

NWLTF Alternative Transport Strategy Discussion Document - Executive summary

This assembly of transport proposals draws on published documents, blue-sky thinking and discussions with interested parties. The proposals are in full accord with national and local priorities. We believe that, for a number of reasons, including the prospect of increased devolution to the Leeds City Region, their potential inclusion in Leeds transport strategy should be considered as a matter of urgency. This note comprises two sections addressing, respectively, the A660 corridor and the wider Leeds area.

A) Improvements in the A660 Corridor

Changes which are worthwhile irrespective of whether the NGT project goes ahead and so need not await the outcome of the Inquiry:

- Enhanced bus priority on the A660
 - general (eg for late running buses)
 - new bus lane southbound in front of Arndale Centre
 - new bus lane northbound on approach to St Michaels Church
- Other measures to encourage increased bus usage:
 - Provision of accurate real-time information at all bus stops
 - Introduction of new services (e.g. express services, services providing access to important sites which are not well served.....)
- Measures to improve traffic flow
 - Restriction of HGVs at peak hours
 - Simplification of the North Lane/Otley Rd junction (involves reopening of Bennett Rd westbound and facilitation of eastbound movement on St Michaels Rd)
 - Bus bay on Cardigan Rd, possible improvements at St Anne's Lane
- Measures to improve pedestrian experience
 - At North Lane junction (simplification allows improved arrangements for pedestrians)
 - Near Original Oak (changes to facilitate pedestrian movements)
 - Other (wrt street furniture and other obstacles)

Additional changes which should be regarded as alternatives to the NGT project:

- Increased bus priority
 - Northbound bus lane from Richmond Rd to Richmond Avenue
 - Northbound bus lane up Headingley Hill (requires limited widening of carriageway)
 - Alterations at Blenheim Walk and at Blackman Lane (to reduce delays to Southbound buses)
 - Southbound bus lane from Rampart Rd to Clarendon Rd (minor widening of carriageway)
 - Redesign of Clarendon Rd/Woodhouse Lane junction
- Improvements to Traffic Flow
 - Redesign of Clarendon Rd/Woodhouse Lane junction
 - Signalisation of Lawnswood roundabout (significant cost)
 - Signalisation of Otley Old Road/Otley Rd junction
 - At Shaw Lane /Otley Rd junction (including possible closure of St Annes Rd)
 - At Hyde Park corner (significant cost)
- Improvements for pedestrians
 - At Clarendon Rd/Woodhouse Lane and Shaw Lane /A660 junctions
 - Via new pedestrian crossings north of Glen Road and of St Chads Rd
- Bodington Fields Park and Ride
 - served by existing bus services, the X84 express and additional express buses
 - staged development as demand grows.

B) Transport Improvements for Leeds as a whole

Aiming to:

- assist the development of the Leeds economy and increase the opportunities available to Leeds residents by improving connectivity within the Leeds City Region and with other centres
- reduce the need to travel where/when e-communication would fulfil the need

General strategy

- making efficient use of limited road-space (e.g. by encouraging the use of public transport)
- managing demand to make efficient use of spare network capacity (likely to involve more intensive use of existing rail lines and encouragement of peak-spreading)
- co-ordination between new development and new/improved transport links
- encouraging use of active modes and promoting e-communication

Generic actions which would improve, and encourage use of, public transport

- Improving the quality of public transport journeys
 - Improving bus journey times through enhanced bus priority and more efficient boarding
 - Progressive renewal of bus fleet and rail rolling stock
 - Improvement of facilities at bus stops and stations
- Introduction of new bus and rail services where necessary and possible
 - To serve new developments
 - To provide express links where appropriate
 - To increase frequency
- Travel demand management to maximise the efficiency of network operation:
- Maximise the efficiency of network operations to ensure most efficient use of existing capacity:

Specific infrastructure schemes to be considered

- **Highway Schemes:**
 - Addressing capacity issues on Outer Ring Road, on M62 and M621 and in Leeds City Centre (station access, inner loop)
 - Completion of “missing links” (southern arc of Leeds Inner Ring, East Leeds Link Road, airport Access Link)
- **Rail infrastructure**
 - enhanced signalling and introduction of turnrounds and bypass lines where appropriate
 - Provision of rail-based park and ride facilities (e.g. at Apperley Bridge, Kirkstall Forge, Calverley, Horsforth station, Horsforth Woodside, Leeds Bradford Airport, East Leeds Parkway, Thorpe Park, Stourton, and Tingley)
 - New stations on existing rail lines or on extensions to them – possibly built to Light Rapid Transit (LRT) rather than “heavy” rail standard. (e.g. at Kirkgate, Aire Valley, Seacroft / Coal Road / Thorpe Park, Beeston / Middleton, Rothwell, Woodkirk / E Ardsley, Tyersal and Otley)
 - Improved rail links to Birmingham, Sheffield and Manchester, perhaps via HS2/HS3
- **Partially segregated rapid transit (LRT or Bus Rapid Transit).**
 - The route to St James Hospital
 - Existing guided bus corridors (may warrant extension or upgrade)
 - Other radials (Kirkstall Rd, Dewsbury Rd, Stanningley Rd towards Bradford, Easterly Rd and Wakefield Rd)
 - Linking the airport with Horsforth station (potentially fully segregated)

Further details are provided in a separate document which will be made available on <http://www.nwlrf.org.uk>

NWLTF's Alternative Transport Strategy Discussion Document

Introduction

This document is a preliminary draft offered by North West Leeds Transport Forum as an input to discussion. It is based on an earlier draft prepared for us by Professor Bonsall and was produced in response to widespread interest in alternative ways forward if the Trolleybus project were not to proceed..

Any city must keep its transport strategy under review. Not only will its needs be continually evolving but so too are the opportunities offered by technology and regulation. Although there have been previous reviews of Leeds transport strategy, the new administrative arrangements and the prospect of new devolved powers for the Leeds City Region mean that it would be timely to repeat the exercise with a wider brief than was previously the case. It should not be assumed that schemes and projects which were afforded high priority in a previous review are still appropriate today.

A particular reason to conduct a review now is that, whatever the outcome of the Trolleybus Inquiry, Leeds needs to be ready with alternative ideas for promoting the local economy, improving public transport and addressing the particular issues in the trolleybus corridors. We maintain that it is clear that the predicted impacts of the project fall short of the original aspirations for it and that, with the prospect of Bus Quality Contract powers, part of its original rationale is removed. Even if the TWAO is approved, DfT funding for the Trolleybus scheme may not be forthcoming, and, even if it is, Leeds may be wiser not to accept it.

This note identifies a number of potential schemes and projects but the list is neither comprehensive nor prioritised. Many of the items have been considered in previous reviews of Leeds transport strategy, some feature in the current plans while others were deferred or rejected (some of them because they conflicted with the trolleybus proposals). We believe that it would be useful to consider the ideas contained in this note, along with others which will doubtless be forthcoming, as part of a without-trolleybus future. The feasibility (technical, financial/commercial, political and administrative), strengths and weaknesses of each one need to be established as part of a strategy for the Leeds City Region. This document has two sections; the first addresses the particular issues along that part of the A660 corridor affected by the trolleybus proposals while the second addresses the broader canvas of Leeds as a whole.

A) Improvements in the A660 Corridor

Particular characteristics of the A660 corridor

The A660 corridor is characterised by well above average bus use, cycling and pedestrian activity. It suffers from serious peak period congestion during university term times. The A660 serves primarily as a local distributor but has to cope with a significant through-flow of commuters along and across the corridor (the main cross flow creates a particular capacity problem where it dog-legs through Headingley). The bus services are very frequent and well patronised but suffer from the peak period congestion and slow boarding times. Local roads suffer from rat-running and excessive demand for parking in residential areas (some of it by people who park up in order to use the bus services). The corridor is served only peripherally by rail (stations on the Harrogate line) and, because of its constricted road space could not accommodate a new transport system without significant impact on existing users and/or the many heritage assets.

These problems are long standing but progress towards their solution or amelioration has been slow - not least because a succession of grand plans for the corridor (Bypass, Supertram, Trolleybus) have diverted attention away from achievement of more modest but nonetheless valuable improvements.

Changes which are worthwhile irrespective of whether the NGT project goes ahead and so need not await the outcome of the Inquiry:

1. General changes:

- Measures to enhance bus priority on the A660:
 - Increased priority - most particularly for late-running busses
 - Deny taxis access to bus lanes during peak periods
 - Periodic high profile enforcement of bus lane restrictions
- Other measures to encourage increased bus usage:
 - Provision of accurate real-time information at all bus stops
 - Introduction of new services (e.g. express services, services providing access to important sites which are not well served.....)
 - Introduction of new bus fleet (quieter, smoother ride) – probably parallel hybrid in turn probably evolving to all-electric
- Measures to improve traffic flow on A660
 - Banning of articulated vehicles (including buses) and, during peak periods, of HGVs
 - Use of most advanced signalling technology and control concepts
- Measures to improve pedestrian experience:
 - Monitoring the effectiveness of pedestrian signal calls (avoid delays which are so long that the pedestrian has already crossed, or walked away, before the call is met).
 - Avoiding insensitively located street furniture
 - Removing unnecessary interruptions in sidewalk (e.g. at site of redundant driveways)
 - Placing call-buttons at convenient places (e.g. not at the “far” side of an island crossing).

2. In front of Arndale Centre (addition of a southbound bus lane from Alma Rd to a point just short of North Lane). A third southbound lane would be created by extending the existing bus bays. It is accepted that buses might not be able to overtake one another without impinging on the general traffic lane. At the south end of the lane, buses in the lane would have priority (via road markings) over traffic in the leftmost general traffic lane and so would be well placed to proceed through the North Lane junction (see 3 below).

3. The North Lane/Otley Rd junction (simplification in order to increase capacity for buses and other traffic without compromising pedestrian convenience). See plan #1. The following restrictions are suggested:

- Ban the right turn out of North Lane (traffic would instead use St Michaels Rd (see 5&6 below)
- Ban the left turn into North Lane (traffic would instead use Bennett Rd (see 4 below)
- Access to and from Wood Lane stub would only be allowed via North Lane (i.e. straight across the junction – although a right turn exit could be accommodated).
- Delete the pedestrian crossing across the NW arm of the junction.

Traffic Light stages would be:

- i. (main stage) A660 Traffic from **NW to SE** and **SE to NW** plus pedestrians crossing Wood Lane and North Lane
- ii. Traffic turning **R into North Lane** and **L out of North Lane** plus pedestrians crossing SE arm of junction and Wood Lane
- iii. Traffic moving **into Wood Lane, out of Wood Lane** and turning **L out of North Lane** plus pedestrians crossing SE arm of junction (note that this stage might be called only if traffic is detected waiting to enter or leave Wood Lane).

4. Bennett Rd (the existing barrier across the road would be removed but junction with the A660 would be restricted to traffic entering Bennett Rd via a left turn from the A660 – traffic would not be allowed to exit onto the A660 nor to enter via a Right turn). This would reduce the congestion associated with traffic emerging from Bennett Rd onto the A660 and of traffic turning right from the A660 into Bennett Rd. It

would also facilitate the ban of L turning traffic into North Lane described at 3 above). Traffic from the Granbys would no longer be able to access the A660 via the East end of Bennett Rd - it would have to exit via the W end. Movements along Bennett Rd might be facilitated if a one-way clockwise circulation were created Northbound on Grunberg St, Grunberg Rd and Bennett Rd.

5. St Michaels Rd (facilitation of access to/ from A660 by utilising opportunity created by pedestrian crossings on the A660). See plan #2. Existing signalised pedestrian crossing at St Michaels war memorial would be replaced by two crossings; one further SE (just SE of current bus stop) and one further NW (from a point just N of the corner of the S kyrack pub across to the new Oak tree). These two crossings would operate in tandem and the space between them would allow traffic exiting St Michaels Rd to get a position on the A660. It might also be beneficial to reopen the SE side of the war memorial for traffic entering St Michaels Rd (such an arrangement would facilitate pedestrians seeking to cross the mouth of St Michaels Rd. The stages created by the two signalised crossings would be:
 - i. (Main stage). Traffic moving **SE to NW on A660**, from **NW to SE on A660**, **turning L into St Michaels Rd** and, if able, **turning R into St Michaels Rd**, plus pedestrians crossing the exit of St Michaels Rd – between the S kyrack and the war memorial.
 - ii. Traffic **turning L or R out of St Michaels Rd** (gaining a position on the A660 but held back at pedestrian crossing) and clearance of traffic wishing to turn into St Michaels Rd. Plus pedestrians crossing A660. Plus, once traffic turning into St Michaels Rd has been exhausted, pedestrians crossing the entry to St Michaels Rd. Note that this stage need only be called if traffic is detected waiting to exit from St Michaels Rd or if the button has been pressed on pedestrian crossings of the A660, and that it would be advantageous to delay the start of this stage if a bus is detected approaching the lights.
6. St Michaels Rd (facilitation of access from Kirkstall Lane and North Lane by making the West end of St Michaels Lane eastbound only and by reducing southeast-bound congestion on Cardigan Rd). Restricting the West end of St Michaels Rd to eastbound traffic will also benefit pedestrians by simplifying the movements (Kerbs could be re-aligned to facilitate entry direction). Cardigan Rd congestion sometimes backs up to interfere with traffic entering from Kirkstall Lane and North Lane. A particular cause of this congestion is buses which are stationary at the stop just W of St Michaels Grove. This could be avoided if the stop were re-located to a bus bay created in the entrance to St Michaels Grove (minor CPO necessary to create splays).
7. Northbound A660 from Richmond Avenue to St Michaels Church (provision of northbound bus and cycle lane with provision for traffic to turn into Spring Bank Crescent and Spring Rd and to exit from Spring Bank Crescent, Spring Rd and Bainbrigge Rd). This lane would offer northbound buses a fast track through a perennially congested stretch of the A660.

Note that the carriageway is wide enough to accommodate this lane except for a short stretch near the top of Spring Rd. If local widening can be afforded (eg by moving the wall to the NE back a bit or moving the wall to the SW back a bit) and the impact on heritage is acceptable, then so much the better, otherwise the lane could be interrupted at this point and the road surface marked to indicate that traffic entering from the bus lane has priority over that from the general lane but that no vehicle should enter the shared stretch unless it exit was clear.
8. Improvements at St Annes' Lane (a dangerous road) Increase the width at narrowest point or, at lower cost, designate it as one way towards Queenswood Drive - or perhaps one-way tidal (towards Burley Rd in am, towards Queenswood Drive in pm).

Additional low cost changes which should be considered as alternatives to the NGT project

9. Northbound A660 from Richmond Rd to Richmond Avenue (If the Headingley bypass is not constructed, the bus and cycle lane described at 7 above could actually begin just after Richmond Rd. This would provide a further benefit to buses). Note that, if the mouth of Richmond Avenue were closed to traffic,

the lane need not be interrupted at this point and that this might be a better location for the bus stop which is currently sited just west of this point (provision of a bus bay would allow buses to overtake others stationary at the stop).

10. Junction of Woodhouse Lane with Blenheim Walk at St Marks Rd (delay to southbound buses heading towards the University is significant. Much could be achieved by rephasing the signals to give them greater priority but a more radical remodelling of the junction might be appropriate).
11. Blackman Lane (if southbound buses continue to have to travel Northeast along Blackman Lane, the delay they experience when entering Blackman Lane from Woodhouse Lane needs to be addressed. Much might be achieved by giving priority to buses approaching this junction but a more radical solution could involve making Blackman Lane one-way towards the Northeast). In this event:
 - Traffic emerging onto Blackman Lane from the Westbound Inner Ring Road or from the multi-storey car park would no longer be able to turn L onto Blackman lane (the sharp right turn onto the SE-bound A660 would still be permitted and traffic wishing to head North would access the northbound A660 via the “Drydock” corner – where a kerb realignment could facilitate this movement)
 - Traffic would no longer be allowed to turn right from Blenheim into Blackman Lane (traffic making this rare move would access the northbound A660 via the “Drydock” corner)
 - Traffic emerging from Lodge Street would be required to turn Left up Woodhouse lane (turning back down Blenheim Walk if its destination is to the south)
 - Traffic wanting to enter Lodge Street could only do so via a left turn (if originating from the north it would have to travel via Blenheim Walk, Drydock corner and Woodhouse Lane).
 - This would enable the lights at the junction of Blackman Lane and Woodhouse lane to be removed because all main movements could co-exist (L turn from Woodhouse Lane into Blackman Lane, R turn from Woodhouse Lane into Blackman Lane, NW up Woodhouse lane, L turn into Lodge Street). Traffic emerging from Lodge Street would have to await a gap.
 - Signals at the junction of Blackman Lane with Blenheim Walk would have the following stages:
 - (main stage) traffic **from Blenheim Walk can proceed SE or turn NE**, traffic **from the Westbound Inner Ring Road or from the multi-storey car park can turn Right onto Blackman Lane** (but cannot yet proceed further), buses coming from Eastern end of Blackman Lane might enter the stream when a gap is available (unless safety requires it to have its own stage). Plus pedestrians can cross Blackman Lane
 - Traffic **from Blackman Lane can turn right**, buses from Blackman Lane can go straight across into the Eastern part of Blackman Lane. Plus, pedestrians can cross Blenheim walk (Note that, if the turn from Woodhouse Lane into Blackman lane were for buses only (with general traffic having to use Blenheim Walk), it might be appropriate to force this stage when a bus is detected as leaving the bus stop on Blackman lane – thereby giving buses useful priority).
12. Shaw Lane /A660 junction (changes to facilitate flow and make life easier for pedestrians).
 - Minor change
 - The right turn into St Annes Rd should be prohibited (with traffic travelling via Burton Crescent and Shaw lane)
 - If a pedestrian island can be introduced in the mouth of Shaw Lane (achieved by narrowing the width of the sidewalk), the stages could be:
 - i. (main stage) traffic from **A660 N to S** and from **A660 S to N** with **L turn into Shaw Lane** and **L turn into St Annes Rd**, plus pedestrians can cross the exit from Shaw Lane (between Baskinds and new island)

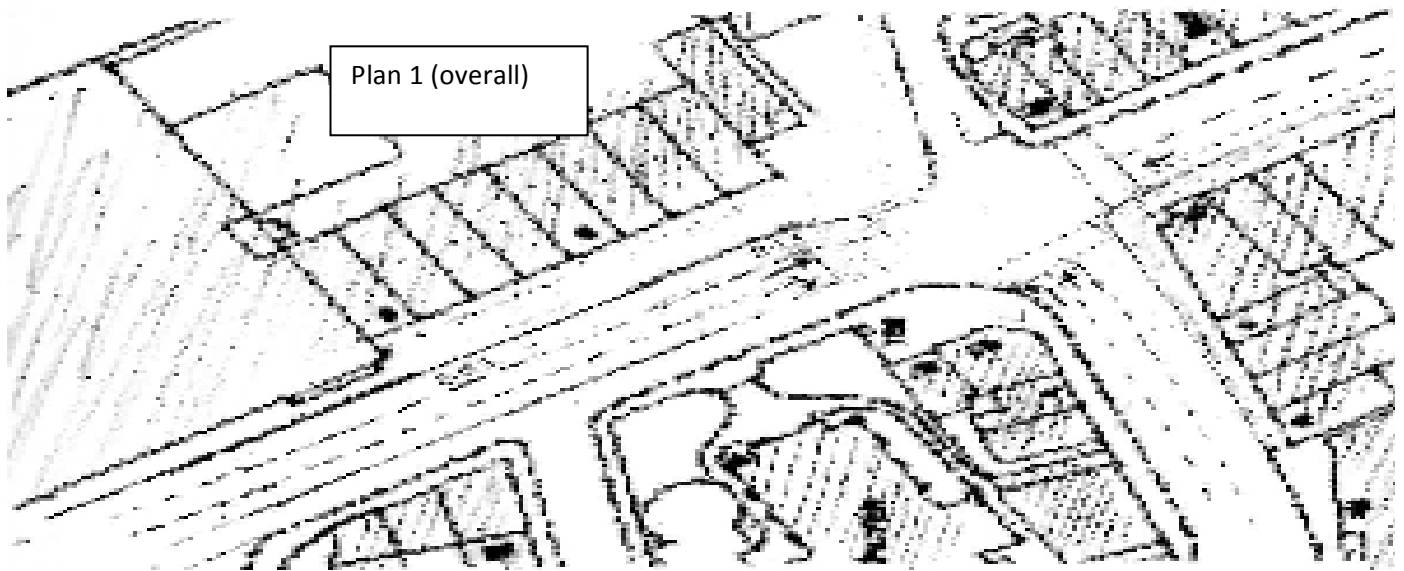
- ii. Traffic from **A660 S to N, R turn into Shaw lane, L turn out of Shaw Lane**, plus pedestrians can cross eastern part of northern arm of the junction (to/from existing island in A660).
 - iii. Traffic from **St Annes Rd can head straight on, turn L** (but held up at second light if pedestrian phase is called) **or turn right** (merging with traffic from **Shaw Lane turning Left**), plus pedestrians can cross western part of northern arm of the junction (to/from existing island in A660).
 - iv. Traffic from **Shaw lane can head straight on, turn L or turn R**. plus pedestrians can cross northern part of Shae Lane and eastern part of North arm of junction.
- More radical change (see plan #4)
 - Shaw Lane /A660 junction (changes to facilitate flow and make life easier for pedestrians as alternative to project 1 (see plan #4) {Promote this to main list?})
 - Close St Annes Rd SW of access to St Annes Parade, use stub end of road to provide parking for local shops (access for customers cars via existing exit onto Otley Road - and with dedicated right turn lane provided in centre of Otley Road possible if bus stop is moved- see separate proposal. Service access to rear of premises would be from St Annes Rd)
 - create southbound bus lane from Shaw lane to Alma Rd
 - create pedestrian island in entrance to Shaw lane by narrowing sidewalk on N corner of junction (facilitates efficient signal settings with maximum time for pedestrians)
 - the signal stages would be:
 - i. (main stage) traffic from **A660 N to S and turning left into Shaw lane, Traffic from A660 S to N**, pedestrians can cross part of Shaw Lane (between Baskinds and new island)
 - ii. Traffic from **A660 S to N and right turn into Shaw lane**, traffic from **Shaw Lane turn left into A660**, pedestrians can cross part of Otley road (from North corner to island)
 - iii. Traffic from **A660 can turn R into Shaw lane**, traffic from **Shaw Lane can turn left into A660**, pedestrians can cross Otley Road (from North corner to island and from Island to West corner)
 - iv. Traffic from **Shaw Lane can left or turn right into A660**, pedestrians can cross part of Shaw lane (between new island and north corner) and part of Otley Road ((from North corner to island)
 - Traffic which used to enter/exit St Annes road at this point would do so via Headingley Mount or St Chads Drive, entry/exit from the latter could be facilitated by placing new pedestrian crossings north and south of the junction.
 - Priority markings at junction of Headingley Mount would indicate main flow is between Headingley Mount and western part of St Annes Rd.
13. Woodhouse Moor and Junction of Clarendon Rd with A660 (More efficient use of space to the particular advantage of buses and pedestrians). See plan #3. By moving the pedestrian crossing from the NW arm of the junction to the SW arm of the junction, space taken by the pedestrian island and central reservation across Woodhouse Moor could be reallocated to allow introduction of an additional bus lane from Rampart Rd through to the bus stop in the mouth of Raglan Rd – without any delay caused by signals (cycle lane could be to NE of trees). The rearrangement of the junction would include two new pedestrian islands – one in the mouth of Clarendon Rd (widened to facilitate this) and one part way across the A660 just southeast of the junction – with one lane to the NE of it and three lanes to the SW of it. The lane to the NE of the new island would cater for buses and for traffic turning Right out of Clarendon Rd. The signal stages would be:

- i. (main stage) traffic from **A660 NW to SE** (ceding priority to buses leaving the bus stop) and from **A660 SE to NW with L turn into Clarendon Rd**, plus pedestrians can cross the northeastern most lane of the SE arm of the junction if buses are not leaving the bus stop. Also, pedestrians can cross the exiting lanes of Clarendon Rd
 - ii. Traffic from **A660 NW to SE** (ceding priority to buses leaving the bus stop) and from **A660 SE to NW turning right into Clarendon Rd**, plus pedestrians can cross the northeastern most lane of the SE arm of the junction if buses are not leaving the bus stop. Also, pedestrians can cross the exiting lanes of Clarendon Rd
 - iii. Traffic from **Clarendon Rd turning L and turning right** (buses leaving the bus stop do not have priority during this phase), plus pedestrians can cross the southwestern three lanes of the SE arm of the junction and the lane entering Clarendon Rd.
14. Junction of Churchwood Avenue/Glen Rd /A660 (investigate feasibility of facilitating movements by traffic and pedestrians by introducing an additional signalised pedestrian crossing across the A660 to the north of the junction such that, with both crossings working in tandem, traffic moving into and out of Churchwood Avenue and Glen Rd can sort itself out while the main A660 flow is held up). This might be more efficient than full signalisation of the junction - particularly if co-ordinated with the signals at Thornbury Avenue - because it would not restrict the side roads to brief opportunity slots and might avoid wasteful interruption of the main flow.
15. Junction of St Chads Rd with A660 (investigate feasibility of facilitating egress from St Chads Rd – especially if S end of Weetwood Lane were blocked or if southbound #28 buses were using St Chads Rd in order to utilise the common bus stop – by adding a second signalised pedestrian crossing across the A660 just north of the junction rather than by full signalisation). As at 13 above, this might be more efficient than full signalisation. It might also assist movement in/out of the drive to St Chads Church.

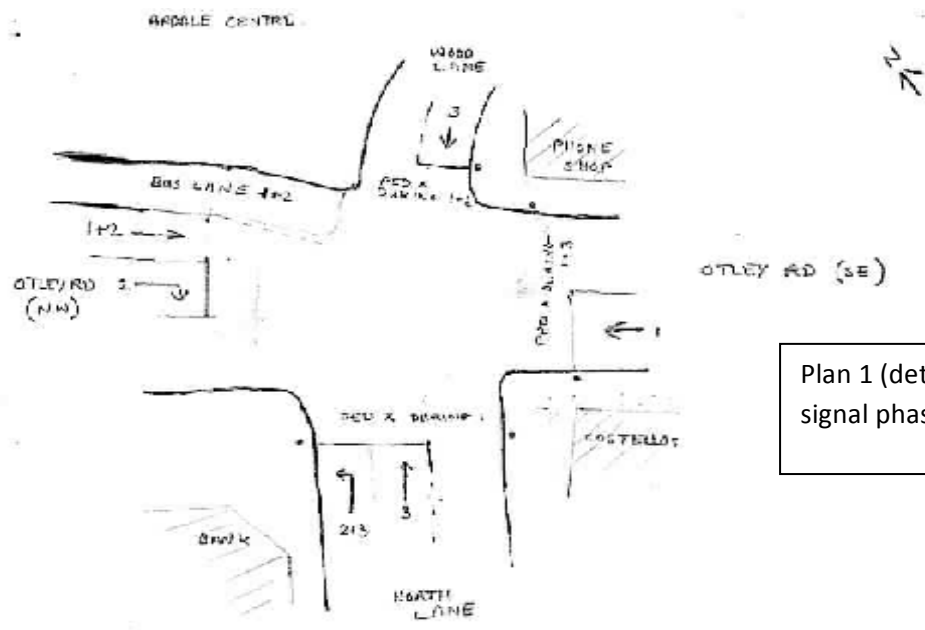
The following schemes, although more expensive, are also probably be worthwhile (budget permitting) if the trolleybus scheme does not go ahead

16. Use of the bypass alignment. Although the option of using the bypass alignment for general traffic (closing Headingley Lane between North Lane and St Michaels Rd to all through traffic except buses and cycles) should be reconsidered, it is likely to be rejected on environmental and cost grounds. If this is the case, the land behind the Arndale Centre might be used for customer parking, a service road to enable the west end of Wood lane to be closed to all traffic and for the start of cycle path following the “bypass” alignment.
17. Hyde Park Corner (major redesign of junction to remove traffic conflicts, facilitate pedestrian movements and move northbound bus stops to better location). Expensive but potentially worthwhile. Demolition of buildings on Headingley lane just north of Victoria Rd would not be necessary. The suggestion (summarised in plan #5) is:
- to make Woodhouse Street one way from Headingley Lane to Woodhouse Cliff;
 - to make Woodhouse Cliff one way from Woodhouse Street to Woodhouse Lane;
 - to make Hyde Park Rd one way from Hyde Park Terrace to Headingley Lane;
 - to construct a new lane one way from Woodhouse Lane (where the bus stops currently are) to Hyde park Rd;
 - to add pedestrian islands in Victoria Rd and in Woodhouse Street;
 - to extend the paving in front of The Crescent; and
 - to extend the northbound bus lane to a new bus bay between Hyde Park Rd and Victoria Rd.
 - Traffic wishing to turn right out of Hyde park Rd, to turn right into Hyde Park Rd, or to turn out of Woodhouse Street, would go via Woodhouse Cliff (signals where Woodhouse Cliff joins Woodhouse Lane would allow traffic to turn right out of Woodhouse Cliff)
 - The traffic signal at Hyde Park phases would be:

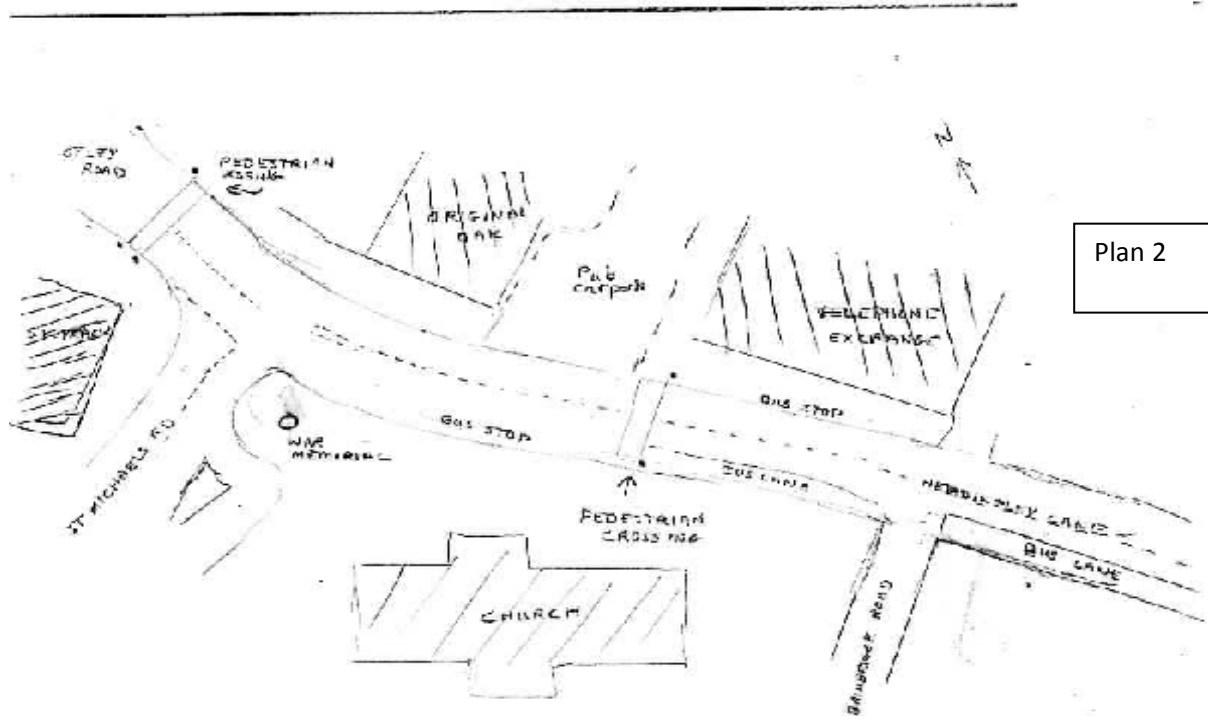
- i. Traffic from A660 north can go south or turn left, traffic from A660 south can go north pedestrians can cross Hyde park road and part of Woodhouse Street
 - ii. Traffic from Hyde Park Rd can go straight into Woodhouse Street or turn left. pedestrians can cross Woodhouse lane (without need for island) and across second part of Woodhouse street. (signals where Woodhouse Cliff joins Woodhouse lane would be linked to this phase to minimise interruption to smooth flow).
18. Headingley Hill (Northbound bus and cycle lane achieved by moving back the wall to the SW of the existing carriageway). Expensive and has undesirable heritage impact but would assist buses. Note that it need not involve demolition of buildings because the lane does not need to be continuous – it can be interrupted by a shared zone to which buses have priority access.
19. Lawnswood Roundabout (signalisation would be beneficial but need not include a pair of public transport lanes through the central reservation)
20. Otley Old Road /A660 junction (signalisation would be beneficial but need not include specific public transport lanes)
21. Bodington Fields Park and Ride Site (could be beneficial and could be served by existing bus services, the X84 express and additional express buses. However, given the uncertainty as to the demand, it would be wise to build the site in stages – starting relatively small and monitoring to see if the demand justifies the full capacity envisaged as part of the NGT scheme.



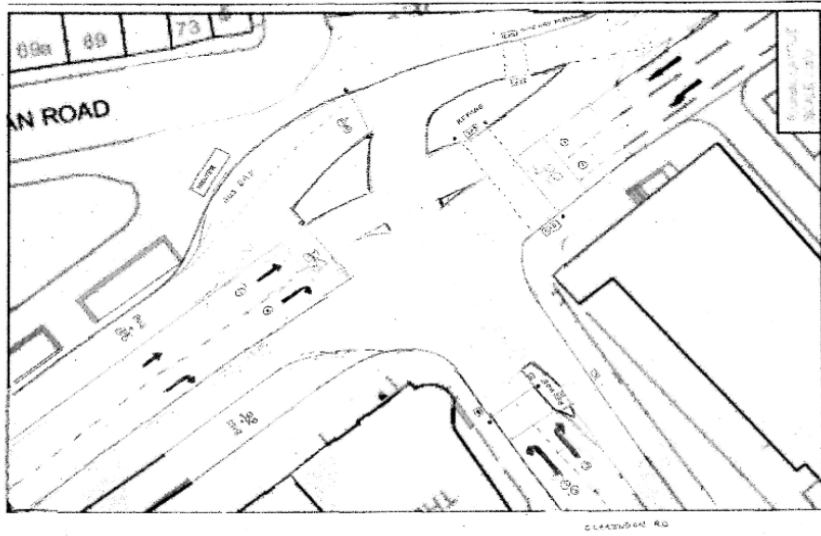
Plan 1 (overall)



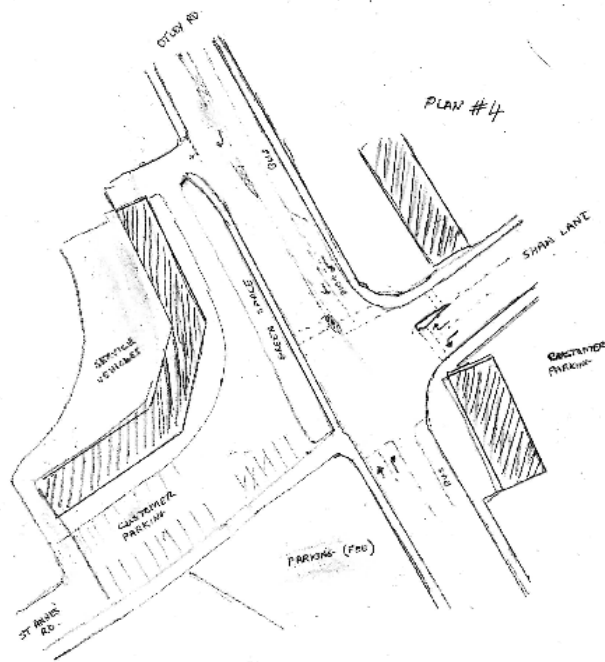
Plan 1 (detail of signal phases)



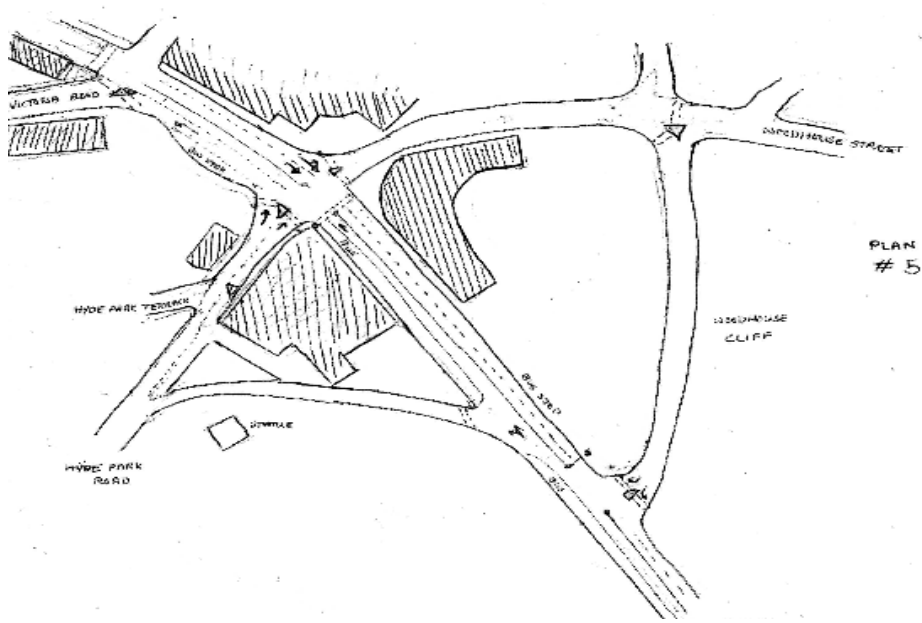
Plan 2



plan #3



plan #4



plan #5

B) Transport Improvements for Leeds as a whole

Aims for Leeds as a whole

- To assist the development of the economy of the Leeds City Region and increase the opportunities available to Leeds residents by improving connectivity within the Leeds City Region and with other centres.
- To reduce the negative impacts of transport (emissions, wasted time and resources, casualties, frustrating/unpleasant journey experiences, environmental degradation)
- To contribute to Leeds' general aims respecting quality of life for Leeds citizens
- To address existing and anticipated transport problems

Issues and problems

- Leeds suffers from localised peak period congestion which is modest by international standards but is recognised as a particular problem on certain routes. Particular problems are evident on the M621, the M62, the Inner Ring Road (A58(M)) and the Outer Ring Road (A6110 and A6120).
- It is generally agreed that there is a shortage of orbital road capacity, that the airport is not well connected by road or public transport and that links to other centres within West Yorkshire, across the Pennines and to Birmingham are in need of improvement .
- Leeds does not have a significant suburban rail network (the majority of public transport journeys are by bus) but rail has become increasingly important for commuters into Leeds from neighbouring towns – despite capacity problems and low quality rolling stock.
- Leeds is relatively well served with city centre car parking (a fact which has frustrated attempts to encourage drivers to use alternative modes).

General strategy for Leeds as a whole

- To make more efficient use of limited road-space (this is likely to involve encouraging the use of public transport except where journeys are too complicated/few to be efficiently served in this way)
- To make efficient use of spare network capacity (this is likely to involve more intensive use of existing rail lines and encouragement of peak-spreading)
- To encourage use of active modes
- To reduce traffic emissions and casualties
- To reduce the need to travel by promoting e-communication where/when appropriate
- To achieve positive impacts as quickly as possible subject to financial, technological, bureaucratic and political constraints.

Generic actions which would improve, and encourage use of, public transport

1. Improving the quality of public transport journeys

- Improving bus journey times through:
 - Greater use of bus priority (additional/extended lanes; increased priority at signals)
 - Reduction in bus boarding times via:
 - Smart ticketing and move towards totally cashless fares and off-bus sales of all ticket products
 - Renewal of bus fleet to include multiple doors and, possibly, two sets of stairs on busiest routes
 - Simplification of fare structures
- Progressive renewal of bus fleet (probably towards parallel Hybrid and, then all-electric)
- Improvement of facilities at bus stops (shelter, real time Information, lighting, CCTV)
- Renewal of rail rolling stock - including electrification

- Improvement of facilities at stations (increased parking, waiting areas, real time Information, lighting, CCTV)
 - Introduction of through tickets and of tickets transferable between operators
2. Introduction of new services (bus and rail) where necessary and possible
- To serve new developments (it being particularly important to serve new developments before contrary modal choices become ingrained)
 - To provide express links where appropriate
 - To increase frequency

Other generic actions which are needed

3. Maximise the efficiency of network operation through travel demand management:
- Provide real time information (respecting congestion, roadworks, parking availability)
 - Restrict provision of space for commuter parking in the city centre
 - Divert traffic onto the rail network by provision of additional parking at existing rail stations and of feeder bus services serving rail stations
 - Encourage peak spreading (via parking tariff structures, off-peak discounts for public transport fares, opening hours of public facilities, agreement with major employers and service providers).
 - Encourage e-activity as a substitute for travel (e.g. by providing e-access to public services, by promoting working from home or at community-based offices....)
 - Prepare for introduction of congestion charging at particular locations (implementation likely to become necessary in due course).
4. Maximise the efficiency of network operations through traffic management, control and maintenance:
- Continued upgrading of the Urban Traffic Management and Control systems (including provision of the most advanced systems to provide priority for buses)
 - Invest in enhanced rail signalling systems (to reduce journey times, facilitate provision of higher frequency services and make most efficient use of infrastructure)
 - Enforce bus priority measures and of those parking/waiting restrictions which are designed to ensure smooth flow of traffic
 - Ensure adequate maintenance of infrastructure
5. Reduce road casualties:
- Promote and follow best practice in infrastructure design and maintenance.
 - Review speed limits across the city – to ensure that restrictions are appropriate to the site (not too high for safety but not so unnecessarily low as to cause frustration and bring restrictions into disrepute)
 - Having established that the restrictions are appropriate, enforce them effectively.

Specific infrastructure schemes to be considered.

It is recognised that major investment in appropriate transport infrastructure can have economic benefits which extend beyond their impact on transport costs. However, it is not suggested that all these schemes could or should be adopted. Some are included simply because they are frequently referred to in public discussion and there are technical, commercial and financial reasons for seeing many of them as alternatives to one another. The order of presentation is not to be taken as indicating priority. Appropriate priorities can only be established through a careful assessment of costs, benefits, urgencies and programming constraints. Note that several of these schemes have already been identified for implementation between now and 2025.

6. Highway Schemes:

- a. Addressing capacity issues on the Leeds Outer Ring Road
 - Signalisation of problematic intersections (e.g. at A61, A65 and A660)
 - More extensive treatment at other intersections (e.g. at Dawson’s Corner)
 - Relief road for eastern section (“East Leeds Orbital Road”)
 - Improvements on SW stretch of A6110 between Stanningley Bypass and the M621
- b. Addressing capacity issues on M62 and M621
 - Additional lanes/use of hard shoulder
 - Use of Smart Motorway Technologies
 - Introduction of HOV lanes and or toll lanes?
- c. Addressing capacity issues in Leeds City Centre
 - Leeds City station for drop-off and pick-up (need for more drop-off kerb space and, separately, for more space for drivers waiting to pick up arriving passengers. Also need for better access from Wellington Street direction – possibly by allowing cars to travel east all the way along Wellington Street before turning Right into Aire Street, with Aire street becoming one way, westbound, as far as Thirsk Row)
 - Inner loop between Merrion Street and roundabout at East end of the Headrow (possibly utilising Bridge Street)
 - Completion of the Leeds Inner Ring (between Armley Gyratory and Hunslet Rd) consistent with plans for new stations etc
- d. Addressing other capacity issues
 - A61, signalisation of junction of Scott Hall Rd with Stonegate Rd and Harrogate Rd.
 - A58(M), re-engineering of the Armley gyratory junction
- e. Addressing other issues
 - Improved highway link to Leeds Bradford Airport
 - East Leeds Link Road

7. More intensive use of existing rail lines – maximum use of existing capacity being achieved by enhanced signalling and introduction of turn-rounds and bypass lines where appropriate. Inter-running of tram-train and heavy rail may be appropriate in some circumstances. The enhanced capacity would be used to support:

8. Provision of rail-based park and ride facilities. Potential sites might include:

- a. **Apperley Bridge** on Aire Valley Line (under construction)
- b. **Kirkstall Forge** on Aire Valley line (due to commence construction)
- c. **Calverley** (Sandoz site) on Aire Valley line – if it can co-exist with Apperley Bridge and Kirkstall Forge, could also serve as local station for new housing development planned nearby.
- d. **Horsforth** station. Using existing station on Harrogate Line if additional parking can be provided (possibly by facilitating relocation of the woodyard) - see also 10h below.
- e. **Horsforth Woodside** on Harrogate Line (in connection with Horsforth turn-round facility?)
- f. **Leeds Bradford Airport** (on, or linked to, Harrogate line. Expensive but could serve as rail link to airport and a P&R facility. An alternative approach is given at 10h below)
- g. **East Leeds Parkway** (near Micklefield on the York line, access from A1(M))
- h. **Thorpe Park** (at J46 of M1)
- i. **Stourton** (at J44 of M1 or J6 of M621, with rail shuttle via Wakefield/Normanton line)
- j. **Tingley** (at J28 on M62, utilising disused rail spur from Wakefield Westgate line. Might also serve new housing developments in the area).

Note that the demand model used in recent assessment of new P&R sites has some undesirable features which make its forecasts unreliable.

9. New stations on existing rail lines or on extensions to them – possibly built to Light Rapid Transit (LRT) rather than “heavy” rail standard. Potential sites might include:
- a. Serving the **East end of Leeds City Centre** – a halt on the York Line near Kirkgate
 - b. Serving **Aire Valley Development Area** (possibly via spur from the Wakefield/Normanton rail line and/or from the York rail line at Neville Hill – possibly using alignment of disused industrial lines)
 - c. Serving **Seacroft and the new housing Development in Northeast Leeds** (via spur from York rail line – possibly utilising part of the disused line to Scholes)
 - d. Serving **Beeston and Middleton** (via spur from the Wakefield/Normanton rail line – possibly using Middleton Railway alignment)
 - e. Serving existing and potential new development at **Rothwell** (via spur from the Wakefield/Normanton rail line – possibly using part of disused alignment)
 - f. Serving existing and potential new development at **East Ardsley** (or at **Woodkirk** via spur from the Wakefield Westgate rail line – possibly using part of disused alignment and possibly associated with Park and ride at Tingley – see 8j above)
 - g. At **Tyersal** on Bradford/Leeds rail line to serve existing housing and potential new housing development.
 - h. Serving **Otley** via reopened line from Menston (running alongside bypass) or Arthington (if route through Pool is possible)
- Note that the recent review of new rail stations related only to “heavy” rail and assumed that NGT would proceed and
10. Other, partially segregated rapid transit (LRT or Bus Rapid transit). Recognising that BRT has greater flexibility and lower cost but may be replaced by higher capacity LRT if/when demand justifies it. Also mindful of the implications for bus revenues in the context of a Bus Quality Contract. Potential routes include:
- a. Existing guided bus corridors (A64 York Rd and A1 Scott Hall Rd) may warrant extension or upgrade – particularly if new developments increase potential patronage
 - b. The route to St James Hospital
 - c. A65 (to Kirkstall and Horsforth New Road Side)
 - d. A 653 (Dewsbury Rd)
 - e. A647 (Stanningley Rd) and to Bradford
 - f. A58 (Easterly Rd)
 - g. A61 (Wakefield Rd)
 - h. From Airport to Horsforth station (potentially on a new, fully segregated, alignment).
11. Improved rail links to Birmingham, Sheffield and Manchester are, of course, envisaged as part of the HS2 and HS3 projects. Leeds and the Combined Authority will want to take a view on the best means of achieving these improvements – mindful of the desirability of also achieving improved links to Newcastle and the possibility that the HS2/HS3 projects will not come to fruition in the short or medium term – if ever, and that other schemes based on existing lines might offer better value for money.