach based on a number of factors such as network hierarchy, stop usage, service frequency, and vulnerability to the elements with priority given to stops on key routes."*⁷

3.3.2 The formulaic approach has been employed by City of York Council as a means to prioritise expenditure on roadside passenger transport infrastructure, primarily by applying a hierarchy to bus services using the route, and stop patronage. An example of this is shown in Figure 3.2. The benefits of this approach are:

- A fair, unbiased approach to infrastructure provision on bus routes
- A hierarchical approach to funding allocation, based on passenger usage

⁷ Pg 12, City of York Local Transport Plan 2006-11, Annex D, Bus Strategy, 8. Bus Stop Infrastructure.

Figure 3.2 - Example of City of York Bus Service Hierarchy for Infrastructure Investment Prioritisation

	PARK & RIDE	URBAN EXPRESS	URBAN CORE	URBAN LOW FREQUENCY	INTERURBAN EXPRESS	RURAL LOW FREQUENCY
DESCRIPTION	High frequency (10bph in both directions) express routes, limited stops	High frequency (10 bph in both directions) express routes with limited stops	High frequency (10 bph in both directions) routes with regular stops	Low frequency routes (4bph in both directions) with regular stops and request stops	High frequency (4 bph in both directions) express routes with limited stops	Low frequency routes with mostly request stops
BUS STOP LOCATION	Preferably only two stops (Origin & Destination)	Minimum 400, maximum 750 metre distance between stops	Minimum 400 metre distance between stops	Minimum 400 metres distance between registered stops, some request stops	Distance between stops 400 - 750 metres when passing through urban areas. Limited stops in rural areas	Pre-published route with guide times, stops are by request.
BUS STOP INFRASTRUCTURE	All stops have lit shelters with seating & are fully DDA compliant.	All stops with a weekly use in excess of 100 person trips will have DDA compliant, lit shelters, otherwise, high kerb, pole & flag only.	All stops with a weekly use in excess of 100 person trips per week will have DDA compliant, lit shelters, otherwise high kerb, pole & flag only.	All stops with a weekly use in excess of 100 person trips per week will have DDA compliant, lit shelters, otherwise high kerb, pole & flag only.	All stops with a weekly use in excess of 100 person trips per week will have DDA compliant, lit shelters, otherwise high kerb, pole & flag only.	Pole & flag only. High kerb where funding allows / access requirements necessitate.
BUS STOP INFORMATION	Real time information preferable, otherwise timetable information at all stops, provided by operator	Timetable board at all stops, provided by operator	Timetable board at all fixed (non-request) stops, provided by operator	Timetable board at fixed (non-request) stops only, provided by operator	Timetable board at fixed (non-request) stops only, provided by operator	Timetable board at fixed (non-request) stops only, provided by operator/council.
BUS STOP OWNERSHIP	Bus stops are managed & maintained as part of the Park and Ride contract, and are route specific	Bus stops are managed & maintained by Council, possibly as part of an Statutory Quality Partnership	Bus stops are managed & maintained by Council, possibly as part of an Statutory Quality Partnership	Bus stops are managed & maintained by council, and are route specific	Bus stops are managed & maintained by Council, possibly as part of an Statutory Quality Partnership	Bus stops on this route will be provided or maintained by parishes only. Where possible, bus shelters will not be provided.
BUS STOP VINYL FLAG	Route(s) shown and colour coded	Route(s) shown and colour coded	Route(s) shown and colour coded	Route(s) shown and colour coded	Route(s) shown and colour coded	Route(s) shown and colour coded

3.3.3 The City of York Strategy, unfortunately, gives only limited guidance as to how infrastructure projects should be prioritised in the event of limited funding.

3.4 Oxfordshire County Council - Bus Strategy

- 3.4.1 The Oxfordshire County Council strategy is exceptionally comprehensive and well thought out. There are a series of elements of good practice in the report. One element that stood out was a paragraph detailing the way in which requests for moving existing bus stop infrastructure will be dealt with by the County Council:

“Requests are often received from individuals or other agencies for stops to be moved. Stop relocation will only be considered by the County Council if the requester pays the full cost of relocation and reconstruction of bus stop facilities, and is able to propose a site which is no less convenient and safe for both the buses and stop users and is fully agreed by all relevant parties and frontagers.⁸”

This element of Oxfordshire’s Bus Strategy effectively ensures that the process of bus stop infrastructure relocation is afforded proper weighting, and is not considered lightly by either the council, or the general public. This element of strategy will no doubt significantly reduce requests such as these, saving wasted officer time and public finance on such movements without a sound business case.

- 3.4.2 The importance of the visual quality of roadside bus infrastructure is mentioned in the following paragraph of Oxfordshire County Council’s Bus Strategy, which discusses the effects of litter and poor maintenance on the effectiveness of infrastructure installations:

“The effectiveness of bus stop infrastructure in encouraging bus use is enhanced if the structures and the area of the stop are kept clean and free from litter, and any minor damage is quickly made good. The Council will seek to reach agreement with local Councils to give particular attention to bus stop areas in their cleaning programmes.⁹”

- 3.4.3 The issue of ‘quality’ of roadside bus infrastructure across the county is addressed in the following excerpt, which details Oxfordshire’s aspirations for improving bus stop infrastructure on specified ‘Premium’ routes:

“There is currently a rather poor standard of bus stops and shelters across Oxfordshire, and there is an ambition to make some significant improvements. The Premium Routes programme includes the provision of better stop infrastructure at stops along those corridors, including an enhanced pole, flag and information case. Attention will be given to raising kerb heights to an appropriate level and improvements will be made to the paved waiting area or hard standing. Similar high standard facilities will be provided in the core of country towns, where several less frequent bus services come together, and at principal stops on hourly routes.¹⁰”

⁸ Pg 29, http://portal.oxfordshire.gov.uk/content/publicnet/council_services/roads_transport/plans_policies/local_transport_plan/ltp2/ltp-bus-strategy2.pdf

⁹ Pg 29, http://portal.oxfordshire.gov.uk/content/publicnet/council_services/roads_transport/plans_policies/local_transport_plan/ltp2/ltp-bus-strategy2.pdf

¹⁰ Pg 29, http://portal.oxfordshire.gov.uk/content/publicnet/council_services/roads_transport/plans_policies/local_transport_plan/ltp2/ltp-bus-strategy2.pdf

3.4.4 The concept of 'premium' routes is, in effect, a prioritisation programme for roadside bus infrastructure for Oxfordshire. The premium routes connect all major settlements and are prioritised according to their frequency. A map showing Oxfordshire's proposed premium routes is shown in Figure 3.3.

Figure 3.3 - Oxfordshire's Proposed Premium Route Network



3.5 Transport for London, Accessible Bus Stop Guidance

3.5.1 Transport for London's Bus Priority Team have issued a document entitled "Accessible Bus Stop Guidance" which gives highly detailed specifications for various examples of bus stop infrastructure, which has been tried, tested and approved by Transport for London's award winning Bus Priority Team. This document is an excellent example of best practice, detailing the global effect of

bus stop infrastructure design and location on journey times, accessibility, driving conditions and congestion. A copy of the document is provided in Appendix 6.

- 3.5.2 An interesting element of the document is the definition of the ideal spacing for bus stops to optimise service performance:

*"...an ideal spacing for bus stops is approximately 400m, although a closer spacing in town centres and residential areas may be necessary to meet passenger [accessibility] requirements."*¹¹

There are significant advantages in having a fixed spacing for bus stop infrastructure, in that having fewer stops on a bus corridor will reduce point-to-point journey times, and can bring about improved accessibility through careful planning and assessment (i.e. a fixed spacing of 400 metres will mean that a person is no more than a 200 metre walk from a bus stop on a given route in an urban area. It is important to note that, as London is an entirely urban area, a different spacing strategy would be required for rural areas and interurban corridors, to take into account access for resident populations. In addition, gradients should also be taken into account, in that steeper gradients can sometimes have an impact on bus usage. However, there are limited locations where this is likely to impact in Worcestershire.

- 3.5.3 Transport for London's Accessible Bus Stop Guidance details a very clear approach to road based infrastructure projects, in that projects are prioritised in terms of their impact on bus journey times, which in turn can bring about significant savings to the cost of running bus services along corridors.

*"A well designed bus stop can provide significant benefits. For example, at a stop served by 20 bph, a 2 second saving per bus provides a value of time saving of almost £6,000¹² per annum. At 5 seconds this increases to over £14,000."*¹³

¹¹ Pg 10, "Stop Spacing", Accessible Bus Stop Design Guidance, Transport for London.

¹² This is calculated using the Transport for London Bus Priority Team Economic Evaluation with 20 bph every day and changing from a 25 second to 23 second journey time.

¹³ Pg 46, "Benefits", Accessible Bus Stop Design Guidance, Transport for London.

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Rail Passenger Transport Infrastructure

4. RAIL PASSENGER TRANSPORT INFRASTRUCTURE

- 4.1 At present, there are no UK examples of local authority strategies that are specifically orientated towards Rail Infrastructure. Network Rail manages the UK's rail infrastructure: an executive agency of the Department for Transport. As such, local authorities have only limited powers to influence the management and investment in railway infrastructure. There are a number of excellent rail strategies, which contain best practice in the way that local authorities exert their influence on the management of railways in their respective areas. Worcestershire County Council has produced a Rail Strategy as part of the Local Transport Plan 2, which will be used in the development of a Passenger Transport Infrastructure Strategy for Worcestershire.
- 4.2 Worcestershire is fortunate in that all major settlements in the county retained access to the rail network after the Beeching Report of 1963, and some of its associated service cuts, however, certain smaller settlements, such as Upton-upon-Severn and Tenbury Wells lost their access. Despite the Cross-Country line (a high speed, high capacity rail route that links the South West with the West Midlands, East Midlands, Yorkshire cities, North East and Scotland) running through the county, there are currently no stations in Worcestershire that are served by this main arterial rail route. Despite the route passing through the Worcestershire stations of Bromsgrove and Barnt Green these stations are not currently served by cross country rail services. Any infrastructure strategy will need to cover the County Council's ambitions for the Worcestershire Parkway Station, and the method in which the County Council will work in partnership with City and District Councils, the Department for Transport, Network Rail and Train Operating Companies for its implementation. A Worcestershire Parkway station could provide direct access to the West Midlands Conurbation, Bristol, Cheltenham and Gloucester, with their associated employment opportunities.
- 4.3 The main rail flows in Worcestershire are between Worcestershire stations and the West Midlands Conurbation, and Worcestershire stations and London. After decades of underinvestment in Worcestershire's rail network, Network Rail has undertaken a series of major Route Utilisation Strategies, which include significant infrastructure improvements. It is proposed that Worcestershire County Council work closely with Network Rail to ensure that these improvements are afforded the highest priority, to make the very best use of this infrastructure in the County.
- 4.4 As part of the redevelopment of the Longbridge site to the south of the West Midlands conurbation, Network Rail plan to resolve the current bottleneck at Longbridge with a series of capacity improvements, to provide Bromsgrove and Redditch with Cross-City line services every 20 minutes. This will involve the electrification of the line between Barnt Green and Bromsgrove. It is proposed that Worcestershire County Council strongly support these proposals and facilitate their rapid installation.
- 4.5 In common with other rural areas in the United Kingdom, there is little co-ordination between rail and bus timetabling in Worcestershire. As rail timetables have much tighter boundaries than bus timetables, and are published up to a month in advance of implementation, there is no apparent reason why bus timetables cannot be 'married' with rail timetables to provide comprehensive multimodal information for prospective passengers. This will be covered in the Passenger Transport Information Strategy for Worcestershire.

- 4.6 The largest single station in Worcestershire (in terms of infrastructure) is Worcester Shrub Hill Station (see Figure 4.1). This station is an excellent example of grandiose Victorian railway architecture, and was constructed to be Worcester's (and Worcestershire's) principal railway station. Despite the station having long enough platforms to accommodate long distance trains comfortably, the station is effectively bypassed with the Worcester and Droitwich Spa avoiding line, which diverts the Cross Country Line away from the city. As a result of this phenomenon, despite high passenger usage, the station is not used operationally to fully capitalise on the existing infrastructure. It is likely that in the event of a Worcestershire Parkway station being built, this may have a dramatic effect on infrastructure (station) use and requirement in the city of Worcester.

Figure 4.1 - Worcester Shrub Hill Railway Station



- 4.7 The following rail strategies have been judged as providing excellent examples of best practice, due to the level of detail and method of assessment of importance, relevance and value of infrastructure schemes:

- Suffolk County Council - Rail Strategy
- Merseyside Local Transport Plan - Rail Strategy
- Transport for London - A Rail Strategy for London's Future

- 4.8 All these rail strategies extol the need for increased multimodal integration. The Suffolk County Council Rail Strategy¹⁴ states that:

"...to make changing between bus and rail easier, there is a need for infrastructure adjacent to rail stations to facilitate this."¹⁵

¹⁴ <http://www.suffolk.gov.uk/NR/rdonlyres/4ECA2911-14AA-43E6-B81D-FE9251E830D2/0/SCCRailStrategy2006withFonts.pdf>

¹⁵ Page 5, Section 3.4, Rail Strategy, Suffolk County Council. (<http://www.suffolk.gov.uk/NR/rdonlyres/4ECA2911-14AA-43E6-B81D-FE9251E830D2/0/SCCRailStrategy2006withFonts.pdf>)

Warwickshire County Council's Rail Strategy¹⁶ takes this concept one stage further, by affirming that:

*"...interchange infrastructure should provide for 'seamless' changes between transport modes. This should be assisted by good signage, information and appropriately designed infrastructure."*¹⁷

The importance of the rail network as the dominant passenger transport mode is highlighted in Transport for London's Rail Strategy:

*"The effectiveness of the Capital's transport infrastructure will be critical to cater for this growth. Rail will be the dominant mode of transport in this."*¹⁸

These rail strategies are discussed in more detail below.

4.9 Suffolk County Council - Rail Strategy

4.9.1 Many of the rail strategies reviewed cite the importance of multimodal interchanges at rail stations. The Suffolk County Council Rail Strategy is explicit in its expectations for rail infrastructure (in particular, at rail stations):

- *"Improved access to stations for bus services providing bus/rail interchange.*
- *Safer access for pedestrians.*
- *Sheltered waiting accommodation for bus and taxi passengers at stations.*
- *Alterations to station forecourts to reduce conflict of movement and improve circulation.*
- *DDA improvements at stations to provide step free access."*¹⁹
- *Secure cycle storage at stations.*

In addition, the very purpose of the rail network within the county, and how the council will seek to encourage its enhanced use is defined:

*"Many settlements in Suffolk, which, although boasting substantial populations, are not served directly by railway lines. A means of meeting latent demand for rail travel from such settlements could be to provide bus or coach links from these settlements to suitable railheads. The introduction of through ticketing arrangements to towns, on specified bus routes, would improve links for potential rail passengers."*²⁰

4.10 Community Rail Partnerships and Rail Action/Promotion Groups

4.10.1 On some of the less used branch lines of the UK rail network, some Transport Authorities have set up Community Rail Partnerships between themselves, passenger rail operators, local user groups and Network Rail. The purpose of these Partnerships is to encourage increased use of existing rail infrastructure. A

¹⁶ http://www.warwickshire.gov.uk/ltpannex/chapter_161.html

¹⁷ http://www.warwickshire.gov.uk/ltpannex/chapter_161.html

¹⁸ Pg 9, A Rail Strategy for London's Future, S5 The Challenge of Catering for London's Rapid Growth is Significant

¹⁹ <http://www.suffolk.gov.uk/NR/rdonlyres/4ECA2911-14AA-43E6-B81D-FE9251E830D2/0/SCCRailStrategy2006withFonts.pdf>

²⁰ <http://www.suffolk.gov.uk/NR/rdonlyres/4ECA2911-14AA-43E6-B81D-FE9251E830D2/0/SCCRailStrategy2006withFonts.pdf>

pertinent example of which is mentioned in the Suffolk County Council Rail Strategy:

“Norfolk County Council formed the first Community Rail Partnership (CRP) in East Anglia in July 1997 to promote the Bittern Line, which is the line between Norwich, Cromer and Sheringham. From 1997 until 2005 passenger numbers on the Bittern Line increased by 192%.”

4.10.2 The Cotswold Line, which runs from Hereford to Oxford, passing through Worcestershire via Great Malvern, the Worcester Stations, Pershore, Evesham and Honeybourne, already has an active promotion group; the Cotswold Line Promotion Group (CLPG, www.clpg.co.uk). Unfortunately, the Cotswold Line is not eligible to be adopted as a Community Rail Partnership, because the line runs to London. There was a stipulation that lines to London could not become Community Rail Partnerships. This well established group campaign for:

- *“Much-improved infrastructure to allow more flexibility in the operation of trains and to minimise delays.*
- *An hourly service throughout the day between London and, at least, Great Malvern, with more trains running through to Hereford.*
- *A much-improved service for Combe, Finstock, Ascott-under-Wychwood, Sipton and Honeybourne stations.*
- *Better connections at Worcester and Hereford for Cardiff and South Wales and at Reading for Gatwick Airport.*
- *Improved and increased car parking at stations.”²¹*

4.10.3 The Stourbridge Line Users Group (SLUG, www.stourbridgelineusergroup.info) covers the Stourbridge line, which runs from the Worcester Stations to Birmingham Snow Hill, including the Worcestershire stations of Droitwich Spa, Hartlebury, Kidderminster, Blakedown & Hagley. A picture of Kidderminster Rail Station is shown in Figure 4.2. This group, similarly to the Cotswold Line Promotion Group, campaign for the betterment of the rail infrastructure and access along the Stourbridge Line route:

- *“A better deal for village stations*
- *Optimum service frequency at interchange stations.*
- *Bus connections to all adjacent towns with no rail services*
- *Security on trains and at stations*
- *Good clear information*
- *Increased staffing levels at stations”²²*

²¹ <http://www.clpg.co.uk/future.htm>

²² <http://www.stourbridgelineusergroup.info>

Figure 4.2 - Kidderminster Station on the Stourbridge Line



4.11 Merseyside LTP - Rail Strategy

- 4.11.1 The Merseyside LTP Rail Strategy has a number of excellent examples of best practice. Merseytravel, the urban area's passenger transport executive, have delivered a number of key improvements to rail infrastructure to enhance multimodal connectivity. Of particular interest is the Liverpool South Parkway station, which has been specifically included within the strategy. The project is described below.

“Liverpool South Parkway will replace the former Allerton and Garston stations with a single modern station. The new station will have bus and taxi stops, park and ride facilities and a high frequency shuttle bus link to Liverpool John Lennon Airport. Liverpool South Parkway will be an interchange that links local, regional and national rail services with the airport and South Liverpool.”²³

The Liverpool South Parkway, with the exception of the airport link, has several similarities with the proposed Worcestershire Parkway station, which is included in Worcestershire County Council's Local Transport Plan 2 for 2006-2011. Both projects include multimodal interchange and Park & Ride facilities to increase intermodal travel opportunities.

- 4.11.2 The Merseyside LTP Rail Strategy has clear objectives for rail infrastructure in the Merseyside region. Of note is their policy on modal integration at rail stations:

“To maximise the attractiveness of the rail network it needs to integrate seamlessly with other public transport modes. This means that all physical, temporal and financial barriers to public transport access need to be minimised to allow passengers to freely access the public transport network and interchange between modes. Development... will offer people a genuine choice to meet their transport needs while presenting a viable alternative to

²³[http://www.transportmerseyside.org/uploads/documents/mar_07/trav_1174050459_Appendix_02_\(Final_Mar_07\).pdf](http://www.transportmerseyside.org/uploads/documents/mar_07/trav_1174050459_Appendix_02_(Final_Mar_07).pdf)

the private car, supporting other policy initiatives on accessibility, improving rail patronage and supporting regeneration."²⁴

4.12 Transport for London - A Rail Strategy for London's Future

4.12.1 The Transport for London Rail Strategy is particularly focussed at the present time towards ensuring that the rail network in the capital is ready for the Olympic Games, which will be held in the city in 2012. Transport for London have prioritised rail infrastructure schemes by the potential each scheme has to reduce overcrowding, and to deliver the following objectives, as set out by the Mayor of London's London Plan:

- *Liveability, providing a safer, more accessible city for London's citizens*
- *Social inclusion, ensuring regeneration and tackling deprivation*
- *Urban environment, creating an attractive, well-designed, green city*²⁵

Transport for London recommend that all schemes are rated using a scoring system which applies a value to:

- *The total cost*
- *The benefits (speed, capacity, and multimodal travel opportunities)*
- *The sustainability of each scheme*

However, Transport for London does not give specific details as to how this scoring system works, or how value scores are attributed to each factor.

²⁴ [http://www.transportmerseyside.org/uploads/documents/mar_07/trav_1174050459_Appendix_02_\(Final_Mar_07\).pdf](http://www.transportmerseyside.org/uploads/documents/mar_07/trav_1174050459_Appendix_02_(Final_Mar_07).pdf)

²⁵ <http://www.tfl.gov.uk/assets/downloads/businessandpartners/rail-strategy-autumn-2006.pdf>

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Passenger Transport Interchange Infrastructure

5. PASSENGER TRANSPORT INTERCHANGE INFRASTRUCTURE

5.1 Passenger Transport Interchanges essentially fall into two categories:

- **Intramodal Interchanges** - *These are locations where passengers may change onto different services of the same mode to reach their destination. An example of this would be a town or city centre Bus Station.*
- **Multimodal Interchanges** - *These are locations where passengers may change onto different services on different modes. An example of this would be a city centre rail terminus, which is well served by buses, taxis and maybe light rail.*

5.2 There are a number of excellent Passenger Transport Interchange Strategies, which provide highly detailed, quality analysis of the location, design and specific requirements for interchanges and how to facilitate specific improvements. Within this report, the following strategies have been drawn upon as examples of best practice:

- Warwickshire County Council - Public Transport Interchange Strategy
- Cheshire County Council - Interchange Strategy
- West Midlands LTP - Interchange & Information Strategy
- Transport for London - Intermodal Transport Interchange for London

5.3 Warwickshire County Council - Public Transport Interchange Strategy

5.3.1 The Warwickshire Public Transport Interchange Strategy²⁶ contains a concise multimodal appraisal of the challenges and solutions for Public Transport Interchanges in a simple tabular format, which is shown in Figure 5.1.

FIGURE 5.1 - Warwickshire Passenger Transport Interchange Strategy, High Level Appraisal Tables

Table One: Constraints to Interchange

	BUS	RAIL	CAR	TAXI	CYCLE	WALK
BUS	Uncertainty Cost of combined journey, lack of information	Location of bus stops, lack of information	Lack of suitable parking at bus interchanges	Cost of fares location of taxi ranks	Cycles not carried on buses, lack of cycle parking	Safety & security of pedestrian routes
RAIL	Location of bus stops, lack of information	Waiting environment, Poor connection	Insufficient parking at stations	Cost of fares location of taxi ranks	Lack of cycle storage & parking	Safety & security of Pedestrian routes

Table Two: Measures to Improve Interchange

	BUS	RAIL	CAR	TAXI	CYCLE	WALK
BUS	Through & multi operator ticketing improvements to information	Relocation of bus stops Diversion of bus services	Dedicated park and ride facilities	Taxi ranks near to bus interchange points	Cycles on buses, cycle parking at bus stops	Safer routes to public transport
RAIL	Relocation of bus stops Diversion of bus services	Improved station environment Connecting services	Improved station car parks/ Parkway Station	Taxi ranks at rail interchange points	Cycle parking at stations Cycle carriage on trains	Safer routes to public transport

²⁶ http://www.warwickshire.gov.uk/ltp annex/chapter_164.html

5.3.2 The basis of the Warwickshire County Council Public Transport Interchange Strategy hinges on multimodal travel opportunities. The core strategy is:

“...to provide the best possible integration of the public transport network system in the County. In achieving high quality public transport interchange we need to think about providing improved interchange facilities and passenger information.”²⁷

It would certainly be hoped that a County Council would ‘think’ about improved interchange facilities and passenger information! Warwickshire County Council has produced a comprehensive passenger transport information strategy, which details their commitment to providing quality passenger transport information, and how this will be delivered. Passenger transport information provision will be dealt with separately under the Passenger Transport Marketing & Information Strategy for Worcestershire.

5.3.3 The Warwickshire strategy categorizes key interchanges into just two types in terms of expectations, Type A and Type B. The standards expected at each are described below:

- *Type A - (generally in the centre of market towns) will have weatherproof shelters, seating, a public telephone, a high standard of lighting and a high standard of passenger information.*
- *Type B - (generally in the centre of main urban centres) At bus stations and major public transport interchanges (e.g. major railway stations) will include Type A facilities and in addition they might be staffed and provide a waiting room, toilet facilities, a taxi rank and in the medium to long term provide real time information as part of the Information Strategy.²⁸*

Unfortunately, the Warwickshire Interchange Strategy does not give any further details as to how to define whether an interchange should be categorized as a Type A or Type B interchange. This is therefore a weakness, as this will create ambiguity when appraising infrastructure requirements.

5.4 Cheshire County Council - Interchange Strategy

5.4.1 The Cheshire County Council Interchange Strategy provides an exceptionally clear, graphic example of the importance of quality interchange infrastructure, shown in Figure 5.2:

²⁷ http://www.warwickshire.gov.uk/ltpannex/chapter_164.html

²⁸ http://www.warwickshire.gov.uk/ltpannex/chapter_164.html

FIGURE 5.2 - The Importance of Quality Interchange



You might travel on this busif you knew when it ranand didn't have to wait here.

5.4.2 The Cheshire County Council Interchange Strategy makes reference to the fact that many interchanges have developed in their current locations:

*"...as a result of historic factors and evolution over time. While this provides a starting point, it does not mean they are permanently fixed. Indeed changes are likely, and sometimes desirable."*²⁹

There is sometimes scope to relocate bus infrastructure to suit contemporary travel needs. The Cheshire strategy cites examples of where and why relocation of infrastructure has taken place across Cheshire:

- *Relocate interchange to better serve the town centre e.g. Macclesfield Bus Station.*
- *Move bus stops to more convenient and safer locations.*
- *Create a new park & ride site at Wrexham Road to reduce traffic flows into Chester City centre.*
- *Proposed rural interchange at Broxton.*

Examples of changes caused by external factors :-

- *Move bus stops as a result of changes to road layouts.*
- *Relocate to a better location available because of commercial developments e.g. Bache Rail Station.*
- *New facilities to serve new developments e.g. bus stops in Chester Business Park.*

5.4.3 The Cheshire County Council Infrastructure Strategy defines best practice by listing, in tabular format, the various user groups that make use of passenger transport interchanges. The individual requirements of each user group are plotted by interchange type. A copy of this is provided in Table 5.1. It is also important to note that the strategy recognised the need for interchanges to cater for operational requirements such as ancillary vehicles (vehicle maintenance and cleaning), standby parking or stabling, and sign-on & changing rooms for operational staff.

²⁹ Section 9, *Where Should Interchanges be Located?* Cheshire PT Interchange Strategy

TABLE 5.1 - Cheshire Passenger Transport Infrastructure Strategy - User Group Requirements by Interchange

Facilities at Interchange Points

Table 1

	Bus Stops	Bus Stations	Rail Stations	Combined Bus/Rail Station	Informal Bus Interchange Points	Specific Park & Ride Sites
Access/Egress issues						
Walking routes	Occasionally	Y	Y	Y	Y	Y
Cycling routes	N	Y	Y	Y	N	Y
Bus stops	Y	Y	Y	Y	Y	Y
Kiss & ride facility	N	Usually	Y	Y	N	Y
Taxi facility	N	Y	Y	Y	N	?
Parking facilities						
Cycle parking	N	Y	Y	Y	N	Y
Powered 2 wheeler parking	N	N	Y	Y	N	Y
Car parking	N	N	Y	Y	N	Y
Information Provision						
Internal direction signs	Y	Y	Y	Y	Y	Y
Timetable display	Y	Y	Y	Y	Y	Y
Public address	N	Y	Y	Y	N	Y
Real time information	Y	Y	Y	Y	Y	Y
Staffed information point	N	Usually	Usually	Y	N	Y
Help point	N	Y	Y	Y	N	Y
Facilities						
Shelter	Y	Y	Y	Y	Y	Y
Waiting room	N	Sometimes	Sometimes	Y	N	Sometimes
Lighting	Y	Y	Y	Y	Y	Y
Ticket purchase facilities	N	Usually	Y	Usually	N	Y
Safety & Security features	Y	Y	Y	Y	Y	Y
Internal Pedestrian Routes	N	Y	Y	Y	N	Y
Level boarding/alighting	Y	Y	Y	Y	Y	Y
Public telephone	N	Y	Y	Y	Nearby	Y
Toilets	N	Y	Where possible	Y	N	Y
Facilities to help the disabled	Y	Y	Y	Y	Y	Y
Staff facilities	N	Sometimes	Sometimes	Sometimes	N	Sometimes

Whilst Cheshire County Council have detailed the facilities required/expected at different elements of passenger transport infrastructure, there is no clear guidance as to how investment should be prioritised, which constitutes a weakness in this strategy.

5.5 The West Midlands Local Transport Plan Interchange & Integration Strategy

5.5.1 The West Midlands LTP Interchange & Integration Strategy³⁰ highlights the view that station car parks are critical to increasing the use of these valuable interchanges, and accepts that all rail stations in the region are effectively Park & Ride interchange sites.

“Facilities have traditionally been available at most rail stations in the Metropolitan area by means of a free car park for rail users. Of these car parks over 80% are operating at or above 50% capacity.”³¹

Building on the success of this section of their interchange policy, the West Midlands LTP has set the following target to increase use of stations as Park & Ride facilities:

“...the West Midlands has 190 Park and Ride spaces per 100,000 [total population] inhabitants, Paris has 970, Stuttgart 760, Lisbon 480, Genoa 310. Our ambitious target to help redress this, is to increase the West Midlands

³⁰ http://www.westmidlandsltp.gov.uk/mmsys/modules/edit/file_send.php?id=742

³¹ 20.9, West Midlands LTP Interchange & Integration Strategy

*number to 250 per 100,000 residents i.e., roughly a 30% increase over 5 years from 4950 to 6500 spaces.*³²

In the West Midlands, station car parks are designed to offer the following facilities to promote inter-modal use:

- Cycle Parking and safe cycling routes to rail stations
- Safe Walking Routes to rail stations
- Kiss & Ride Facilities / Taxi Drop Off Facilities
- DDA compliant parking spaces
- Bus accessibility at rail stations

Figure 5.3 shows the station car park at Ludlow in Shropshire, The bus stop, disabled parking, kiss and ride / taxi drop off, DDA compliant parking spaces and wide footpath for safe pedestrian access can all clearly be seen.

Figure 5.3 - Ludlow Station, Shropshire



5.6 Transport for London - Intermodal Transport Interchange for London

5.6.1 The Transport for London, Intermodal Transport Interchange for London document is an outstanding compilation of best practice in the provision of multimodal interchange facilities. It is recommended that the information within this document is used extensively in the creation of a Passenger Transport Infrastructure Strategy for Worcestershire.

5.6.2 The TfL Interchange document contains the results of detailed market research undertaken by Transport for London into user requirements for transport interchanges. The following priorities were highlighted for improvement:

- *Time and convenience in crossing roads between modes;*
- *Lighting and security in the interchange zone;*

³² 20.8, West Midlands LTP Interchange & Integration Strategy

- *Service disruption & real time information;*
- *Interchange signage and general routeway information;*
- *Shelter from the weather; and*
- *Staff training in multi-modal information provision.*³³

5.6.3 The TfL Interchange document recognises the importance of co-operative procedures where more than one party uses or manages interchange. Guidance is given as to how this should be approached:

- *Identifies interfaces between all the parties involved in managing and serving the interchange, including external bodies, particularly the fire brigade, ambulance service, police and local authorities;*
- *Clear responsibilities for managing these interfaces; and*
- *Unambiguous accountabilities for the tasks that are required to ensure that the interchange operates successfully.*

³³ <http://www.tfl.gov.uk/assets/downloads/interchange.pdf>

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Existing Passenger Transport Infrastructure
in Worcestershire

6. EXISTING PASSENGER TRANSPORT INFRASTRUCTURE IN WORCESTERSHIRE

6.1 Worcestershire Bus Stops

- 6.1.1 There are 3,684 bus stop 'points'³⁴ in the County of Worcestershire. The bus stop 'points' vary in style and standard, from totally unmarked bus stops known as 'custom & practice' stops or those marked with a 50+ year old concrete post, to stops that have been upgraded to a high standard with raised boarding kerbs and crossing points, 'state-of-the-art' bus stop poles and shelters (e.g. Great Malvern Railway Station).
- 6.1.2 As the Highway Authority, the County Council has generally assumed responsibility for bus stop poles and over the years these have been installed and maintained by the local Highways Partnership Unit (HPU) or County Council (Highways service), as they are now known. It is estimated that approx 2,000 of these poles are equipped with bus stops signs provided and installed by the predominant operator, First Wyvern; the remaining signs provided and installed by Worcestershire County Council, Castleways and Stagecoach Midlands.
- 6.1.3 Bus stop signs or 'flags' as they are more commonly known, are attached to bus shelters, metal or concrete bus stop poles and lamp columns. Note that British Telecom no longer allows bus stop flags to be attached to its telegraph poles.
- 6.1.4 Worcestershire County Council maintain and update timetable display cases at approximately 300 bus stops, many of which lie in the rural areas of the County. First Wyvern provide and maintain display cases at a similar number of stops but mainly located in urban areas where they operate the bulk of their 'commercial' services. Castleways and Stagecoach Midlands also provide timetable information at bus stops in Worcestershire.

6.2 Worcestershire Bus Shelters

- 6.2.1 The County Council do not 'own' any bus shelters, as it has traditionally been the responsibility of the individual District, Town or Parish Council to provide and maintain these structures. The County Council continues to organise and fund the installation of shelters as part of a variety of route improvements and projects (e.g. Great Malvern Station, 303 route), however, these shelters are provided on the basis that once installed the local 'council' body assumes ownership, including the cleaning and maintenance responsibilities.
- 6.2.2 In addition to standard shelters, the District Councils have agreements with advertising companies (e.g. Adshel Ltd) for the provision of advertising shelters in their area. The normal arrangement is for the local authority to permit the installation of advertising shelters in return for an agreed number of non-advertising shelters, at no cost. Unlike standard shelters, those with advertising panels require planning permission from the local highway authority and there have been examples in other parts of the UK where non-domestic rates have been

³⁴ The Worcestershire Routewise Database

charged on bus shelters and information kiosks as they have the advertising potential.

- 6.2.3 Wyre Forest District Council (WFDC), for example, has a contract with Adshel Ltd to provide one non-advertising shelter at a location of the District Council's choosing, for every two advertising shelters installed. This contract currently provides 26 advertising shelters and 14 non-advertising shelters, based on a 15-year contract.
- 6.2.4 Such agreements are financially beneficial to the District, requiring no outlay of expenditure, as Adshel are responsible for the installation and ongoing cleaning and maintenance of the bus shelters. However, the downside is that the advertising companies will install shelters at locations that maximise advertising revenue, rather than necessarily benefiting bus users. The result is that some advertising shelters are installed at stops with low levels of bus provision, leaving other 'busier' bus stops with no shelter and disgruntled bus users.
- 6.2.5 It is clear from the appearance of some shelters in the County that cleaning and maintenance is undertaken on an ad-hoc basis and not as part of monitored maintenance agreements. An additional problem lies in the variety of suppliers and shelter designs in each District, Town & Parish Council that inevitably leads to a lack of perceived 'County identity', with no consistent appearance in terms of style and quality.

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Recommendations

7. RECOMMENDATIONS

7.1 A number (but not an exhaustive list) of Passenger Transport Infrastructure Strategies have been reviewed to identify best practice, as part of the development of the Integrated Passenger Transport Strategy for Worcestershire.

7.2 It is proposed that, wherever possible, any prospective strategy should not contain site-specific information, and should instead seek to provide a minimum and preferred standard for all infrastructure installations and interchange sites. The strategy must be constructed so that the County Council is sufficiently prepared to apply a consistent approach to all passenger transport interchange and infrastructure projects across the county. The strategy must also seek to meet the aims and ambitions of District, Town and Parish Councils wherever possible.

7.3 It is recommended that a standard 'Worcestershire' shelter design be specified for most locations in the County. The advantages of a standard design are that it provides:

- *Bus users with a high quality public transport facility regardless of the location.*
- *A clear statement that it is a recognised bus stop which is provided and maintained by the local authority;*
- *Bulk purchase savings on shelters and replacement items (glazing and panels etc);*
- *Common standards for cleaning and maintenance*

There are however some drawbacks of using a standard design, which are:

- *Potential opposition in more rural or conservation areas;*
- *This opposition may have a negative affect on bus services and how they are perceived;*
- *Difficulty in achieving agreement with all Districts, who may perceive a dilution of District identity.*

It is therefore recommended that alternative designs be specified for these more 'sensitive' locations. A choice of 'district' colour schemes may be considered for the standard 'Worcestershire' shelter, where economies of scale permit. However, in order to provide best value to taxpayers, it is likely that a single colour scheme will be required to drive down costs.

7.4 It is recommended that a full countywide audit is completed of ALL roadside bus infrastructure, interchanges and rail infrastructure, to collect the following information:

- Location Details (Including GPS Coordinates and location identifiers)
- Facilities Audit (infrastructure & information)
- Report of faults, damage and inadequacies
- Any Upgrades Required

The results of this audit should be stored and maintained in the monitored Routewise database, to ensure effective management of the county's passenger transport infrastructure. Data from Routewise will be extracted and fed into Geographic Information Systems via the TransXchange data feed, for sense checking and performance monitoring on an annual basis. This database will ensure that life expired, vandalised or damaged infrastructure is identified and repaired or replaced, with the effect that the quality image of bus infrastructure in Worcestershire will be improved. In addition, it is recommended that ALL infrastructure installations be coded with their associated NAPTAN codes, with the NAPTAN code being clearly displayed on each installation. This will drastically speed up reporting of damaged infrastructure, and will eliminate confusion over repairs and location.

7.5 With the development of Statutory Quality Partnerships, as part of the Transport Act 2000, there is scope for transport authorities to develop these Statutory Quality Partnerships on core routes, to ensure optimum quality bus services, and value for money. The Statutory Quality Partnership model defines investment according to specific requirements along a bus route, and so will act to prioritise funding on the most heavily used bus corridors, where user benefits will be maximised. It is recommended that Statutory Quality Partnerships be considered for use across Worcestershire's commercial bus networks. Quality infrastructure will play a vital part in the success of any Statutory Quality Partnerships, each new Statutory Quality Partnership will need to be assessed on the following criteria:

- Vehicular Route
- Bus Stop Rationalisation
- Ownership of Infrastructure
- Risk and Efficiency Assessment of route and infrastructure
- Upgrade recommendations

7.6 As rail infrastructure is maintained and managed nationally by Network Rail on behalf of the Department for Transport, it is proposed that a specific Worcestershire Rail Group is set up, attended by suitably empowered members of all interest groups in Worcestershire including County, District & Parish Councils and User Groups, to deliver joint requests for infrastructure and service improvements, on behalf of the County, to Network Rail and Train Operating Companies. This will ensure that requests are afforded a high weighting, and thus will receive much greater priority than currently.

7.7 The proposed headings for the Passenger Transport Interchange Strategy are shown below.

7.7.1 Road Based Passenger Transport Infrastructure (Bus)

This section contains the following elements:

- A Bus Route Grading Structure for Prioritisation of Bus Services (See Figure 7.1)
- The Worcestershire Standard for Roadside Bus Infrastructure (See Figure 7.2)
- Guidance on the relocation or removal of infrastructure (See Figure 7.3)

- Bus Stop Locations (See Figure 7.4)
- Bus Stop Policy on New Developments (See Figure 7.5)
- Bus Stop Poles (See Figure 7.6)
- Bus Stop Signs (Flags) (See Figure 7.7)
- Bus Boarding Kerbs (See Figure 7.8)
- Bus Shelter Glazing (See Figure 7.9)
- Bus Stop Spacing (See Figure 7.10)
- Illumination at Bus Stop Poles (See Figure 7.11)
- Bus Shelter Illumination (See Figure 7.12)
- Bus Shelter Seating (See Figure 7.13)
- Bus Shelter Design Guidance (See Figure 7.14)
- Bus Stop Location Types and Recommended Standards (See Figure 7.15)
- Bus Shelter Styles (See Figure 7.16)
- Location of Bus Stop Poles and Signs (See Figure 7.17)
- Bus Shelter Timetable Information (See Figure 7.18)
- Bus Shelter Maintenance (See Figure 7.19)
- Bus Shelter Design and Location (See Figure 7.20)
- Indicative Costs for Bus Shelter Installation (See Figure 7.21)
- A proposed Parish, Town and District Council Bus Stop Purchase Scheme (See Figure 7.22)

7.7.2 Rail Based Passenger Transport Infrastructure

This section will contain the following elements:

- The Worcestershire Standard for Rail Infrastructure (See Figure 7.23)
The Worcestershire Standard for Rail Infrastructure will detail the County Council's commitment to developing facilities at rail stations to maximise inter-modal travel opportunities.
- Worcestershire County Council's Objectives & Aspirations for Rail Infrastructure (See Figure 7.24)
The County Council's Objectives and Aspirations for Rail Infrastructure will include any objectives or aspirations for any major rail infrastructure upgrades or development schemes that could affect the county. These objectives will be shared with those of district councils, parish councils and rail user groups to define a prioritised list of requests with which unified demands can be made to Network Rail.

7.7.3 Passenger Transport Interchanges

- The Worcestershire Standard for Interchanges (See Figures 7.25, 7.26 and 7.28)
This will provide a clear definition of a "Worcestershire Standard" for different types of interchanges across the county. Worcester city interchanges may have to be treated differently to other interchanges, in that car parking in the city centre is plentiful, although not located adjacent to the interchanges. Thus, it may not be practical to apply the car parking provisions of the Worcestershire Standard.
- Worcestershire - Interchange Management Partnerships (See Figure 7.27)
The process involved for setting up an Interchange Management Partnership, to ensure that interchanges in Worcestershire are maintained to a defined 'Worcestershire Standard'.

Figure 7.1 - Bus Route Grading Structure for Prioritisation of Bus Services

	PRIMARY AND CORE ROUTES				OTHER (FEEDER) BUS ROUTES	
	PARK & RIDE	URBAN EXPRESS	INTERURBAN EXPRESS	URBAN CORE	URBAN LOW FREQUENCY	RURAL ROUTES
DESCRIPTION	High frequency (at least 6bph in both directions) express routes, limited stops	High frequency (at least 6bph in both directions) express routes, limited stops	Medium frequency (at least 3bph in both directions) express routes, limited stops	Medium frequency (at least 3bph in both directions) express routes, limited stops	Low frequency routes (<2 bph per direction) with regular stops and request stops	Low Frequency routes with mostly request stops (unmarked and Custom & Practice Stops)
BUS STOP LOCATION	Limited stops serving only key trip attractors en-route to/from City Centre of Park & Ride Site	Minimum 400, maximum 750 metre distance between stops	Distance between stops 400-750 metres when passing through urban areas. Limited stops in rural areas	Minimum 400 metre distance between stops	Minimum 400 metres distance between registered stops, some request stops	Published route with timing points, most stops are by request
BUS STOP INFRASTRUCTURE	Bus Stops will be graded according to 'The Worcestershire Standard for Roadside Bus Infrastructure' (See recommendation 6)	Bus Stops will be graded according to 'The Worcestershire Standard for Roadside Bus Infrastructure' (See recommendation 6)	Bus Stops will be graded according to 'The Worcestershire Standard for Roadside Bus Infrastructure' (See recommendation 6)	Bus Stops will be graded according to 'The Worcestershire Standard for Roadside Bus Infrastructure' (See recommendation 6)	Bus Stops will be graded according to 'The Worcestershire Standard for Roadside Bus Infrastructure' (See recommendation 6)	Bus Stops will be graded according to 'The Worcestershire Standard for Roadside Bus Infrastructure' (See recommendation 6)
BUS STOP INFORMATION	Real time information, otherwise timetable displayed at all stops	Timetable displayed at all stops	Timetable displayed at fixed (non-request) stops only	Timetable displayed at fixed (non-request) stops only	Timetable displayed at fixed (non-request) stops only	Timetable displayed at fixed (non-request) stops only
BUS STOP OWNERSHIP	Bus Stops are managed & maintained as part of the Park & Ride contract/ Statutory Quality Partnership by the County Council	Bus Stops are managed & maintained by County Council, possibly as part of Statutory Quality Partnership	Bus Stops are managed & maintained by County Council as part of Statutory Quality Partnership	Bus Stops are managed & maintained by County Council as part of Statutory Quality Partnership	Bus Stops are managed & maintained by County Council	Bus Stops are managed and maintained by County Council. Bus Shelters will be provided according to the Worcestershire Standard
VINYL FLAG	See Marketing & Information Strategy	See Marketing & Information Strategy	See Marketing & Information Strategy	See Marketing & Information Strategy	See Marketing & Information Strategy	See Marketing & Information Strategy

Figure 7.2 - The Worcestershire Standard for Roadside Bus Infrastructure (Guidance as to where the following standards for roadside bus infrastructure will be used is provided in Figure 7.1.)

The Worcestershire Standard for Roadside Bus Infrastructure

The Gold (High Use) Standard (In excess of 500 users a week)

- BUS SHELTER - Of mainly glass construction, with seating, preferably provided by a shelter advertising company. (See full specification)
- SHELTER LOCATION - Preferably located as close to the boarding point as possible.
- POLE & FLAG - Flag to be clearly visible from the roadside (The proposed contents of the flag will be covered in the Passenger Transport Marketing & Information Strategy for Worcestershire) where possible, this should be integral to the bus stop, to minimize unnecessary street clutter.
- RAISED KERBS - To provide level access for buggies and wheelchairs
- ROAD MARKINGS - Comprising of yellow bus-stop clearway markings, sign and red or green carriageway box.
- TIMETABLE INFORMATION - For all routes serving the stop.
- CROSSING POINT - A safe place to cross the road within 50 metres of the bus stop, to include dropped kerbs and tactile paving where appropriate.
- DDA COMPLIANT - Fully accessible for disabled people
- DOUBLE LENGTH BUS STOPS - Where Gold Standard bus stops are located on Premium Routes, it may be necessary to provide double length bus stops, to permit express services to overtake stopping services.

The Silver (Moderate Use) Standard (250 to 499 users a week)

- SHELTER LOCATION - Preferably located as close to the boarding point as possible.
- POLE & FLAG - Flag to be clearly visible from the roadside (The proposed contents of the flag will be covered in the Passenger Transport Marketing & Information Strategy for Worcestershire) where possible, this should be integral to the bus stop, to minimize unnecessary street clutter.
- RAISED KERBS - To provide level access for buggies and wheelchairs
- ROAD MARKINGS - Comprising of yellow bus-stop clearway markings, sign and red or green carriageway box.
- TIMETABLE INFORMATION - For all routes serving the stop.
- CROSSING POINT - A safe place to cross the road within 50 metres of the bus stop, to include dropped kerbs and tactile paving where appropriate.
- DDA COMPLIANT - Fully accessible for disabled people
- BUS SHELTER - A bus shelter will be provided where funding allows. Of mainly glass construction, with seating. (See full specification)

The Bronze (Low Use) Standard (less than 249 users a week)

- POLE & FLAG - Flag to be clearly visible from the roadside. (The proposed contents of the flag will be covered in the Passenger Transport Marketing & Information Strategy for Worcestershire)
- HARDSTANDING - Paved waiting area

Figure 7.3 - Guidance on the Relocation or Removal of Roadside Bus Infrastructure

Guidance on the Relocation or Removal of Roadside Bus Infrastructure

Once full route audit has been completed, Bus Stop relocation will only be considered by Worcestershire County Council if the requester pays the full cost of relocation and reconstruction of bus stop facilities, and is able to propose a site which is no less convenient and safe for both the buses and stop users and is fully agreed by all relevant parties and frontagers.

Figure 7.4 - Bus Stop Locations

Bus Stop Locations

Bus stops should be located to allow passengers to board and alight safely and conveniently and should also be safe for other road users and pedestrians. The layout of the bus stop should permit buses to stop parallel to, and as close to the kerb as possible, to allow effective use of the buses facilities (such as ramps). Key considerations for bus stop locations are shown below:

- Road and pedestrian safety e.g. avoiding bends and crests in the road;
- Visibility for road users (in both directions) when buses are stopped;
- Driver and intending passengers are clearly visible to each other;
- Where there is adequate unobstructed footway width;
- Where there is space for a bus shelter;
- On-street parking arrangements;
- Close to (and at the exit side of) pedestrian crossings;
- Sited to minimise walking distance between interchange stops;
- Close to main junctions without affecting road safety or junction operation
- Close to local facilities e.g. shops, offices, pubs, residential areas
- Located to minimise likely objections from nearby residents

Consideration should be given to the routes taken by passengers to and from the bus stop. Locating stops near pedestrian crossing facilities, and in particular at junctions, is convenient and helps passengers complete the rest of their journey safely. In making a bus stop accessible to wheelchairs (and pushchairs), consideration must be given to the accessibility of routes to and from the bus stop. It may also be necessary to provide additional dropped kerb crossings and/or crossing facilities in the vicinity of the stop as part of any bus stop improvements. A Bus Stop Site Visit Checklist is provided in **Appendix A**.

Figure 7.5 - Bus Stop Policy on New Developments

New Developments

It is essential that passenger transport user and operator needs are taken into account during the planning of new developments (e.g. housing, health, business, education, retail and leisure). Sites for new or relocated bus stop facilities must be identified and located as such that they are integral to a new development. Walking distances to the bus stops, should be minimised and the occupiers of the new developments should, ideally, be within a 250 metre (approximately 2.5 minutes) walk of a bus stop and certainly no more than a 400 metre walk. It is important that stops are established during construction before the occupation.

Figure 7.6 - Bus Stop Poles

Bus Stop Poles

Most bus stops are marked with standard traffic sign 76mm metal (mild steel) poles, older concrete posts or bus stop flags on lamp columns. However, it is recognised that in order to improve the image of bus travel that a more effective and bespoke bus stop pole design be considered, to complement the improvements to the latest bus designs. The latest bus stops poles are a 'modular' design and the top two suppliers of these are Trueform Ltd and Bissell Ltd.

Trueform 'Elite' Bus Stop Pole (Patented System)

This was the original contemporary modular pole and can be seen at all bus stops in London and is installed at Great Malvern railway station. It has the advantage of being able to fit directly and securely over the top of existing 76mm posts, meaning that there is no need for excavation or disruption to footway surfaces. It will, however, not fit over the concrete bus stop posts, of which there are a considerable number in Worcestershire.

The post can be supplied with single, double or triple case configurations that are attached to fit flush to prevent litter (or incendiary devices) being placed inside the stop. It is also future-proofed as it designed to enable the addition of tele-communications cables for lighting and real-time information displays.

Bissell 'Desire' Bus Stop Pole

The Bissell 'Desire' pole is similar in design to the Trueform Elite post except that it is narrower and not as obtrusive on the footway. The post can be installed directly into the footway or using a socket; it cannot fit over an existing 76mm pole.

The pole is designed for the installation of the standard Bissell timetable cases ('Little Samson') currently used by WCC and like the Trueform 'Elite' pole, can be supplied with single, double or triple case configurations. The cost is significantly lower than the Trueform 'Elite' and following the installation of these poles as part of the 303 route improvements it is recommended that this pole be specified as the County standard. It should be recognised that the figures quoted below are for single installations. If large orders are made, discounts can be sought.

Item	Trueform Elite Bus Stop Pole	Bissell Desire Bus Stop Pole
Bus Stop Pole	£250.00	£81.00
Flag (3 Colour PVC Vinyl)	£45.00	£14.20
Display Cases (double)	£155.00	£83.20
Install Costs*	£160.00	£150.00
TOTAL	£610.00	£328.40
Extras :		
Solar Power Unit	£350.00	N/A

Figure 7.7 - Bus Stop Signs (Flags)

Bus Stop Signs (Flags)

The content of the Bus Stop Sign (or flag) will be provided in the Marketing and Information Strategy. It is recommended that two styles are specified: one that is compatible with the new modular pole (Bissell 'Desire') and one that retains brackets for banding.

Figure 7.8 - Bus Boarding Kerbs

Bus Boarding Kerbs

In order that buses can offer level access (by kneeling or use of a ramp) at the boarding point, raised kerbs should be installed. Regulations under the Disability Discrimination Act 1995 (DDA) require new buses to be capable of deploying a ramp, giving a 1:8 or 12 percent (7 degree gradient), onto a kerb of at least 125mm in height. This regulation, therefore, assumes a 'standard' kerb height of 125mm, which, although not the case universally, is the height that vehicle manufacturers are guided to apply in bus design.

The standard kerbs heights in Worcestershire range from 125mm to 140mm and research by Greater Manchester Passenger Transport Executive (GMPTE) suggests that a height of 160mm will give the best compromise between ease of level access and reduced damage to the bus. They also recommend that the following minimum lengths of proprietary raised kerbs be provided at bus stops on Quality Bus Contract's:

- 4 metres at lightly used or alighting bus stops
- 7 or 8 metres (depending on shelter configuration) at single bus stops where only one bus is scheduled to arrive at any one time and a shelter is provided
- 16 metres at a double bus stop
- 26 metres at a double bus stop used by standard 12 metre length buses and articulated buses
- The above do not include transition kerbs. These are the kerbs that bridge the level difference between the standard kerbs and the existing footway and the level of the footway where the raised kerbs are installed.

Figure 7.9 - Bus Shelter Glazing

Bus Shelter Glazing

To promote personal safety and assist the bus driver, it is recommended that the shelter be constructed with a maximum of transparent material, so people can see and be seen. Unless a location is particularly prone to vandalism, it is recommended to specify toughened glass as the main glazing option (various thicknesses are available). Glass maintains its clear transparency in the long term and is less expensive than the more robust alternative of polycarbonate. However, bus shelters and the glazing in particular, are subject to vandalism and where this happens it is recommended to replace damaged glass panels with anti-graffiti polycarbonate.

Figure 7.10 - Bus Stop Spacing

Bus Stop Spacing

An ideal spacing for bus stops is approximately 400m, although a closer spacing in urban centres and residential areas may be tolerated to meet passenger requirements. Consideration should be given to improving spacing, and reviewing locations, particularly where interchange is an issue. The number of stops on a route affects bus journey times and therefore a careful balance must be achieved.

At very busy city/town centre stops consideration may be given to providing more than one stop at a location to enable buses on different routes to serve separate stops, therefore reducing bus-on-bus delay and traffic congestion.

Figure 7.11 - Illumination at Bus Stop Poles

Illumination at Bus Stop Poles

In order that timetable information can be easily read in the dark, consideration should be given to illuminating timetable cases using solar panels. Trueform lead the way in this technology and supply illuminated cases and bus stop signs at a large number of stops in the London area. The use of solar power means there is no need for mains connection and is a strong message in promoting renewable energy and sustainable travel.

However the high cost of these poles means they may only be appropriate at high profile bus stops and interchanges, with regular evening and late night bus services. In addition, the technology is relatively new and the long-term maintenance costs for these is not clear at present.

Figure 7.12 - Bus Shelter Illumination

Bus Shelter Illumination

For the comfort and personal security of intending passengers, it is recommended that shelters be lit during the hours of darkness. Shelters can be lit using either mains or solar power and the choice of power source will depend on a number of factors. Whatever choice of power is chosen it is recommended that shelters are installed with movement detector sensors to avoid shelters been lit overnight when not in use.

Where street lighting or mains supply is available nearby, it is recommended to specify mains power, as connection costs are likely to be significantly lower than the cost to provide a solar unit. There is a connection cost of approx £800 per shelter (as at July 2007), compared to £1500-£2000 for a solar unit. However, connecting to the mains supply is a more difficult process and it is important that the 'owner' of the shelter is made aware of arrangements for bill paying, fault reporting and electric test arrangements.

In locations where connection to the mains supply is not easily accessible, it is recommended to specify solar lighting. Although the initial capital outlay is high (£1500-£2000), the lighting is fully functional once the shelter is installed. A battery that needs replacing typically after 5 years powers the solar unit. It could be argued that in order to promote our sustainable credentials that *all* new bus shelters are equipped with solar energy, where possible.

Figure 7.13 - Bus Shelter Seating

Bus Shelter Seating

For the comfort of users, particularly those less mobile, it is recommended that seating should be provided where possible. This seating should be in the form of a bench, platform or horizontal rails to rest against, at a height of approx. 580mm. To be clearly visible, seating should be in a contrasting colour to the main shelter and, if not undercover, should be designed so that rainwater does not collect on it.

Where seating is provided within the shelter, sufficient covered area should be available for a wheelchair user i.e. if a 4m length shelter is specified, the seating should be a maximum of 3m length, to allow 1m free for a wheelchair, ideally opposite the shelter exit for ease of manoeuvring. Experience from the demonstration stop in Cheshire highlighted that older or less mobile users preferred bench seating with hand rests. If space is not available for a bench seating the shorter perch seating should be specified.

Figure 7.14 - Bus Shelter Design Guidance

Bus Shelter Design Guidance

The needs of end users should be of paramount importance when deciding on which shelter design/type to specify for Worcestershire. As a minimum, users should expect a facility that is clean, safe, accessible & comfortable, contains timetable & route information (unless this is provided on a separate bus stop pole) and, most importantly, provide protection from the elements.

A bus shelter should meet the following standards:

Clean - the shelters should be constructed of robust materials and finishes that are easily cleaned and minimise vandal damage e.g. anti-graffiti polycarbonate glazing. Guidance on appropriate cleaning materials and time intervals should be sought from suppliers. Suitable cleaning arrangements should be in place, to ensure the shelter remains in a clean condition. A litter bin must be provided, and emptied at regular intervals.

Safe - the shelter to be constructed with robust and long-lasting materials and have maximum glazing, so that passengers can see and be seen while waiting in the shelter. The shelter should have internal courtesy lighting (mains or solar power) for added comfort and safety. As with cleaning, suitable maintenance and fault reporting arrangements should be in place to ensure the shelter remains in a safe condition. At locations where anti-social behaviour has occurred the introduction of CCTV may also be considered either integral or adjacent to the bus shelter.

Comfortable & Accessible - the shelter to be an attractive place in which to wait with seating (where space permits) that is located and designed so it is comfortable for all users. The shelter and its associated infrastructure need to be accessible by all users and, in particular, for those with limited mobility such as the elderly, those travelling with young children and wheelchair users. This may involve the installation of raised kerbs to assist level access boarding and dropped kerbs to provide accessible crossing points to the bus stop.

Timetable Information - the shelter should be designed to include an integral timetable display and bus stop flag. It is important that timetable display units are located so that all users, including wheelchair bound, are able to access the information provided. New shelters should be future-proofed to permit the retrospective installation of Real Time Information Systems.

Weather Protection - the shelter to be constructed to provide optimum protection from the elements. The shelter design to incorporate enclosed and semi-enclosed configurations and should have a suitable water displacement system so that users are protected in the rain.

In addition to the above consideration has to be given to the marketing effect the shelter will have i.e. the shelter should enhance the image of bus travel. The infrastructure that Worcestershire provides should speak volumes about the commitment of the County to improve bus travel and to addressing user needs. The visual appearance of the shelter should complement (as much as it is possible) and even enhance, the local surroundings.

Figure 7.15 - Bus Stop Location Types and Recommended Standards

Bus Stop Location Types & Recommended Standards

For the purposes of this report six bus stop location types are recommended. They are:

- **Deep Rural** - these are remote stops with low use that may be un-marked at present. It is recommended to provide a bus stop pole (incl sign and timetable case), bus stop road markings and hard standing only.
- **Rural Village** - 'sensitive' village locations where an 'architecturally inoffensive' timber shelter would be most appropriate. Bus services in these areas would be generally less than hourly e.g. Pebworth. A timber or an 'in-keeping' bus shelter should be provided where the location allows; at other locations the installation of a bus stop pole and suitable hard standing only (incl sign and timetable case). It is assumed that most of these locations would not be suitable for raised/drop kerbs. It is recommended that the bus shelters be illuminated using solar power.
- **Large Village/Interurban** - this is for less 'sensitive' locations in larger villages or on main inter-urban roads where buses generally operate every 60 minutes or less e.g. Powick. A bus shelter along with raised and dropped kerbs should be provided where the location allows; at other locations the installation of a bus stop pole (incl. sign and timetable case) and raised/drop kerbs should be provided. It is recommended that both the shelter and bus stop poles be illuminated using solar power.
- **Town/City Conservation** - this is for sensitive locations in Town or City Centres that are architecturally sensitive and/or in a conservation area e.g Kidderminster Town Hall or Worcestershire Cathedral (Gifford Hotel). An 'in-keeping' bus shelter(s) along with raised and dropped kerbs should be provided; a bus stop pole may also be required.
- **Suburban/Urban** - this for locations where buses operate frequent services e.g. Warndon. A bus shelter along with raised/drop kerbs and bus stop markings should be provided where the location allows; at other locations the installation of a bus stop pole (incl sign and timetable case), and raised/drop kerbs and bus stop markings should be provided. In addition it is recommended to provide red tarmac surfacing to reduce illegal parking.
- **Main interchange/City Centre Stop** - prime locations that are heavily used and served by a multitude of services and operators e.g. Foregate Street. A high profile bus shelter(s), raised/drop kerbs and bus stop markings should be provided; a high profile bus stop pole may also be required. In addition it is recommended to provide red tarmac surfacing to reduce illegal parking.

A selection of bus shelter styles is provided in Figure 7.17.

Figure 7.16 - Bus Shelter Styles



Clockwise from Top Left:

Durham 'Heritage' shelter (Broxap Ltd)

Great Leigh timber shelter (Littlethorpe Ltd)

Meridian shelter (Queensbury Ltd)

Landmark shelter (Adshel)

Cheshire CC 'Elite' shelter (Trueform Ltd)

Figure 7.17 - Location of Bus Stop Poles and Signs

Location of Bus Stop Poles and Signs

In order to minimise street 'clutter' and obstacles in the footway, it is recommended that, where possible, the bus stop sign be attached to a bus shelter or lamp column. At locations where this is not possible, bus stop poles should be installed so they are clearly visible by the driver and obvious to intending passengers. They should be installed at either edge of the footway, so as not to reduce footway width unnecessarily. It is recommended to install the pole adjacent the bus boarding area and at least 500mm from the kerb edge. The bus stop sign should be installed 90 degrees to highway and pointing inward to footway to avoid conflict with bus mirrors.

Figure 7.18 - Bus Shelter Timetable Information

Bus Shelter Timetable Information

To avoid the need for the installation of a bus stop pole and minimise street 'clutter', it is recommended that shelters are equipped with integral information display cases and a bracket for banding a bus stop flag. It is also recommended that a standard timetable display case be specified in all shelters. The Cheshire Elite shelters are all equipped with a double-crown size landscape display case (747mm wide x 500mm depth), which provides sufficient space for timetable information as well as route maps, if available. Where the shelter is situated away from the bus stop, a separate bus stop pole may be required to advise intending passengers and bus drivers of the bus stopping location.

Figure 7.19 - Bus Shelter Maintenance

Bus Shelter Maintenance

To ensure that the quality image of bus stop infrastructure installations is maintained, it is vital that an agreed maintenance programme is enacted, to ensure that Bus Stops are attractive and comfortable for users. It is recommended that district-wide, bus stop specific cleaning contracts are devised, in partnership with all interested parties, to ensure that bus stops meet the Worcestershire Standard.

Where newly installed shelters become under the ownership of a third party such as a Parish Councils, the 'owners' must be made aware of the suppliers maintenance and cleaning advice. This is especially important for the safe and effective functioning of lighting.

Figure 7.20 - Bus Shelter Design and Location

Bus Shelter Design and Location

The design, positioning and configuration of a bus shelter at a bus stop will depend on the site conditions. Therefore, a site inspection is the precursor to any installation project. The needs and comfort of users must be considered throughout the process to ensure the shelter is 'fit for purpose', fully wheelchair accessible, and enhances the image of bus travel. It is important that the shelter location does not compromise the safety of the highway or footway safety. Appendix B includes draft guidance on the installation of a shelter.

It is recommended that enclosed or semi-enclosed shelters be installed in more 'exposed' locations; when they are specified, sufficient area for the manoeuvring of a wheelchair or buggy must be provided. At locations where the footway width is limited then a cantilever shelter may be specified, however, consideration should be given to providing $\frac{1}{2}$ or $\frac{1}{4}$ side panels, to afford some side weather protection for users.

A selection of bus shelter configurations are provided in Appendix E.

The Department for Transport's Inclusive Mobility Report includes guidance for the provision of accessible transport infrastructure and it is recommended that the appropriate sections in this document be used as a design guide for Officers directly involved in specifying the positioning and configuration of bus shelters.

Wherever possible it is recommended to install the shelter to the rear of the footway and open to the road, for the following reasons:

- To maximise visibility so that passengers can see the bus coming and bus drivers see them waiting;
- To keep the footway clear for pedestrians trying to pass and to give wheelchair users an easier manoeuvring area on to the bus;
- To meet Crime and Disorder responsibilities.

In many cases this may not be possible, for example, where:

- The proximity to the highway means that users may get 'splashed' by passing traffic in wet weather and/or it exposes users to the prevailing winds;
- It may compromise the security of neighbouring properties e.g. where people can get access to nearby property via the shelter roof;
- There is busy pedestrian flow between shelter and bus boarding area, which may make boarding more difficult for those less mobile.

Figure 7.2.1 shows the indicative costs for the supply, delivery and installation for the shelters shown above, based on the provision of mains lighting. Costs will vary according to specification and configuration, with the supply of solar lighting costing approx. £1,800-£2,200.

Figure 7.21 - Indicative Costs for Bus Shelter Installations

Supplier	Design	Cost
Littlethorpe	Great Leigh	£7,200
Broxap	Durham	£13,000
Trueform	Elite	£6,000
Queensbury	Meridian	£6,000
Adshel	Landmark	£11,500

Figure 7.22 - Proposed Parish, Town and District Council Bus Stop Purchase Scheme

Proposed Parish, Town and District Council Bus Stop Purchase Scheme

It is proposed that all bus stop infrastructure installations on the core network is owned and operated by the County Council. In locations where bus stop usage does not warrant County Council infrastructure installation, it is proposed that the County Council operates a purchasing scheme, to allow parishes, town and district councils to take advantage of the County Council's economies of scale when purchasing, and to ensure that ALL bus stop infrastructure conforms to the Worcestershire standard.

Figure 7.23 - The Worcestershire Standard for Rail Infrastructure

The Worcestershire Standard for Rail Infrastructure

The Worcestershire Standard for rail infrastructure has as its primary objective, to promote increased sustainable and safe use of rail stations as key multimodal interchanges. The Worcestershire Standard will develop the principles outlined in the Worcestershire Rail Strategy, which forms part of the Local Transport Plan 2 Document 2006-2011. This will be achieved by upgrading rail facilities to the following standards:

- KISS & RIDE / TAXI FACILITIES - Segregated drop-off/pick-up space close to ticket office/Station platforms
- DDA COMPLIANT SPACES - At least two to be provided at each station, located close to the platform.
- SAFE WALKING & CYCLING ROUTES - Safe walking and cycling routes to stations.
- SECURE CYCLE PARKING - Secure cycle parking facilities.
- A GOLD STANDARD BUS STOP - To be located within 100 metres of the rail station, and to be served by at least one express/core service, and as many other low frequency services as possible, to maximise intermodal travel opportunities
- CLEAR SIGNAGE - To promote inter modal travel, including walking, cycling, bus and car.
- FREE CAR PARKING - For season ticket holders and proven rail users. All rail stations are to be treated as park & ride sites.
- INCREASED CAR PARK CAPACITY - Where existing car parking capacity is not adequate to meet demand, the council must actively seek to increase car park provision at stations where appropriate. Or improve bus links constraints prohibit increased parking capacity (e.g. the Worcester Stations.)
- WAITING ROOM/SHELTER - To be dry and lit.
- CCTV - Installed with localised control, to promote safety and security.

Figure 7.24 - Worcestershire's Objectives & Aspirations for Rail Infrastructure

Worcestershire's Objectives & Aspirations for Rail Infrastructure

- UPGRADE all stations and station car parks to the Worcestershire Standard
- UPGRADE SIGNALLING on all lines passing through Worcestershire from semaphore to colour light signalling, to maximise capacity and efficiency of existing rail infrastructure.
- REDOUBLING OF THE TRACK on the Cotswold Line from Worcester to Oxford
- THE CONSTRUCTION of the Worcestershire Parkway station at Norton-juxta-Kempsey.

Figure 7.25 - The Worcestershire Standard for Interchanges - Gold Standard

The Worcestershire Standard for Interchanges - Gold Standard

The Gold (Park & Ride, Main Rail & Main Bus Station) Standard:

- ADEQUATE CAPACITY FOR ALL SERVICES - Sufficient bus bays/platforms to accommodate levels of service and sufficient capacity/space for future expansion.
- PRIORITY ACCESS & EGRESS - Priority access to and egress from interchanges for bus and other road based passenger transport
- FULLY DDA COMPLIANT ACCESS - All interchange facilities.
- KISS & RIDE / TAXI FACILITIES - Segregated drop-off/pick-up space close (within 400 metres) of the terminal building.
- SAFE WALKING & CYCLING ROUTES - Safe walking and cycling routes to interchanges.
- SIGNAGE - To promote safe use of interchange facilities.
- RETAIL & REFRESHMENT FACILITIES - Encourage retail facilities into interchanges, to increase the viability and attractiveness of interchange environment.
- SECURE CYCLE PARKING - Secure cycle parking facilities.
- PROXIMITY TO OTHER MODES - Interchanges will only be deemed to be truly multimodal if the different modes (primarily cycle, bus, rail and car) are situated no more than a 400-metre walking route away from each other.
- WAITING ROOM/SHELTER - To be dry and lit.
- LIGHTING - All interchanges to be brightly lit for security and safety reasons.
- INFORMATION DISPLAYS - (See Marketing & Information Best Practice Report
- CCTV - Installed with localised control, to promote safety and security.
- RAISED KERBS & TACTILE PAVING AT BUS STOPS - To provide step free access to buses to minimise dwell times.
- TOILETS - Self cleansing or warden monitored toilets to ensure quality.
- HIGH LEVELS OF CLEANLINESS - Windows clean, paintwork fresh and no litter/dust/filth.
- DDA COMPLIANT PARKING SPACES - At least two to be provided at each interchange where applicable, located close to the bus stop or platform.
- INCREASED CAR PARK CAPACITY - Where existing car parking capacity is not adequate to meet demand, the council must actively seek to increase car park provision at stations where appropriate. Or improve bus links where car parking is limited due to built constraints (i.e. the Worcester Stations.)
- *FREE CAR PARKING - For season ticket holders and proven bus/rail users. All rail stations are to be treated as park & ride sites.*

Figure 7.26 - The Worcestershire Standard for Interchanges - Silver Standard

The Worcestershire Standard for Interchanges - Silver Standard

The Silver (Minor Rail and Minor Bus Station) Standard:

- ADEQUATE CAPACITY FOR ALL SERVICES - Sufficient bus bays/platforms/layover to accommodate existing and future levels of service.
- PRIORITY ACCESS & EGRESS - Priority access to and egress from interchanges for bus services
- FULLY DDA COMPLIANT ACCESS - to all interchange facilities.
- KISS & RIDE / TAXI FACILITIES - Segregated drop-off/pick-up space close (within 400 metres) of the terminal building.
- SAFE WALKING & CYCLING ROUTES - Safe walking and cycling routes to/between interchanges.
- SIGNAGE - To promote safe use of interchange facilities.
- SECURE CYCLE PARKING - Secure cycle parking facilities.
- RETAIL OPPORTUNITIES - Encourage retailers to locate close to interchanges
- PROXIMITY TO OTHER MODES - Interchanges will only truly be deemed multi-modal if the different modes (primarily cycle, bus, rail and car) are situated no more than a 400-metre walk route away from each other.
- WAITING ROOM/SHELTER - To be dry and lit.
- LIGHTING - All interchanges to be brightly lit for security and safety reasons.
- INFORMATION DISPLAYS - (Specification to be provided in Marketing & Information Strategy)
- CCTV - Installed with localised control, to promote safety and security.
- RAISED KERBS & TACTILE PAVING AT BUS STOPS - To provide step free access to buses to minimise dwell times.
- CLEANLINESS - Windows clean, paintwork fresh and no litter/dust/filth.
- *DDA COMPLIANT PARKING SPACES - At least two to be provided at each station, located close to the facility to minimise walk distances.*
- *INCREASED CAR PARK CAPACITY - Where existing car parking capacity is not adequate to meet demand, the council must actively seek to increase car park provision at stations where appropriate. Or improve bus links where car parking is limited due to built constraints (i.e. the Worcester Stations.)*
- *FREE CAR PARKING - For passenger transport ticket holders and bona fide bus/rail users. All rail stations are to be treated as park & ride sites.*

Figure 7.27 - Interchange Management Partnerships for Worcestershire

Interchange Management Partnerships for Worcestershire

These partnership groups will meet at least twice a year, and are to be made up of delegates of key interest parties. These delegates will sign a binding, interchange-specific management contract, which will clearly define responsibilities for the effective management of the interchange to the Worcestershire Standard.

For example, the Worcester Crowngate Bus Interchange would most likely have an Interchange Management Partnership with representatives from the following stakeholders/users:

- Crowngate Shopping Centre, Car Park and Bus Interchange Management
- First Group plc
- Astons Coaches
- Worcestershire County Council
- Worcester City Council
- West Mercia Police
- Local Retailers
- Chamber of Commerce

Figure 7.28 - The Worcestershire Standard for Park & Ride Interchanges

The Worcestershire Standard for Interchanges - Park & Ride

PARKING CAPACITY - To meet forecast demand but to be a minimum of 500 spaces. These to be 2.5 metres wide, of which 12% should be 3.6 metres wide to cater for parents and children and the mobility impaired. Sites should be constructed with the potential to expand capacity, if required.

LAYOUT, DESIGN & OPERATIONAL FACILITIES - Layout should be designed so that it:

- Minimises conflict between pedestrians and motorised vehicles
- Minimises conflict between buses and cars within and on the approach to and exit from the facility
- Minimises walk distances to/from the bus stops, the maximum walk distance between a parked car and the boarding stop should be 100m
- Has dedicated (3.6m wide) parking bays for parent and children and mobility impaired users
- Provides two bus stands (one for alighting and one for boarding) capable of accommodating 18m long articulated low-floor buses
- Provides one layover stand capable of accommodating one 18m long articulated low-floor bus, the layover stand must be accessible from the alighting stop and should, ideally be located BETWEEN the alighting and boarding stops, thereby minimising bus manoeuvres at the site.
- Has a high quality waiting, information and ticket issuing facility for passengers
- Is well lit and meets the latest design standards.
- Has CCTV installed with a control facility provided in the Park & Ride operational office provided at the site.
- Raised Kerbs & Tactile Paving should be used to provide level boarding/alighting.

TICKETING & BARRIER CONTROL - The Park & Ride site must be designed so that access to and egress from the Park & Ride car park will be barrier controlled. The car park entrance barrier system must:

- Be capable of issuing tickets to drivers
- Be located such that vehicles queuing to access the car park do not block vehicular access to other facilities
- Have a sign displaying available parking capacity (real time display)

In addition, the Exit barrier system must:

- Be integrated with the entrance barrier in terms of ticketing and car park capacity reporting
- Have a ticket reader system, which allows cars to depart the site only on tendering of a valid ticket (whether issued at the entrance barrier or by on-site ticket machines)
- Be located such that cars can depart the car park safely and with minimal conflict with Park & Ride buses

PASSENGER & STAFF FACILITIES - The following facilities should be provided at any Park & Ride Site in Worcestershire:

- A heated and lit passenger waiting area, located adjacent to the bus-boarding stop.
- A passenger information counter
- Toilet facilities
- Operations room (including CCTV control)
- Site staff mess room
- Secure parking facilities for cyclists
- Up to three ticket vending machines
- Up to two real time information screens (one in the building and one adjacent to the boarding stop)

The location and design of the facility should be such that Park & Ride users progress from the car park, through the building and past the ticket vending machines and information screens to the bus boarding point.

Passenger Transport Infrastructure Best Practice Report

November 2007



Appendices

APPENDIX A

Infrastructure Guidance Notes at Prospective Bus Shelter Locations: Checklist

Site meeting attendees:

WCC (PTG), WCC (Highways), West Mercia Police, Bus Operator³⁵, Parish or Town or District Council

Consultees (once location has been decided): As above plus District Councillor, County Councillor. WCC (PTG) to consult with nearby residents/businesses that be affected by the location of a bus stop.

N.B. Highway safety issues raised should be addressed by the Police and WCC Highways (Accident Studies)

Item	Checked
Safe location i.e. avoid bends/crests in road	
Forward visibility for road users i.e. when bus is at a halt at the stop traffic (in both directions) have a clear view and adequate distance to reduce speed	
Stop visibility (driver can clearly see intending passengers)	
Visibility splays (the operation of the bus stop should not adversely affect visibility for nearby junctions and accesses)	
Close to main junctions without affecting road safety or junction operation	
Clear unobstructed footway width near bus stop	
Sufficient crossing points and footway	
Bus accessibility to stop i.e. clear entrance & exit paths and ability to berth straight and close to kerb for level access	
Close to (and at the exit side of) pedestrian crossings (if applicable)	
Is bus stop required in opposite direction?	
Sufficient space for shelter? (If so, see shelter guidance note)	
Sited to minimise walking distance between interchange stops	
Sited approx. 400m from nearest stop	
Sited to minimise affect on nearby residents or businesses i.e. Privacy or boundary issues	
Close to local facilities e.g. shops, offices, pubs	
Ground works required³⁶:	
Raised kerbs	
Crossing points (dropped kerbs)	
Footway improvements	
Bus stop markings	
Photograph of site and location plan prepared (for consultation & file)	

³⁵ Main bus operator will normally suffice however all bus operators serving the stop must be consulted and notified when stop can be served by bus services

³⁶ Ground-works affecting highway and footway will require full design drawing for consultation.

APPENDIX B

Infrastructure Guidance Notes at Existing Bus Shelter Locations: Checklist

Site meeting attendees:

WCC (PTG), WCC (Highways), Parish or Town or District Council

Consultees: As above plus Police, Bus Operators, District Councillor, County Councillor. NB: The 'owner' of the shelter to undertake consultation with nearby residents & businesses

N.B. Highway safety issues raised should be addressed by the Police and WCC Highways (Accident Studies)

Shelter Location	Checked
Convenience for users i.e. short distance and unobstructed route to boarding area including that for wheelchair/buggy users	
Visibility i.e. passengers to see buses and bus driver to see passengers	
Footway widths and clearance to front & rear of shelter	
Allowance for existing street furniture and footway obstacles	
Utilities: underground and overhead ³⁷	
Safe location e.g. does not impede visibility splays	
Local homes & businesses i.e. privacy, access, boundary issues	
Land ownership, rights of access, easements	
Drainage and water displacement	
Lighting e.g. is mains power nearby	
Does bus stop need to be relocated to enable optimum shelter location?	
Local designation i.e. conservation area/listed buildings	
Biodiversity i.e. existence of protected and noted species	
Shelter Design³⁸	
Style: Urban, Heritage, Rural, Bespoke	
Configuration i.e. cantilever, enclosed, entrances/exits	
Glazing i.e. toughened glass, polycarbonate	
Seating i.e. bench or perch	
Lighting i.e. mains or solar	
RTI enabled	
Colour (shelter, seating, display case)	
Integral or separate bus stop pole & flag	
Litter bin	
Ground works required³⁹:	
Raised kerbs	
Crossing points (dropped kerbs)	
Footway improvements	
Bus stop markings	
Photograph of site and location plan prepared (for consultation & file)	

³⁷ Overhead cables may impede delivery of shelter to site

³⁸ Shelter location and design to be approved by 'owner'

³⁹ Ground-works affecting highway and footway will require full design drawing for consultation.

APPENDIX C

CHESHIRE COUNTY COUNCIL, PUBLIC TRANSPORT POLICY - INFRASTRUCTURE ON THE HIGHWAY

INTRODUCTION

- 1 In accordance with Government White Paper, Cheshire County Council (CCC) has produced a Local Transport Plan (LTP) for the period 2001 to 2006 and is currently writing one covering the period 2006 to 2011. The aims of both the current and proposed LTPs are broadly similar and aim to promote sustainable accessibility, to improve travel safety and security, to promote the integration of all forms of transport, to contribute to an efficient and sustainable economy, and to protect and enhance the environment.
- 2 The LTP aims can only be achieved if more people travel by bus. This requires all aspects of bus travel to be improved so more people choose to use it. Hence, information, service standards, service quality and the infrastructure all need to be of a high standard.
- 3 The principles of how this will be achieved are set out in the County's Bus Strategy and Interchange Strategy, both of which were approved in 2002.
- 4 The purpose of this report is to give more detail on the provision of bus stop infrastructure on the highway; i.e what should be provided and the procedure for installing and maintaining it. Highway issues are also covered as they affect the ability of buses to serve the people.

BUS STOPS AND BUS SHELTERS- PRESENT POSITION

- 5 In Cheshire, there are at least 3,800 bus stops. These vary in style and standard from totally unmarked stops to stops that have been upgraded to a high standard. The County Council manages all bus stops without shelters and many shelters also. Other shelters are owned by districts, parishes, and Adshel (which carry illuminated adverts).
- 6 Approximately 870 of the stops in Cheshire have shelters. These are in various styles and of variable quality. A consistent style is difficult to achieve due to the fact that various authorities and companies have been responsible for providing and maintaining them.
- 7 Bus stops are currently being upgraded to the Cheshire County standard. This is covered in more detail later in this report.

PASSENGER AND COMMUNITY NEEDS

- 8 The bus stop is a critical part of the bus product as this is where people join the network. If it is clean, safe and attractive it will act as a good 'advert' for the bus service, especially if it has a high quality shelter to keep people dry and easy to read accurate timetable information. A bus stop that is not constructed to this standard will discourage people from using the bus.
 - 9 Bus stop design also needs to take into account the needs of people with baby buggies, mobility problems and wheelchair users. Note that the features incorporated in the design to achieve this also help more able bodied people. It is also important to ensure that people can cross the road safely to reach the bus stop.
 - 10 The bus must be able to stop at the bus stop to pick up and set down passengers, unhindered by badly parked vehicles. This is especially important for wheelchair users and those with baby buggies.
-

- 11 Research that has been carried out has shown that a quality stop which is clean and well maintained improves the look of an area, while one which is not detracts from it. New shelters are positively welcomed by users.

THE CHESHIRE STANDARD

- 12 Following discussions with stakeholders, trials at demonstration stop and experience from implementation; the following standard has been established for bus stops in Cheshire.
- Raised kerbs, ideally 6 plus 2 transitions, to provide level access for buggies and wheelchairs.
 - Road markings comprising yellow bus stop clearway markings, sign and red carriageway box to enable the bus to dock with the raised kerb.
 - Up to date, accurate and easy to read timetable information.
 - Either a bus stop pole and flag, or a shelter of mainly glass construction (so people inside can see out and be seen) with seats and lighting. Shelters are provided where appropriate and feasible, with the aim being to have one at each well used boarding stop.
 - A safe crossing point nearby incorporating dropped kerbs and tactile paving.
 - All the above to be DDA compliant.
- 13 There are some bus stops which are lightly used, but they are important to those people who do use them. With limited funding it is not really practical to upgrade all of these to the standards described above. Therefore the minimum facilities to be provided in these circumstances are a safe hardstanding area off the carriageway, a modern bus stop pole and flag and an up to date timetable.
- 14 Local factors influence what is needed and what can be provided at each individual bus stop. Therefore what is provided at each location will vary according to the actual circumstances.
- 15 While this is the County Council's Standard for new stops, some shelters are provided by other organisations over which the County Council has little or no control.

IMPLEMENTATION

- 16 The procedure used when upgrading stops is as follows,
- Carry out a site visit
 - Consult bus operators, Engineering Service, and carry out a safety audit
 - Consider the stop in relation to the bus routes in the area, other nearby bus stops and local facilities.
 - Prepare draft plans
 - Consult stakeholders including nearby residents, bus users, Borough Council, Parish Council and local County and Borough Members. Send consultation letters to nearby residents and businesses who may be considered to be affected (e.g. with boundaries adjoining the site, homes overlooking the site, driveways which possibly have visibility affected) allowing a minimum 21 days for response.
 - Consider any comments received and revise the plans if necessary. If a proposal is contentious and the issue cannot be resolved then the case is referred to the Local Joint Committee for decision. If a site meeting is arranged with local residents then the local County and Borough Member will be invited.
 - Upgrade the stop.
 - Visit the stop to check the work has been carried out according to plan.
-

- 17 Where a stop is being upgraded with no significant changes, e.g. same location, replacing an existing shelter for a new one, clearway markings replacing existing double yellow lines, then nearby properties are informed that the work is going to take place, but there is no formal consultation.
- 18 At present (January 2005) 750 stops have been upgraded to the standards set out above. 250 of these have new shelters. A countywide contract for the provision of advertising bus shelters is currently out to tender, this will replace the current contracts held by individual district councils.
- 19 The aim is to maintain or increase the current level of improvement through the next LTP period.

MAINTENANCE

- 20 All upgraded stops are cleaned regularly. Arrangements have been made for urgent and non-urgent repairs to be carried out following accident, damage or vandalism. In shelters subject to persistent damage glass panels are replaced with glass reinforced plastic (GRP) and polycarbonate.
- 21 The standards applied by other organizations that are responsible for shelters may differ from these.
- 22 In cases of emergency, the County's Area Offices has a procedure agreed and in place to carry out any works deemed required to make the equipment and the highway safe for the public.

THE HIGHWAY

- 23 If the County Council is to achieve its objective of increasing bus use, then the highway needs to be suitable for bus operation. This means that roads which are used by local buses (or are likely to be) must be able to accommodate them; including strong enough, wide enough (with parking taken into account), bends and junctions with large enough curve radii, gradient changes which give sufficient clearance etc.
- 24 When undertaking highway maintenance and improvement, or in new developments, due consideration will be given to ensuring that the highway is suitable for the operation of public transport services on appropriate roads. Particular attention is drawn to the following extracts from the Bus Strategy,
- Action 7, ensure new developments are accessible to buses.
 - Action 8, ensure that traffic management and traffic calming schemes do not impair or prevent bus operations.

INTERCHANGES

- 25 There are a small number of bus stations and interchanges (e.g. Ellesmere Port Bus Station) in Cheshire. These are very dependant on local circumstances and mainly off the highway. Hence they are not included in this paper. They are covered in detail in the County Council's Interchange Strategy.
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APPENDIX D

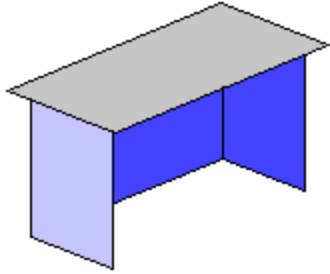
List of reference documents researched during the compilation of this Passenger Transport Infrastructure Best Practise Report:

- Corás Iompair Éireann - Dublin Bus Strategy
 - Cambridgeshire County Council - Bus Strategy
 - Cheshire County Council Bus Strategy
 - Cheshire County Council Infrastructure Strategy
 - Cheshire County Council Interchange Strategy
 - Devon County Council Bus Strategy
 - East Riding of Yorkshire Bus Strategy
 - Gloucestershire County Council Bus Strategy
 - Greater Manchester PTE Bus Strategy
 - Greater Nottingham Bus Strategy
 - Hull City Council Bus Strategy
 - Isle of Wight Bus Strategy
 - Kent County Council Bus Strategy
 - Lancashire County Council Bus Strategy
 - Leicester City Council Bus Strategy
 - Leicestershire County Council Bus Strategy
 - Lincolnshire County Council Bus Strategy
 - Merseyside PTE Bus Strategy
 - Merseyside PTE Rail Strategy
 - Norfolk County Council Bus Strategy
 - North Yorkshire County Council Bus Strategy
 - Nottingham City Council Bus Strategy
 - Oxfordshire County Council Bus Strategy
 - Peterborough City Council Bus Strategy
 - South East Wales Transport Association (SEWTA) Bus Strategy
 - Somerset County Council Bus Strategy
 - Staffordshire County Council Bus Strategy
 - Staffordshire County Council Interchange Strategy
 - Suffolk County Council Bus Strategy
 - Suffolk County Council Rail Strategy
 - South Yorkshire PTE Bus Strategy
 - South Yorkshire PTE Rail Strategy
 - Transport for London - Accessible Bus Stop Guidance
 - Transport for London - Bus Pre-Signals Document
 - Transport for London - Rail Strategy
 - Transport for London - Interchange Strategy
 - Transport for London - Selective Vehicle Detection
 - Transport for London - Traffic Calming Measures for Bus Routes
 - Tyne & Weir PTE Bus Strategy
 - Warwickshire County Council Bus Strategy
 - Warwickshire County Council Rail Strategy
 - Warwickshire County Council Interchange Strategy
 - West Midlands PTE Interchange Strategy
 - West Midlands PTE Rail Strategy
 - West Midlands PTE Bus Strategy
 - West Yorkshire PTE Bus Strategy
 - West Yorkshire PTE Infrastructure Strategy
 - West Yorkshire PTE Rail Strategy
 - Worcestershire County Council Rail Strategy
 - York City Council Bus Strategy
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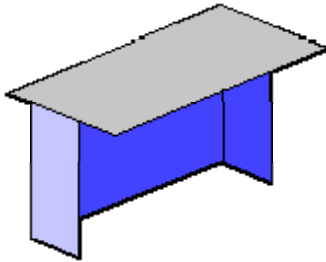
APPENDIX E

Bus Shelter Configurations

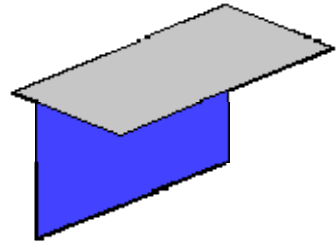
Cantilever with full ends



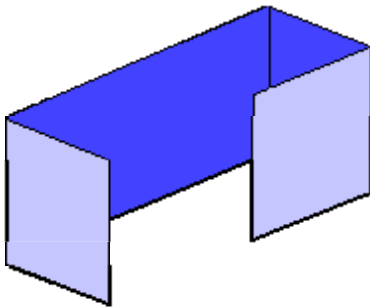
Cantilever with half ends



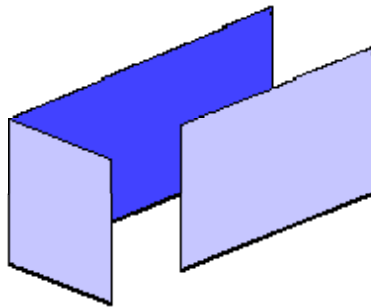
Standard Cantilever



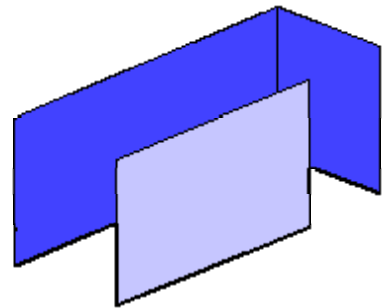
End left front right



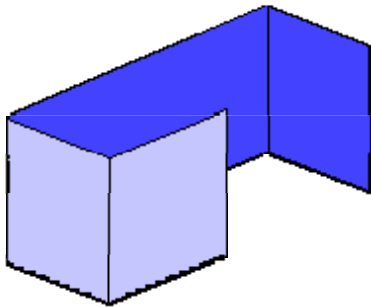
End right front left



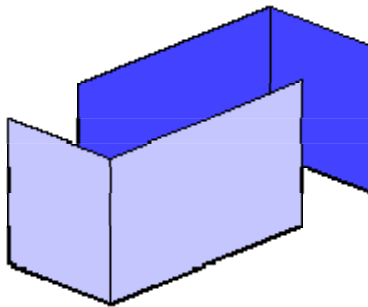
Front left



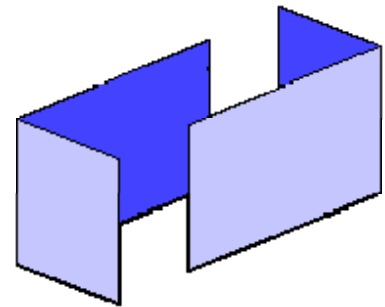
Front right



Rear left front right



Rear right front left



Double front entrance

