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Casualty Reduction Initiative for Residential Areas

20 mph Zones and Speed Limits

Sunderland City Council

December 2009

Executive summary

This report considers the implications of a number of recent DfT publications and advice on setting local speed limits. Particular reference is made to the advice offered to local traffic authorities in relation to the introduction of 20 mph zones and limits. This recent advice is then applied to Sunderland City Council's Local Road Safety Strategy (SLRSS) and the current Local Transport Plan in order to determine whether policies, practices and programmes within these documents are consistent with current advice.

The publications and guidance referred to are'

- Circular Roads 01/2006, Setting Local Speed Limits.
- A Safer Way: Consultation on Making Britain's Roads the Safest in the World.
- Manual for Streets, DfT.
- A Review of 20 mph Zone and Limit Implementation in England – Road Safety Research Report.
- Child Road Safety Strategy, 2007.
- An Interim Review of the Implementation of 20 mph Speed Limits in Portsmouth (Atkins).

Circular Roads 01/2006, Setting Local Speed Limits.

Circular Roads 01/2006 states that "Alternative speed management options should always be considered before a new speed limit is introduced".

When considering setting new local speed limits, Circular Roads 01/2006 recommends local traffic authorities use measurements of mean speed as the basis for determining local speed limits.

20 mph speed limits are recommended for use on individual roads or a small number of roads. DfT recommends their use where speeds driven are already consistent with the 20 mph speed limit, that is average speeds not greater than 24 mph.

Circular Roads 01/2006 recommends the use of 20 mph speed limits and zones in town centres, residential areas and in the vicinity of schools where there is a high presence of vulnerable road users.

A Safer Way: Consultation on Making Britain's Roads the Safest in the World.

In April 2009 the government published "A Safer Way: Consultation on Making Britain's Roads the Safest in the World", a consultation document containing a range of proposals for reducing road traffic related casualties and collisions throughout the next decade to 2020.

One of the most challenging aspects of the proposal is that serious and fatal casualties sustained by children as pedestrian are currently disproportionately high compared with other European countries and compared with Britain's relatively good

casualty rates. Furthermore children in less affluent areas have a significantly higher serious and fatal injury involvement.

In order to improve safety on the streets where we live, government has stated an intention to amend its guidance on speed limits, **recommending that highway authorities, over time, introduce 20 mph zones or limits into streets that are primarily residential in nature and which are not part of any major through route**. Similarly, local authorities will be encouraged to consider introducing 20 mph limits or zones in town or city streets, such as around schools, shops, markets, playgrounds and other areas where pedestrian and cyclist movements are high.

These measures can be effectively targeted to less affluent areas, where casualty rates, particularly those involving children as pedestrians, may be relatively high.

Manual for Streets (MfS), DfT.

MfS provides guidance on the design of urban "streets". Streets are defined as:

> *a highway that has important public realm functions beyond the movement of traffic. Most critically, streets should have a sense of place, which is mainly realised through local distinctiveness and sensitivity in design. They also provide direct access to the buildings and the spaces that line them. Most highways in built-up areas can therefore be considered as streets.*

In effect MfS changes the previously accepted concept of a roads hierarchy based largely on the movement of traffic. MfS promotes an alternative approach that gives pedestrians and other vulnerable road users priority in locations where it considers the "place" function should predominate.

MfS recommends that design speeds in streets should be no more than 20 mph. Nevertheless there is little reference in MfS to traditional traffic calming, 20 mph zones or speed limits. MfS envisages that the lower design speeds should preferably be achieved through design rather than "unsympathetic traffic calming".

A Review of 20 mph Zone and Limit Implementation in England – Road Safety Research Report.

The government has commissioned a review of the outcomes of the implementation of 20 mph zones and speed limits. Unfortunately the full findings of the review will not be published until 2011. While some information is included in the current report on previous research into the effects of 20 mph zones and limits, there is relatively little information from this research is currently available concerning the specific effects on speeds driven and casualty rates in either 20 mph zones or limits.

The previous research suggests that the introduction of 20 mph speed limits is relatively ineffective in reducing speeds driven.

Child Road Safety Strategy, 2007

This report makes reference to the Child Road Safety Strategy, 2007, with particular reference to the positive effects of introducing traffic calming and other similar measures in less affluent areas due to higher child pedestrian KSI rates. It is not known whether this is the case in Sunderland as this is outside of the scope of this study.

An Interim Review of the Implementation of 20 mph Speed Limits in Portsmouth (Atkins).

Portsmouth City Council (PCC) is the first local authority in England to implement an extensive area-wide 20 mph speed limit scheme covering the majority of its residential roads and using speed limit signing alone i.e. terminal and repeater signs. PCC has introduced 20 mph speed limits on 410km of its 438km road network – i.e. 94% of the length of its roads.

The scheme was intended to be self-enforcing so as to avoid the need for extra police enforcement and was introduced:

- partly to support the low driving speeds adopted previously by many motorists; and
- partly to encourage less aggressive driving behaviour from those who drove at inappropriate speeds.

The cost of implementing the scheme was £0.57million which came from the LTP capital expenditure programme.

An independent interim evaluation of the effects of implementation of these area wide speed limits has been carried out. There is some evidence that speeds and collisions have been reduced by the implementation of the speed limits and that speed reduction has been greater than that suggested in Circular Roads 01/2006. However based on the available data for one year after scheme implementation, casualty benefits greater than the national average were **not** demonstrated.

Sunderland Local Road Safety Strategy (SLRSS)

For the achievement of casualty reduction targets, SLRSS relies on the development of a roads hierarchy for the delivery of the objective - to make Sunderland City a leading edge authority in terms of casualty reduction.

There is a relatively close fit with other recent advice and guidance in respect of this recommendation. Circular Road 01/2006 states that in town centres and shopping streets, casualties are often concentrated at specific locations. On residential streets, collisions are more scattered, but nonetheless usually include a high proportion of pedestrians and cyclists (DTLR, 2001) and also involve a higher proportion of children than on other roads. Efforts should therefore be made to promote the use of more suitable routes for through traffic and to manage the speed of traffic requiring access to residential streets using traffic calming and associated techniques (see Traffic Advisory Leaflet 07/96, DoT, 1990 for traffic calming measures).

Associated with the development of the roads hierarch, SLRSS recommends the development of a Speed Management Strategy. SLRSS does not, in itself, develop a Speed Management Strategy.

The need to develop a speed management strategy *per se* seems to have been rendered redundant by the issue of Circular Road 01/2006, which gives guidance on the types of roads that are suitable for different speed limits. The advice is related to the road function and SLRSS suggests that in some cases in Sunderland the road function needs to be changed.

SLRSS makes little reference to 20 mph zones or speed limits. 20 mph zones are considered to be suitable for new build housing. Traffic calming is considered to be suitable for existing housing areas. In both cases only those roads that fall into the "lowest level of the roads hierarchy" are considered suitable.

The reference to 20 mph limits in SLRSS is, perhaps, ambiguous.

> *"The combined application of the revised route hierarchy and the accident plot will highlight those areas most in need of addressing. The types of measures that may be used in these areas will be similar to those identified for the lowest level of the road hierarchy, i.e. access only roads. Typical measures include 20mph speed limits,……"*

There is only this single reference, which without further explanation may simply mean 20 mph zones

Circular Roads 01/2006 encourages local traffic authorities to adopt speed limits of 20 mph in situations where there is a particular risk to vulnerable road users. This seems to go beyond the recommendation in SLRSS, which sees 20 mph zones or limits, being used on roads in the "lowest level of the road hierarchy". Whereas it is on urban roads that the majority of casualties occur, including over 86% of pedestrian and pedal cyclists casualties (*Road Casualties Great Britain 2004: Annual Report*; DfT, 2005).

There is little reference to vulnerable road user injuries and their predominance in less affluent areas in SLRSS.

Tyne & Wear Local Transport Plan 2006-11

Throughout the Plan, there is considerable emphasis on relating transport policies and investment to wider policy objectives across the Councils; for instance linking transport to wider initiatives for improving housing, health and well-being. Against these parameters, the LTP acknowledges that Tyne & Wear performs relatively poorly compared to other parts of the country. The Plan emphasises relationships to Community Strategies and wider city-visions, ensuring a ready fit with the ambition to develop Sunderland as the Most Liveable City. It is clear that the LTP provides a policy context for transport planning and traffic management practice fitting with much wider regeneration and development of neighbourhoods across Sunderland.

There are specific strategic objectives set out in the Plan that are relevant to the delivery of 20 mph zones/speed limits and the Plan identifies funding streams within the integrated transport allocations for such work..

Conclusion

Traffic authorities such as Sunderland City Council may, subject to satisfactory consultation, introduce 20 mph speed limits and 20 mph zones on local roads within their administrative area.

20 mph speed limits are made by order and supported by the appropriate traffic signs.

20 mph zones are areas subject to a 20 mph speed limit that is supported by appropriate orders, zone entry signs and if necessary physical measures within the zone to ensure that speeds driven are generally consistent with the 20 mph speed limit.

The documents reviewed are supportive of speed reduction, particularly where vulnerable road users are evident in relatively high numbers. 20mph zones have specific benefits in terms of casualty reduction, particularly in relation to vulnerable road users.

The documents are relatively cautious about the benefits of introducing area wide 20 mph speed limits without supporting traffic calming measures. These should only be introduced on individual or a small number of roads.

Sunderland Local Road Safety Strategy makes relatively little reference to 20 mph speed limits or zones, whereas the Local Transport Plan makes specific reference to the benefits of reducing speed as follows.

- Ensuring transport systems are safe whilst reducing the incidence and severity of transport-related accidents. The **road safety** strategy specifically refers to a concern for pedestrians in road safety planning.
- Maintaining and improving personal **accessibility** and linkages within Tyne & Wear
- Reducing the adverse **impacts of transport** on our environment

Manual for Streets is supportive of lower vehicle speeds in order to encourage a sense of place. The lower speeds are to be achieved through sensitive design rather than unsympathetic vertical traffic calming. Manual for Streets encourages the creation of public realm where people feel secure to meet and interact. The encouragement of a sense of place supports the objective stated in the Community Strategy as The Most Liveable City. There is considerable benefit to be gained from relating transport policies and investment to wider policy objectives across the Council; for instance linking transport to wider initiatives for improving housing, health and well-being and contributing to the vision of making Sunderland “The Most Liveable” city.

It is evident that 20mph zones are identified (in the Local Transport Plan) as eligible for the allocation of funds. There are many precedents for this use of LTP capital funding within Tyne & Wear and nationally. However, to be certain of any potential audit issues, specific advice should be sought from the Chief Financial Officer at the City Council prior to the commencement of a local 20mph zones programme. The final section of this report outlines the findings from a set of preliminary City-wide analyses aimed at identifying potential locations for 20mph treatments in Sunderland. 15 prospective areas have been identified within Sunderland. A series of further recommendations identify additional areas for investigation as part of any subsequent design process.

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Contents

1 Introduction

1.1 Background

1.1.1 This commission relates to the development of a comprehensive Speed Management Strategy. In particular this document has been developed in order to provide a

"Review of the current Sunderland Road Safety Strategy and Local Transport Plan in light of current government guidance and best practice on the subject of casualty reduction in relation to speed management"

1.1.2 The publication "Tomorrow's roads: safer for everyone" was published on 1 March 2000, by the former Department for Environment, Transport and the Region. Through the publication of this document the government set new casualty reduction targets, set against the baseline of the average of the recorded casualties for the years 1994-98. The targets are

- A 40% reduction in the number of people killed or seriously injured in road accidents;
- A 50% reduction in the number of children killed or seriously injured; and
- A 10% reduction in the slight casualty rate, expressed as the number of people slightly injured per 100 m vehicle kms.

1.1.3 These target casualty reductions were to be achieved by 2010.

1.1.4 Many local authorities adopted these targets to be achieved locally, or adopted a policy of contributing to these targets through the implementation of their road safety programmes.

1.1.5 In a report dated February 2002 the former Director of Environment reported on accident statistics for the year 2000 and informed members of the new casualty reduction targets.

1.1.6 In 2003 Sunderland City Council commissioned a firm of consultants to prepare a road safety strategy. The strategy was to consider the factors contributing to the various aspects of the collision record and make recommendations on reducing the level of road crashes, with the ultimate aim of helping Sunderland achieve top 25% in the relevant Best Value Performance Indicators.

1.1.7 The Road Safety Strategy and its recommendations were adopted by Sunderland City Council in September 2004.

1.1.8 In his annual report to the Planning and Highways Committee on road collisions, the Director of Development and Regeneration reported in April 2005 that Sunderland had a relatively poor accident rate in respect of serious and fatal injuries to child pedestrians on Sunderland's roads (based on casualty records for 2003 and preceding years).

1.1.9 This was picked up by Sunderland City Council's Environment and Planning Review Committee which added to its work programme a review of the casualty situation in respect of child pedestrians in Sunderland.

1.1.10 The Review Committee considered a range of evidence from a wide variety of sources. It concluded its study in June 2006 and recommended that:

the targets set out in the Local Road Safety Action Plan should be regularly reviewed and that progress

reports should be submitted to this Committee (Environment and Planning Review).

Also that further research be carried out to:

Isolate the specific reasons why Sunderland has a greater child pedestrian casualty problem.

Determine why the age group 5-9 is most at risk as pedestrians.

Identify the reason for the significant improvements to the child pedestrian casualty rate for 2004.

The Council should further investigate the potential of Homes Zones and the lessons learnt from the experience of the Staithes development in Gateshead and the Square Route Scheme at New Herrington.

The Council should continue to deliver local publicity campaigns promoting road safety and driver awareness through the national and local media.

The Council, with its partners, should develop the existing speed management framework into a comprehensive Speed Management Strategy.

There needs to be continued joint working both between Directorates of the Council and neighbouring health and local authorities in order to maximise the use of available resources.

1.1.11 The City Council is Tyne and Wear Local Transport Plan delivery partner. The current Local Transport Plan, LTP2, has within it a number of proposals that relate to the shared priorities, one of which, "a safer future" is supported by road safety programmes. Therefore LTP2 includes road safety programmes to be delivered by the partner organisations, throughout the plan period, 2006 – 2011.

1.1.12 In particular the recently published DfT Circular 01/2006, "Setting Local Speed Limits" and the consultation document from the DfT, "2010-2020 A Safer Way" will be used to guide possible solutions and proposals. Also reference will be made to "Review of 20 mph Zone and Limit Implementation in England" – a DfT road safety research report.

2 Setting Local Speed Limits, DfT Circular 01/2006

2.1 Introduction

2.1.1 DfT Circular 01/2006, Setting Local Speed Limits, was published in August 2006. This guidance supersedes that previously contained in Circular Roads 01/93 (DoT, 1993), which is now cancelled and provides guidance to local traffic authorities for setting speed limits on local roads.

2.1.2 Circular 01/2006 retains and builds upon many of the underlying principles of Circular Roads 01/93. However, it also reflects some of the important developments in speed management policies and research, including the relationship between speed and the risk of collision and severity of injury, and of the actual speeds being driven on rural roads. The guidance also gives some examples of the type of roads on which particular speed limits might be suitable and sets out key extended knowledge of the elements of speed limit legislation, including signing rules and requirements.

2.1.3 The guidance is to be used for setting all local speed limits on single and dual carriageway roads in both urban and rural areas. It brings together the main features of other published guidance on speed limit related issues, including speed-related road traffic regulation and signing, street lighting, traffic calming, speed limits in villages, and, of particular relevance to this study, **20 mph speed limits and zones**.

2.1.4 Circular Roads 01/2006 states that the DfT encourages and supports 20 mph limits and zones in situations where there is a particular risk to vulnerable road users.

2.2 The Legislative Framework

2.2.1 Part VI of the RTRA 1984 deals specifically with speed limits, with Sections 81-84 dealing with different speed limits and the speed-limit order-making process. Sections 82(1)(a) defines a restricted road in England and Wales as a road which is provided with “a system of street lighting furnished by means of lamps placed not more than 200 yards apart”. Section 81 specifically makes it an offence for a person to drive a motor vehicle at a speed of more than 30 mph on a restricted road.

2.2.2 All speed limits, other than those on Restricted roads, should be made by order under Section 84 of the Road Traffic Regulation Act 1984. This includes the making of a 30 mph speed limit on an unlit road.

2.2.3 Any speed limits below 30 mph, other than 20 mph limits or 20 mph zones, require individual consent from the Secretary of State.

2.3 Considerations in Setting Local Speed Limits

2.3.1 Accident types, patterns, frequency, etc, as well as traffic speed and volume data should be studied to help determine if the speed limit is appropriate for the type of road given the uses and intensity of uses by different road user groups. Any differences in the aspirations of the traffic authority and community for the uses of the road may need to be reconciled.

2.3.2 However, Circular Roads 01/2006 states that “Alternative speed management options should always be considered before a new speed limit is introduced”. The

costs and benefits of changing a local speed limit should be assessed. Many of the costs do not have monetary values. Traffic authorities may need to develop an assessment framework in order to help assess the different costs and benefits. An assessment should include the following factors:

- Accident and casualty savings
- Traffic flow and emissions
- Journey times for motorised traffic
- Journey-time reliability
- The environmental impact
- The level of public anxiety
- The degree of severance by fast moving traffic
- Conditions and facilities for vulnerable road users
- The cost and visual impact of signing and possible environmental impact of engineering or other physical measures
- The cost of enforcement.

2.3.3 **The underlying aim of speed management should be to achieve a 'safe' distribution of speeds that reflects the function of the road and the impacts on the local community.** This implies a mean speed appropriate to the prevailing conditions, and all vehicles moving at speeds as close to the posted speed limit as possible.

2.3.4 A key factor influencing speeds driven on a road is what the road looks like to the road users, such as its geometry and adjacent land use. Drivers are likely to expect and respect lower limits, and be influenced when deciding on what is an appropriate speed, where they can see there are potential hazards, for example outside schools, in residential areas or villages and in shopping streets.

2.4 Speed Limit Signing

2.4.1 Direction 11 of The Traffic Signs Regulations and General Directions 2002 (TSRGD 2002) defines the requirements for the placing of speed-limit repeater signs. This states that speed-limit repeater signs cannot be placed along a road on which there is carriageway lighting not more than 183 metres apart and which is subject to a 30 mph speed limit. This direction applies regardless of how the speed limit has been imposed.

2.4.2 TSRGD 2002 prescribe the designs and conditions of use for traffic signs, including speed limit signing in England, Scotland and Wales. Traffic authorities must follow these Regulations when signing speed limits. Special authorisation must be sought if traffic authorities wish to deviate from that which is prescribed and signing that is contrary to the Regulations must not be installed without first seeking authorisation. Special authorisation applications should be sent to the Speed Policy Branch at the Department for Transport or to the relevant government office.

2.4.3 In relation to 20 mph speed limits and 20 mph zones the relevant signing is specified in TSRGD 2002 as

• diagrams 674 and 675 – 20 mph 'Speed limit zone' signs

and is shown below in figures 1.1 and 1.2.

Figure 1.1

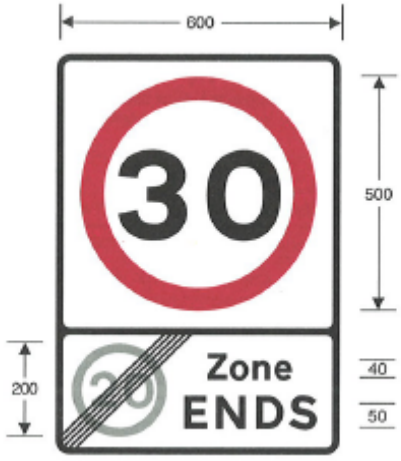


Figure 1.2

2.4.4 Additional signing may be required depending on the circumstances of the 20 mph speed limit or zone. In some circumstances the following signing (TSRGD 2002) may be required.

- diagram 670 – 'Maximum speed limit' sign
- diagram 671 – 'National speed limits apply'
- diagrams 674 and 675 – 20 mph 'Speed limit zone' signs
- diagrams 878, 879 and 880 – 'Camera warning' signs
- diagram 883 – 'Traffic calmed area' sign
- diagram 1062 – 'Road hump' marking
- diagram 1065 – Carriageway roundel road marking
- diagram 2402.1 and 2403.1 – Town or village gateway sign (boundary sign) (may be combined on the same post or backing board with a speed limit sign)
- diagram 7032 – Temporary 'New 30 mph speed limit' sign
- diagrams 557.1 to 557.4 – 'Road hump' signing

2.5 Urban Speed Management

2.5.1 The standard speed limit in urban areas is 30 mph, representing a balance between mobility and safety of road users, especially the more vulnerable groups. Circular Roads 01/2006 encourages local traffic authorities to set speed limits of 20 mph in situations where there is a particular risk to vulnerable road users.

2.5.2 It is on urban roads that the majority of casualties occur, including over 86% of pedestrian and pedal cyclists casualties (*Road Casualties Great Britain 2004: Annual Report*; DfT, 2005). The type of road user casualty involved differs substantially from one location to another. In town centres and shopping streets,

casualties are often concentrated at specific locations. On residential streets, collisions are more scattered, but nonetheless usually include a high proportion of pedestrians and cyclists (DTLR, 2001) and also involve a higher proportion of children than on other roads. Efforts should therefore be made to promote use of more suitable routes for through traffic and to manage the speed of traffic requiring access to residential streets using traffic calming and associated techniques (see Traffic Advisory Leaflet 03/90, DoT, 1990).

2.5.3 Since July 1999, the Road Traffic Regulation Act (Amendment) Order 1999 (SI 1999 No. 1608) has given traffic authorities the powers to introduce both 20 mph speed limits and 20 mph zones without obtaining the consent of the Secretary of State.

2.5.4 Furthermore, Traffic Advisory Leaflet 09/99 (*20 mph Speed Limits and Zones*) (DETR 1999a) gives advice on how and where to implement 20 mph speed limits and 20 mph zones. **They should not be implemented on roads with a strategic function or on main traffic routes**.

2.5.5 Successful 20 mph zones and 20 mph speed limits should be generally self-enforcing. Traffic authorities should take account of the level of police enforcement required before installing either of these measures. Circular Roads 01/2001 advises that **20 mph speed limits are unlikely to be complied with on roads where vehicle speeds are substantially higher than this and, unless such limits are accompanied by the introduction of traffic calming measures, police forces may find it difficult to routinely enforce the 20 mph limit**. Traffic authorities should therefore always consult the local police force when considering possible 20 mph limits or zones, and thereafter as part of the formal consultation process.

2.6 20 mph Zones

2.6.1 20 mph zones are predominantly used in urban areas – both town centres and residential areas – and in the vicinity of schools. It is generally recommended that they be imposed over an area consisting of several roads.

2.6.2 The purpose of this type of area-wide traffic management is to create conditions in which drivers naturally drive at around 20 mph because of the general nature of the location, or as a result of traffic calming measures being put in place.

2.6.3 They are very effective at reducing collisions and injuries. This is confirmed in research that shows that the number of accidents involving injury to children may be reduced by up to two-thirds.

2.6.4 A 20 mph zone is indicated by specially designed 20 mph zone entry and exit signs (TSRGD 2002 diagrams 674 and 675). The statutory provisions (direction 16(1) TSRGD) require that no point within the zone must be further than 50 metres from a traffic calming feature (unless in a cul-de-sac less than 80 metres long). Direction 16 of TSRGD 2002 also gives full details of the traffic calming measures that meet the definition required for a 20 mph zone.

2.6.5 No additional speed limit or traffic calming signs are required within a 20 mph zone, as vehicle speeds will be low enough to render it unnecessary.

2.7 20 mph Speed Limits

2.7.1 20 mph speed limits should be used for individual roads, or for a small number of roads.

2.7.2 Research into 20 mph speed limits carried out by TRL (Mackie, 1998) showed that, where speed limits alone were introduced, reductions of only about 2 mph in 'before' speeds were achieved. 20 mph speed limits are, therefore, only suitable in areas where vehicle speeds are already low (the Department would suggest where mean vehicle speeds are 24 mph or below), or where additional traffic calming measures are planned as part of the strategy.

2.7.3 A 20 mph speed limit is indicated by terminal speed limit signs, and 20 mph repeater signs are required at regular intervals along the road(s) covered by the limit.

2.8 Summary

2.8.1 Circular Roads 01/2006 states that "Alternative speed management options should always be considered before a new speed limit is introduced".

2.8.2 Traffic authorities such as Sunderland City Council may, subject to satisfactory consultation, introduce 20 mph speed limits and 20 mph zones on local roads within their administrative area. When considering setting new local speed limits, Circular Roads 01/2006 recommends local traffic authorities use measurements of mean speed as the basis for determining local speed limits.

2.8.3 20 mph speed limits are made by order and supported by the appropriate traffic signs. They are recommended for use on individual roads or a small number of roads. DfT recommends their use where speeds driven are already consistent with the 20 mph speed limit, that is average speeds not greater than 24 mph.

2.8.4 20 mph zones are areas subject to a 20 mph speed limit that is supported by appropriate orders, zone entry signs and if necessary physical measures within the zone to ensure that speeds driven are generally consistent with the 20 mph speed limit.

2.8.5 Circular Roads 01/2006 recommends the use of 20 mph speed limits and zones in town centres, residential areas and in the vicinity of schools where there is a high presence of vulnerable road users.

3 A Safer Way: Consultation on Making Britain's Roads the Safest in the World

3.1 Introduction

3.1.1 In April 2009 the government published "A Safer Way: Consultation on Making Britain's Roads the Safest in the World", a consultation document containing a range of proposals for reducing road traffic related casualties and collisions throughout the next decade to 2020.

3.1.2 A Safer Way sets out the government's vision.

> "Our long-term vision is to have **the world's safest roads**."

3.1.3 A Safer Way also proposes new casualty reduction targets to be achieved by 2010. Reducing road deaths is a priority, with particular emphasis on improving road safety for young people (0 – 17 years).

3.1.4 The document refers to the disparity between casualty rates for different socio-economic groups. Reference is also made to the relationship between speed and both the number and severity of injuries.

3.1.5 In considering how road safety can be improved A Safer Way purports to have taken account of the need to support the economy, protect the environment and improve public health. The document states that proposals are based on research and analysis; they are intended to make the most of the overlapping interests of safety, environment and health and to present an economically rational package of measures. Given the massive economic and social cost of road accidents, this is a pressing priority for Government.

3.2 New Targets

3.2.1 The proposed targets are set out below.

- to reduce road deaths by at least 33 per cent by 2020 compared to the baseline of the 2004–08 average number of road deaths; and
- to reduce the annual total of serious injuries on our roads by 2020 by at least 33 per cent.

3.2.2 Also children and young people are a particular priority. Britain compares less favourably internationally when child road deaths are considered. A target regarded as challenging by DfT is proposed for children and young people.

- to reduce the annual total of road deaths and serious injuries to children and young people (aged 0–17) by at least 50 per cent against a baseline of the 2004–08 average by 2020.

3.2.3 For health, environmental and other reasons, the government is keen to encourage more walking and cycling. Government wishes to reduce the risk to the individual walker or cyclist and to take into account expected growth in these activities. A Safer way therefore proposes a target based on the rate of casualties.

- to reduce by at least 50 per cent by 2020 the rate of KSI per kilometre travelled by pedestrians and cyclists, compared with the 2004–08 average.

3.3 Speed

3.3.1 A Safer Way states that research shows a strong link between speed and road casualties. Reducing the average speed of traffic on a road by 1 mph leads to an expected reduction of 5 per cent in the number of collisions on that road, while reducing the speed of the fastest drivers has the largest effect on collisions. There is a well-understood relationship between the speed of a crash and the impact – and therefore the likely severity of any injuries.

3.3.2 Reductions in speeding have been observed over the last decade, in particular on 30 mph-limited roads, where the percentage of cars speeding has fallen from 72 per cent in 1996 to 49 per cent in 2007. Nevertheless, in view of the risks posed by excessive speed, these numbers are too high. Of 2,946 road deaths in 2007 there were 727 deaths where speed was recorded as a contributory factor, while a 2007 survey for the THINK! campaign showed that over 70 per cent of drivers admit to speeding.

3.3.3 A Safer Way identified three key issues to be addressed in relation to speeding. The most relevant to this study is:

- speeding on urban roads where high numbers of vulnerable road users are present, and where small changes in speed have a large impact on injury severity;

3.4 Deprivation

3.4.1 A Safer Way states that research shows a link between deprivation and road safety risk. The previous 2005 target of reducing total road casualties in the most deprived English districts faster than for England as a whole was successfully achieved. However, the most deprived areas remain slightly over-represented in the casualty population. In 2007, 12 per cent of casualties were living in the 10 per cent most deprived areas, whilst 8 per cent were living in the 10 per cent least deprived areas, based on the index of multiple deprivation.

3.4.2 In fact, this link between casualties and deprivation is largely due to pedestrian casualties, where the rate falls from 70 casualties per 100,000 population in the most deprived areas to 21 in the least deprived. The rate in the most deprived areas is higher across all age groups, but most stark for children; the rate for pedestrian casualties per 100,000 population in the 0–16 age range is approximately 4 times greater in the 10 per cent most deprived areas than in the 10 per cent least deprived.

3.4.3 More information on the disparity between casualty rates for different socio-economic groups is available in DfT Child Road Safety Strategy, 2007.

> A number of studies provide evidence to show that children in the most deprived neighbourhoods are at greatest risk. For example, the report *Streets ahead*, produced in 2002 by the Institute of Public Policy Research (Grayling *et al.*, 2002), found that children in the ten percent most deprived wards in England were more than three times as likely to be pedestrian casualties as children in the ten percent least deprived wards. The problem is compounded because more people live in deprived wards and children are a larger proportion of the total. More than a quarter of child pedestrian injuries in England in 1999

and 2000 occurred in the ten percent most deprived wards, and almost half occurred in the 20 percent most deprived wards. This is the case for both deaths and serious injuries and for minor injuries.

Graham *et al*. (2005) also report an association between increased deprivation and higher numbers of pedestrian casualties across England. They find the deprivation effect is strong both for all child casualties and for children killed or seriously injured. Estimates for adult casualties also reveal a positive and significant association with increasing deprivation, but the magnitude of the effect is smaller than for children.

The most recent data available continue to show significantly higher child road casualties among disadvantaged groups and in disadvantaged areas. Edwards *et al*. (2006) state that in 2001-2003, compared with children of parents in NS-SEC Class 1, the death rate of children with parents in NS-SEC Class 8 was 20.6 times higher for deaths as pedestrians, 5.5 times higher for deaths as car occupants, and 27.5 times higher for deaths as cyclists. National Statistics Socio-economic Classification (NS-SEC) Class 1 represents higher managerial and professional occupations and Class 8 those who have never worked and the long-term unemployed.

3.5 Reducing Pedestrian Casualties

3.5.1 A Safer Way states that, as in other areas of road safety, there is an established suite of measures to assist in protecting pedestrians. This includes infrastructure such as pedestrian crossings and refuges. Government expects these kinds of interventions to continue to be made by highway authorities.

3.5.2 However, the pattern of pedestrian casualties year on year is not often consistent, meaning that single pieces of infrastructure will not provide adequate protection. Research suggests that pedestrians struck at 30 mph have about a 1 in 5 chance of being killed. At 20 mph the chance of a pedestrian dying is 1 in 40. In order to improve safety on the streets where we live, government has stated an intention to amend its guidance on speed limits, **recommending that highway authorities, over time, introduce 20 mph zones or limits into streets that are primarily residential in nature and which are not part of any major through route**. Similarly, local authorities will be encouraged to consider introducing 20 mph limits or zones in town or city streets, such as around schools, shops, markets, playgrounds and other areas where pedestrian and cyclist movements are high.

3.5.3 Government believes that these zones and limits will offer greater protection not only for pedestrians, but for cyclists and motorcyclists. In particular, they will offer greater protection for children and older people, since both groups are less able to withstand the impacts of collisions.

3.5.4 Local authorities have been incrementally introducing such zones and limits in recent years. A Safer Way states that comprehensive data on the extent of 20 mph zones and limits is not available, but it is known, for example, that London now has around 750 zones. A Safer Way states that such zones and limits are proven in making our streets safer, where they are appropriately engineered. There is an established toolkit of engineering measures that moderate vehicle speeds, and A Safer Way anticipates that these will be used appropriately in the creation of zones.

3.5.5 Government intends that further research is to be carried out on the effect on speeds and casualties of wide-area, un-engineered 20 mph zones. As introduced in Portsmouth and proposed for a number of other cities, these are implemented

through 20 mph signs alone. Previous evidence shows that these have the effect of reducing speeds by 1–2 mph (as opposed to engineered zones, which can reduce speeds to near 20 mph) and therefore appear to be most suited to roads where average speeds are already low.

3.5.6 Not only do these zones make residential streets safer, but they also have potential to reduce pollution and improve public health by encouraging walking and cycling. The limited evidence gathered to date suggests that people walk and cycle more in areas subject to 20 mph zones. It is believed that these road safety measures will have the effect of enhancing both public safety and public *perception* of safety, so encouraging more walking and cycling. They are particularly popular around schools, with both children and adults.

3.6 Summary

3.6.1 A Safer Way is a consultation document. The consultation period is now expired and in due course the government will publish the outcome of the consultation process.

3.6.2 The government's objective is to make Britain's roads the safest in the world. One of the most challenging aspects of the aim is that serious and fatal casualties sustained by children as pedestrian are disproportionately high compared with other European countries and compared with Britain's relatively good casualty rates. Furthermore children in less affluent areas have a significantly higher serious and fatal injury involvement.

3.6.3 In order to improve safety on the streets where we live, government has stated an intention to amend its guidance on speed limits, **recommending that highway authorities, over time, introduce 20 mph zones or limits into streets that are primarily residential in nature and which are not part of any major through route**. Similarly, local authorities will be encouraged to consider introducing 20 mph limits or zones in town or city streets, such as around schools, shops, markets, playgrounds and other areas where pedestrian and cyclist movements are high.

3.6.4 These measures can be effectively targeted to less affluent areas.

4 Manual for Streets (MfS), DfT

4.1 Introduction

4.1.1 MfS provides guidance on the creation of places in the public realm where a number of activities are encouraged to take place and take priority over the movement of vehicles.

4.1.2 MfS considers that for too long the focus has been on the movement function of residential streets. The result has often been places that are dominated by motor vehicles to the extent that they fail to make a positive contribution to the quality of life. MfS demonstrates the benefits that flow from good design and assigns a higher priority to pedestrians and cyclists, setting out an approach to residential streets that recognises their role in creating places that work for all members of the community. MfS refocuses on the place function of residential streets, giving clear guidance on how to achieve well-designed streets and spaces that serve the community in a range of ways.

4.1.3 While the emphasis of MfS is on the design of residential streets it also makes reference to the need to incorporate many aspects of the MfS philosophy into other highways, such as high streets, where it considers the “place” function should take priority.

4.1.3 In effect MfS turns on its head the previously accepted concept of a roads hierarchy based largely on the movement of traffic. MfS promotes an alternative approach that gives pedestrians and other vulnerable road users priority in locations where it considers the “place” function should predominate.

4.2 Definition of Street

4.2.1 MfS defines a street as

> *a highway that has important public realm functions beyond the movement of traffic. Most critically, streets should have a sense of place, which is mainly realised through local distinctiveness and sensitivity in design. They also provide direct access to the buildings and the spaces that line them. Most highways in built-up areas can therefore be considered as streets.*

4.2.2 Traditionally, road hierarchies (e.g. district distributor, local distributor, access road, etc.) have been based on traffic capacity. As set out in Chapter 2, street character types in new residential developments should be determined by the relative importance of both their place and movement functions.

4.2.3 Examples of the more descriptive terminology that should now be used to define street character types are

- high street;
- main street;
- shopping street;
- mixed-use street;
- avenue;

- boulevard;
- mews;
- lane;
- courtyard;

4.2.4 The above list is not exhaustive.

4.2.5 The design philosophy behind MfS is thus considered to be appropriate beyond roads in the “lowest level of the roads hierarchy”.

4.3 Changes in Approach

4.3.1 The main changes in the approach to street design that MfS recommends are as follows:

- applying a user hierarchy to the design process with pedestrians at the top;
- emphasising a collaborative approach to the delivery of streets;
- recognising the importance of the community function of streets as spaces for social interaction;
- promoting an inclusive environment that recognises the needs of people of all ages and abilities;
- reflecting and supporting pedestrian desire lines in networks and detailed designs;
- developing masterplans and preparing design codes that implement them for larger-scale developments, and using design and access statements for all scales of development;
- creating networks of streets that provide permeability and connectivity to main destinations and a choice of routes;
- moving away from hierarchies of standard road types based on traffic flows and/or the number of buildings served;
- developing street character types on a location-specific basis with reference to both the place and movement functions for each street;
- encouraging innovation with a flexible approach to street layouts and the use of locally distinctive, durable and maintainable materials and street furniture;
- using quality audit systems that demonstrate how designs will meet key objectives for the local environment;
- **designing to keep vehicle speeds at or below 20 mph on residential streets** unless there are overriding reasons for accepting higher speeds; and
- using the minimum of highway design features necessary to make the streets work properly.

4.3.2 Thus the need to control speeds in residential areas, and by implication other areas, is regarded as an important feature of creating a highway with a sense of place.

4.4 Achieving Appropriate Traffic Speeds

4.4.1 For residential streets, a maximum design speed of 20 mph should normally be an objective. MfS considers that conflict among various user groups can be minimised or avoided by reducing the speed and flow of motor vehicles. However there is a preference for speeds to be controlled through design rather than horizontal or vertical traffic calming.

4.4.2 MfS gives advice on design schemes to keep speeds low, there is very little reference to the implementation of either 20 mph zones or speed limits.

4.5 Summary

4.5.1 MfS changes the priority of highway design at locations where the “place” function is considered important. Emphasis is placed on the creation of places where people feel safe to meet and go about their business and reduces the priority of traffic movement through such streets.

4.5.2 MfS recommends that design speeds in streets should be no more than 20 mph.

4.5.3 Nevertheless there is little reference in MfS to traditional traffic calming, 20 mph zones or speed limits. MfS envisages that the lower design speeds should preferably be achieved through design rather than “unsympathetic traffic calming”.

4.5.4 Importantly MfS extends the category of places where this design speed is appropriate beyond residential streets.

5 A Review of 20 mph Zone and Limit Implementation, DfT

5.1 Introduction

5.1.1 This study has been commissioned by the Department for Transport to undertake a review of the implementation of 20 mph zones and limits in England. The review considered where and when zones and limits are being implemented, the rationale for their use and the characteristics of supporting traffic calming measures.

5.1.2 Unfortunately the full report will not be published by DfT until 2011. Nevertheless the main findings have been published in a Road Safety Research report and are discussed below.

5.2 Current Review Methodology

5.2.1 This review considered the following key research questions:

- Where (location and area type) are the 20 mph zones and limits located?
- When were schemes implemented?
- What are the characteristics of the zones introduced?
- What are the local policies, strategies and plans for developing and delivering 20 mph zones and limits?
- What differences in strategic approach can be identified among authority areas/types?
- Why are 20 mph schemes being implemented?
- What are the main processes and decision making points in scheme implementation?
- What are the main barriers to implementation and how can existing processes be improved?
- How could the relationships between road safety stakeholders, the DfT and Local Highway Authorities be improved to advance the processes of delivering 20 mph zones and limits?

5.3 Main Findings

5.3.1 The main findings of the review were:

- There are an estimated 2,150 20 mph zones in operation in England.
- Case study evidence indicates that 96% of 20 mph zones take the form of vertical traffic calming/ deflection measures, such as road humps. 1% of zones utilise horizontal measures, such as chicanes, and 3% contain a mix of vertical and horizontal measures.
- 10% of 20 mph measures in case study authorities are speed limit controlled areas, using signing only.
- The average case study LHA road network length incorporated within zones and limits is 2.7 km, with a range from less than 1 km to 25 km.

- In case study areas the percentage of the total LHA road network covered with 20 mph zones and limits varies from less than 1% to 44%.
- In forming the decision to introduce 20 mph zones and limits implementation in the vicinity of schools provided by far the strongest rationale. This rationale was not always supported by historic evidence from recorded casualties in the 20 mph zones and limits areas.
- The location of zones and limits did not appear to be linked to levels of social deprivation or the proximity to hospitals.

5.3.2 To assist the Department (DfT) in promoting the cost-effective implementation of 20 mph zones and limits, this review considered the following key research questions:

- Where (location and area type) are the 20 mph zones and limits located?
- When were schemes implemented?
- What are the characteristics of the zones introduced?
- What are the local policies, strategies and plans for developing and delivering 20 mph zones and limits?
- What differences in strategic approach can be identified among authority areas/types?
- Why are 20 mph schemes being implemented?
- What are the main processes and decision making points in scheme implementation?
- What are the main barriers to implementation and how can existing processes be improved?
- How could the relationships between road safety stakeholders, the DfT and Local Highway Authorities be improved to advance the processes of delivering 20 mph zones and limits?

5.3.3 The research identified the number of 20 mph zones implemented in England, using a combination of DfT databases and primary data collation with case study authorities. There were an estimated 2,148 zones in England by 2008, consisting of 399 in London and 1,749 in non-London LHAs.

5.3.4 The study has assessed the implementation of 20 mph zones in areas of social deprivation to further explore the conclusions of previous research in London. The 14 case study LHAs surveyed as part of this research were analysed using Indices of Multiple Deprivation data and identified that:

- 33% of LHAs had implemented the majority of 20 mph zones in the *most* deprived areas;
- 33% of LHAs had implemented the majority of 20 mph zones in the *least* deprived areas; and
- 33% of LHAs had implemented 20 mph zones in a relatively even mix between areas of least and most deprivation.

5.3.5 In an analysis of 20 mph zone and limit locations within the case study LHAs identified a correlation with the presence of schools, with over half the schemes being located next to, or adjacent to, an educational institution. However, no correlation was identified in relation to hospitals, which also act as significant trip generators in urban areas.

5.3.6 Case study consultations revealed two main approaches to decisions on 20 mph zone and limit implementation. Some authorities took highly 'active' approaches based predominantly on funding availability and set targets for the number of zones to be implemented each year. In these authorities the use of casualty evidence to justify scheme was often a secondary consideration. Other authorities relied more heavily on evidence of high casualty levels to justify investment in 20 mph zones or limits.

5.4 Previous Research

5.4.1 In setting the background to the study the review makes reference to previous research. The first 20 mph zones were opened in Norwich, Kingston-upon-Thames and Sheffield in January 1991 to address the problem of child pedestrian casualties in and around residential areas. In a study of the impacts of 250 such zones, carried out by the Transport Research Laboratory (TRL) in 1996, it was found that:

- Average speeds had fallen by nine miles per hour;
- The annual total of accidents had fallen by 60%;
- The number of accidents involving children had fallen by 67%; and
- The number of incidents involving cyclists had fallen by 29%.

5.4.2 A subsequent study carried out by TRL in 1998 focused on areas where a 20 mph speed limit had been introduced without extensive traffic calming measures. This review indicated that:

- The use of 20 mph signs alone, without associated traffic calming methods, led to speed reductions, on average, of about one mile per hour; and
- 20 mph speed restrictions where reliance is placed primarily on the signing of the limit are less effective in reducing traffic speeds than when zone treatment (traffic calming) is used.

5.5 Summary

5.5.1 The government has commissioned a review of the outcomes of the implementation of 20 mph zones and speed limits. Unfortunately the full findings of the review will not be published until 2011. Relatively little information from this research is currently available concerning the specific effects on speeds driven and casualty rates in either 20 mph zones or limits.

5.5.2 It is anticipated that the outcome of the review will help local traffic authorities' decisions on the future implementation of 20 mph zones and limits.

5.5.3 Other reviews of other towns and cities in England (other than Portsmouth, which is dealt with below) that have introduced 20 mph zones and speed limits on a town / city wide basis have also been undertaken. The towns and cities have introduced these measures for a number of stated reasons, the following reasons for their introduction being commonly cited by the authorities.

- to increase safety levels and help reduce accidents.
- to improve the environment and quality of life for pedestrians, cyclists and residents,
- to encourage more people to walk and cycle to reduce congestion and pollution, and to improve health.

5.5.4 Unfortunately there is currently relatively little available data to assess whether these objectives have been realised.

6 An Interim Review of the Implementation of 20 mph Speed Limits in Portsmouth

6.1 Introduction

6.1.1 Portsmouth City Council (PCC) is the first local authority in England to implement an extensive area-wide 20 mph speed limit scheme covering the majority of its residential roads and using speed limit signing alone i.e. terminal and repeater signs. PCC has introduced 20 mph speed limits on 410km of its 438km road network – i.e. 94% of the length of its roads.

6.1.2 The scheme was intended to be self-enforcing so as to avoid the need for extra police enforcement and was introduced:

- partly to support the low driving speeds adopted previously by many motorists; and
- partly to encourage less aggressive driving behaviour from those who drove at inappropriate speeds.

6.1.3 The cost of implementing the scheme was £0.57million which came from the LTP capital expenditure programme.

6.1.4 An independent interim evaluation of the effects of implementation of these area wide speed limits has been carried out.

6.2 Background

6.2.1 On most of the roads where the speed limit signs and road markings were installed, the average speeds before installation were less than or equal to 24 mph. The relatively low speeds on these roads before the scheme implementation were mainly attributable to narrow carriageways and on-street parking which reduce the effective width. 20 mph signs were also provided on roads within the sectors with median speed greater than 24 mph in order to avoid inconsistency in the signed speed limit within the sector.

6.2.2 For ease of installation the city was divided into six sectors: Central East, Central West, North East, North West, South East and South West.

6.2.3 Before and after speed data were available for some sectors of the city. Accident data were available for the scheme areas and traffic volume data were available for cordon roads and roads within the sectors.

6.3 Summary of Outcomes

6.3.1 The average speed after the 20 mph speed limits were imposed was 0.9 miles per hour lower than the average speed before the speed limits were imposed. The report states that this change is not statistically significant.

6.3.2 At sites where the average “Before” speed was greater than 24 mph the average speed reduced by 7 mph. The report states that this change is statistically significant.

6.3.3 Despite a reduction in the number of sites with average speeds above 24 mph (21 sites before scheme implementation), 14 sites were found to still have average speeds between 24 mph and 29 mph after the schemes were implemented.

6.3.4 Due to the limited amount of data available at this stage, it was not possible to determine if the scheme has had an effect on traffic migration or vehicle composition.

6.3.5 The analysis showed the total accident reduction was 13% and the number of casualties fell by 15%. KSI casualty numbers stayed the same whilst KSI accidents increased by 2%. The report states that none of these results were statistically significant when compared against national trends.

6.3.6 When the results of the 20 mph limit (without traffic calming) are compared to the effects of 20 mph zones (with traffic calming), **it is evident that 20 mph zones are more effective in terms of casualty and speed reduction**. This is likely to be attributable to the greater reductions in average speed (typically 9 mph) achieved by 20 mph zones. It is however noteworthy that on roads in Portsmouth with high initial speeds (average speeds greater than 24 mph) an average 7 mph speed reduction has been achieved by the 20 mph limits.

6.3.7 Research carried out by TRL for Transport for London and observations during an experiment in Hull (in 1998) showed that the implementation of 20 mph speed signs alone only resulted in a 1 mph reduction in speed. This is comparable to the reduction in speeds observed in Portsmouth.

6.4 Summary

6.4.1 The average speed reduction achieved by speed limit signs alone is less than that achieved by the implementation of 20 mph zones. This is partly because speed limits tend to be introduced where speeds are already relatively low.

6.4.2 Within an area-wide application of 20 mph sign only limits, those roads with average speeds higher than 24 mph generally benefit from significant speed reductions, but not to the extent that the 20mph speed limit is self enforcing.

6.4.3 Based on the available data for one year after scheme implementation, casualty reduction benefits greater than the national average were not demonstrated.

6.4.4 The conclusions are subject to further data analysis in future years.

7 Sunderland City Council's Local Road Safety Strategy

7.1 Introduction

7.1.1 Sunderland City Council adopted a Local Road Safety Strategy (LRSS) in 2004, with a caveat that further work was required on the resource implications of some of the proposals.

7.1.2 At the time of writing the LRSS the road accident casualty record for Sunderland was better than average compared to similar local authorities, but not within top 25%. The stated purpose of the LRSS was to put forward proposals that would enable Sunderland to achieve top quartile in relation to the relevant Best Value Performance Indicators.

7.1.3 The recommendations of the LRSS have been considered in the light of recent government guidelines and best practice reviews as discussed above.

7.2 Collisions and Casualties

7.2.1 The development of Sunderland's LRSS involved a comprehensive and detailed accident analysis in order to determine the most vulnerable user groups and locations in Sunderland. LRSS summarised the road users and locations seen to be most at risk as those below:

- The areas to the east of the A19
- The radial routes
- Three areas north of the River Wear; Roker, Southwick and Hylton Castle
- The city centre.
- The A19 river crossing section.
- Washington major routes, particularly at junctions.
- The A182 from Easington Lane to Washington.
- Young people in the 16 – 19 years age group are of particular concern as vehicle occupants and particularly as drivers.
- Children in the 0-4 years old age group appear to be over represented as child car occupant casualties.

7.3 Interventions

7.3.1 LRSS proposed a range of possible interventions to achieve the LRSS objective that can be fit within five broad programme areas as below.

- Education, Training and Publicity
- Enforcement
- Infrastructure
- Management and Monitoring, and
- Partnerships

7.4 Road Hierarchy

7.4.1 SLRSS sets out the basis of establishing the nature and priority of road safety schemes in Sunderland through the establishment of a suitable road hierarchy. SLRSS states that future safety measures will be designed and implemented on the basis of this hierarchy and standard Urban Safety Management principles.

7.4.2 The LRSS considered the current road hierarchy to be rather complex mainly due to "the misuse of roads in Sunderland". It was considered that some local distributor routes tended to be used as major through routes and some access routes used as distributor routes (i.e. rat runs). It was considered that there was a need for increased clarity as to how particular roads should function on the road network in and around Sunderland.

7.4.3 A roads hierarchy was proposed in Plan B of LRSS's Appendix A.

7.4.4 The following types of measures would flow from the development of the roads hierarchy.

- ***Traffic calming***
- ***20mph zones***
- ***Altered speed limits***
- Junction treatment
- Mass Action
- Route Action
- Road width reduction
- Increasing pavement width
- Crossing facilities
- Cycle Lanes
- Signing

7.5 Speed Management

7.5.1 SLRSS considers that speed is a major contributory factor in traffic accidents and, irrespective of the type of road, the control of speed is of paramount importance.

7.5.2 SLRSS defines Speed Management as an overall and focussed approach by Highway and Police Authorities to achieve a reduction in casualties arising from excessive or inappropriate speed. Citizens appear to have high levels of concern about inappropriate speeds. The development of the Speed Management Strategy will help the Council and Police deal with those concerns in an effective, fair and realistic way.

7.5.3 SLRSS anticipated that typical measures by which this will be done will include:

- Introducing a new hierarchy of speed limits;
- Improving enforcement;
- Using engineering measures to modify the road character and environment; and
- Changing attitudes to the implications of speeding.

7.5.4 SLRSS envisaged the preparation of a speed management strategy for Sunderland. The development of the speed management strategy would be closely related to the development of a roads hierarchy for Sunderland.

7.5.5 LRSS considered that the newly (at that time) introduced Northumbria Speed Camera Partnership would have a major and beneficial impact on overall speed management for Sunderland as well as having specific road safety benefits. The Speed Camera Partnership should be used to derive maximum enforcement benefits.

7.5.6 While a roads hierarchy was developed, as discussed in 6.4.3 above, SLRSS talks about the need to develop a speed management strategy, but does not develop such a strategy.

> "*In line with establishing the revised route hierarchy it will be important to identify those limits that could be subject to change following the re-structuring of the current route hierarchy."*

7.6 20 mph Zones and Limits

7.6.1 In relation to 20m mph zones and limits, SLRSS again lays great significance in the development of the roads hierarchy. This roads hierarchy forms a fundamental aspect of the development of the LRSS and LRSS anticipated that future safety measures would be designed and implemented on the basis of this hierarchy and standard Urban Safety Management principles.

7.6.2 Similar to the recommendations of SLRSS in relation to the need for a Speed Management Strategy, SLRSS recommended that a policy for the implementation of 20 mph zones needed to be developed, but did not in itself, develop those policies.

7.6.3 The only reference found in LRSS to 20 mph speed limits is as follows:

> *"The combined application of the revised route hierarchy and the accident plot will highlight those areas most in need of addressing. The types of measures that may be used in these areas will be similar to those identified for the lowest level of the road hierarchy, i.e. access only roads. Typical measures include 20mph speed limits,……"*

There is no associated discussion about the 20mph limits and it is not clear if LRSS is differentiating between 20 mph zones and limits.

7.7 Air and Noise

7.7.1 One of the LTP shared priorities is air quality and specific reference is made in SLRSS to the benefits in terms of air quality, from speed reduction.

> *"Targets should be incorporated into the aims of the LRSS that would enhance the noise and air quality in the ways discussed above. An example of a specific target could be to reduce the average speed throughout Sunderland by 2mph, which would, in turn, result in a particular improvement in noise and air quality."*

7.8 Action Plans

7.8.1 Table 6.1 is the action plan that relates to the introduction of engineering measures. This table makes 2 references to the need to introduce speed reducing measures. The recommended action for existing residential areas is,'

Introduce a programme of Traffic Calming schemes within Sunderland.

7.8.2 The recommended action for proposed residential areas is,

Introduce criteria within development planning to increase the number of 20mph zones introduced within new housing developments.

7.8.3 Although the need to develop a speed management strategy is referred to throughout the Stage 2 LRSS report, no mention is made of this in the Action Plans.

7.9 Summary

7.9.1 SLRSS relies heavily on the development of a roads hierarchy for the delivery of the objective, to make Sunderland City a leading edge authority in terms of casualty reduction.

7.9.2 The need to develop a Speed Management Strategy is referred to and is considered to be closely associated with the development of the roads hierarch. SLRSS does not, however, develop a Speed Management Strategy.

7.9.3 Furthermore SLRSS makes little reference to 20 mph zones or speed limits. 20 mph zones are considered to be suitable for new build housing. Traffic calming is considered to be suitable for existing housing. In both cases only those roads that fall into the "lowest level of the roads hierarchy" are considered suitable.

7.9.4 The reference to 20 mph limits is, perhaps, ambiguous. It may simply mean 20 mph zones.

8 Tyne and Wear Local Transport Plan, 2006 – 2011.

8.1 Introduction

8.1.1 The Local Transport Plan (LTP) is the statutory transport strategy document for the Tyne & Wear conurbation, setting out joint transport policies and programmes for the five local authorities and the Integrated Transport Authority (formerly Passenger Transport Authority) and Nexus. The current LTP covers the 5-year period 2006-11 and was prepared in response to Government guidance on local transport policy-making.

8.1.2 The overarching policy objectives for Tyne & Wear were developed with regard to a series of "Shared Priorities" agreed between Government and local authorities. In Tyne & Wear, the policy objectives include;

- Reducing inequality, improving social inclusions and community cohesion
- Better environmental quality, sustainability and quality-of-life
- Improving health standard and reducing premature deaths

8.1.3 Throughout the Plan, there is considerable emphasis on relating transport policies and investment to wider policy objectives across the Councils; for instance linking transport to wider initiatives for improving housing, health and well-being. Against these parameters, the LTP acknowledges that Tyne & Wear performs relatively poorly compared to other parts of the country. The Plan emphasises relationships to Community Strategies and wider city-visions, ensuring a ready fit with the ambition to develop Sunderland as the Most Liveable City. It is clear that the LTP provides a policy context for transport planning and traffic management practice fitting with much wider regeneration and development of neighbourhoods across Sunderland.

8.1.4 Specific strategic objectives set out in the Plan that are relevant to the delivery of 20 mph zones/speed limits are, as follows;

- Ensuring transport systems are safe whilst reducing the incidence and severity of transport-related accidents. The **road safety** strategy specifically refers to a concern for pedestrians in road safety planning.
- Maintaining and improving personal **accessibility** and linkages within Tyne & Wear
- Reducing the adverse **impacts of transport** on our environment

8.2 Sunderland's LTP objectives and programmes

8.2.1 Sunderland's strategic policy goal is "*to achieve a step change in the quality, pace and scale of physical regeneration, whilst developing a clean attractive and stimulating City by securing continuous environmental improvement*". Transport is required to contribute to this by better integration of policy and investment plans with wider programmes for;

- Employment, enterprise and business
- Health

- Regeneration & housing renewal
- Community safety
- Education, training & skills
- Environmental management

8.2.2 The LTP strategic framework enables and encourages this broader perspective. As well as more integrated planning and delivery, stronger integration with other policy areas has potential to increase the value derived from investment across the City.

8.2.3 Sunderland's LTP Annex states that "*there is a need to develop a programme of Local Safety Schemes targeted at accident hotspots, particularly child pedestrian accidents for which Sunderland has a significantly poorer record than its Tyne & Wear neighbours and Great Britain as a whole. This will involve giving priority to the implementation of road safety programmes in deprived areas of the City.*" Accordingly, consideration of child casualties is expected to be a valuable parameter in seeking to prioritise future investment on 20mph zones.

8.2.4 LTP states that the Council will introduce area-wide 20mph zones in residential areas. Again, this indicates that a residential, neighbourhood focus may be a relevant consideration in commencing a programme of investment across the City.

8.2.5 LTP makes reference to the roll out of the City Council's *People First Initiative* aiming to assure access to civic and public services in every local centre. This approach is entirely consistent with the strategic LTP objectives for enhanced and sustainable accessibility. Measures that are identified to help deliver this initiative include;

- Traffic calming to reduce average speeds
- Introduction of 20mph speed limits on residential roads

8.2.6 Consideration of the LTP shows that there is a sound strategic and local policy basis for developing a programme of 20mph zones/limits in Sunderland within Tyne & Wear Local Transport Plan. The following paragraphs outline some of the more specific impacts and opportunities for funding.

8.3 Road Safety

8.3.1 The LTP describes the very strong local performance on road safety improvements (1994-2005), resulting in 49% reduction in fatal/serious road accident casualties (KSI's) and a 66% reduction in child KSI's across Tyne & Wear.

8.3.2 But over same period, a 9% increase in slight casualties 4008 (1994) rising to 4376 (2005) was recorded for the area. This is attributed to growth in traffic levels over the period. Increasing numbers of slight accidents give reason to consider a wider range of accident mitigation / speed management measures than in earlier years, with potential benefits arising from development of 20mph zones/speed limits.

8.3.3 The LTP Road Safety Strategy identifies 20mph zones as a mechanism for taking action on child road accident casualties – linked to traffic calming, safer routes to schools and road safety education initiatives. In this context 20mph zones are considered to be one of the available engineering measures to be "*targeted at sites with a known speed-related problem to assist vulnerable road user groups*" in key corridors, centres and neighbourhoods.

8.3.4 The Plan states:

> "*20mph zones and Homes Zones will reduce the severity and number of collisions, where they are implemented. They also have added value benefits in relieving congestion, and as a consequence, improving air quality and the quality of life for residents living in those areas*"

8.3.5 The Plan sets out a performance management framework for transport investment in Tyne & Wear. Of the mandatory performance indicators included in LTP2, 20mph zones are likely to make a long-term contribution to targets for;

BVPI 99x –total killed and seriously injured casualties

BVPI 99y –child killed and seriously injured casualties

BVPI 99z – total slight casualties

8.4 Accessibility

8.4.1 Strategies to improve accessibility to employment, schools and services place major emphasis on making greater use of public transport. Delivery of 20mph zones can potentially integrate well with approaches to improve accessibility by public transport, especially buses, throughout Sunderland. Potential 20mph zones will need to be carefully designed to ensure efficient bus operations are preserved, even enhanced, but management of lower traffic speeds, facilities for pedestrians, and integration with the wider bus network can provide a complementary mix.

8.4.2 The LTP demonstrates a major commitment to Safer Routes to Schools / School Travel Planning initiatives. 20mph zones in the vicinity of schools and more widely throughout residential areas can act as complimentary measures to these initiatives, enhancing people's confidence and willingness to enable more children to walk or cycle to schools.

8.5 Environmental Impacts

8.5.1 The LTP acknowledges a wide range of adverse environmental impacts arising from traffic, including localised Air Quality, Noise, Severance, Congestion and global issues such as climate change.

8.5.2 The Plan sets out a Congestion Reduction Strategy which identifies the role of 20mph zones in encouraging sustainable travel choices which will reduce impacts of traffic growth and congestion. Under the Network Management Duty established by the Traffic Management Act 2004, "*the plan partners are encouraging growth in walking, cycling and public transport which will need to be carefully integrated with the highway networks across the area*." Identified early actions for congestion management include encourage walking & cycling through infrastructure. It is appropriate to consider this approach to consider the delivery of 20mph zones where they can contribute to these policy outcomes.

8.6 Investment

8.6.1 Tyne & Wear's LTP is the major source of local transport capital investment funding for the local authorities. For 2006/07 to 2010/11, LTP results in between £28.5million to £33.0million for transport investment and highways maintenance.

8.6.2 The Integrated Transport block award is targeted at all activities except roads maintenance, but including road safety, traffic management and accessibility improvements. This is the most appropriate specific funding source for 20mph treatments, where these are to be LTP funded.

8.6.3 In 2009/10, the programmed Integrated Transport funds awarded to Sunderland are

Programme	2006/07	2007/08	2008/09	2009/10	2010/11
Road Safety	150	80	330	410	500
Travel demand management	440	619	360	406	0
Sustainability	340	200	293	348	582
Total	**930**	**899**	**983**	**1164**	**1082**

8.7 Summary

8.7.1 It is not practical to identify the detailed nature of annual investment programmes from the LTP document itself. This would require more detailed analysis of annual programmes prepared by Sunderland City Council.

8.7.2 Nevertheless, it is evident that 20mph zones are identified as eligible for allocation of funds under the Travel Demand Management theme in LTP. They also clearly contribute to the Road Safety Strategy for accident prevention and mitigation. They may well also contribute to wider sustainability programmes.

8.7.3 Identification of a capital investment budget that was substantially, or wholly, funded from the identified blocks within LTP would be consistent with the stated strategic objectives for LTP. Such investment in the infrastructure fabric on Sunderland's roads network would also be generally considered appropriate deployment of capital resources. There are many precedents for this use of LTP capital funding within Tyne & Wear and nationally. However, to be certain of any potential audit issues, specific advice should be sought from the Chief Financial Officer at the City Council prior to the commencement of a local 20mph zones programme.

9 Pilot Projects in Sunderland

9.1 Introduction

This review of current practice regarding 20 mph speed limits and zones has considered the policy background and examples of implementation both locally, within Tyne & Wear, and nationally. Our findings indicate that there is a sound policy-based rationale for consideration of 20mph as a means of furthering delivery of Sunderland's road safety agenda as well as a series of broader policy objectives that complement the Council's wider aims of being a liveable, safe and accessible City. There is much recent practice to support the view that 20mph can enhance the quality of residential neighbourhoods by delivering a series of outcomes including;

- Improved road safety especially vulnerable road users including pedestrians, cyclists and children
- Reducing the volume and speed of traffic passing through residential areas with associated benefits for residents including greater accessibility to local facilities, improved access to schools, reduced traffic noise and pollution
- Reducing the incidence of "rat-running" through residential areas through stronger definition of the local roads hierarchy with associated benefits for liveability, quality-of-life and reduced fear of crime and accidents
- Opportunities to enhance the streetscape of residential streets with appropriate use of traffic-calming, landscaping, and pedestrian facilities thereby improving the amenity of neighbourhoods
- Opportunities to integrate 20mph treatments with other transport infrastructure for pedestrians, cyclists and public transport which can influence local travel-choices thereby contributing to wider agendas for sustainable travel by influencing the use of private cars – especially for short, local trips.

Best practice in the use of 20mph treatments develops local schemes which meet a wide range of these policy objectives, selecting specific engineering measures that are appropriate to the local environment. Successful schemes are generally developed with active participation of local communities during the design process so that the purpose and application of measure is understood and supported by residents, business and other interested-parties. In this way, 20mph can be a high value approach to delivering some of the wider policy objectives for communities.

9.2 Criteria-based Assessment

Jacobs was instructed to identify a set of areas within the City of Sunderland where 20mph treatments would be an appropriate means of delivering the Council's strategic objectives.

Taking into account the varied potential impacts and benefits arising from 20mph, it is important to consider a range of factors when seeking to identify potential locations that might benefit from 20mph. We have developed a relevant Multi Criteria Assessment framework for Sunderland, drawing upon factors that are set

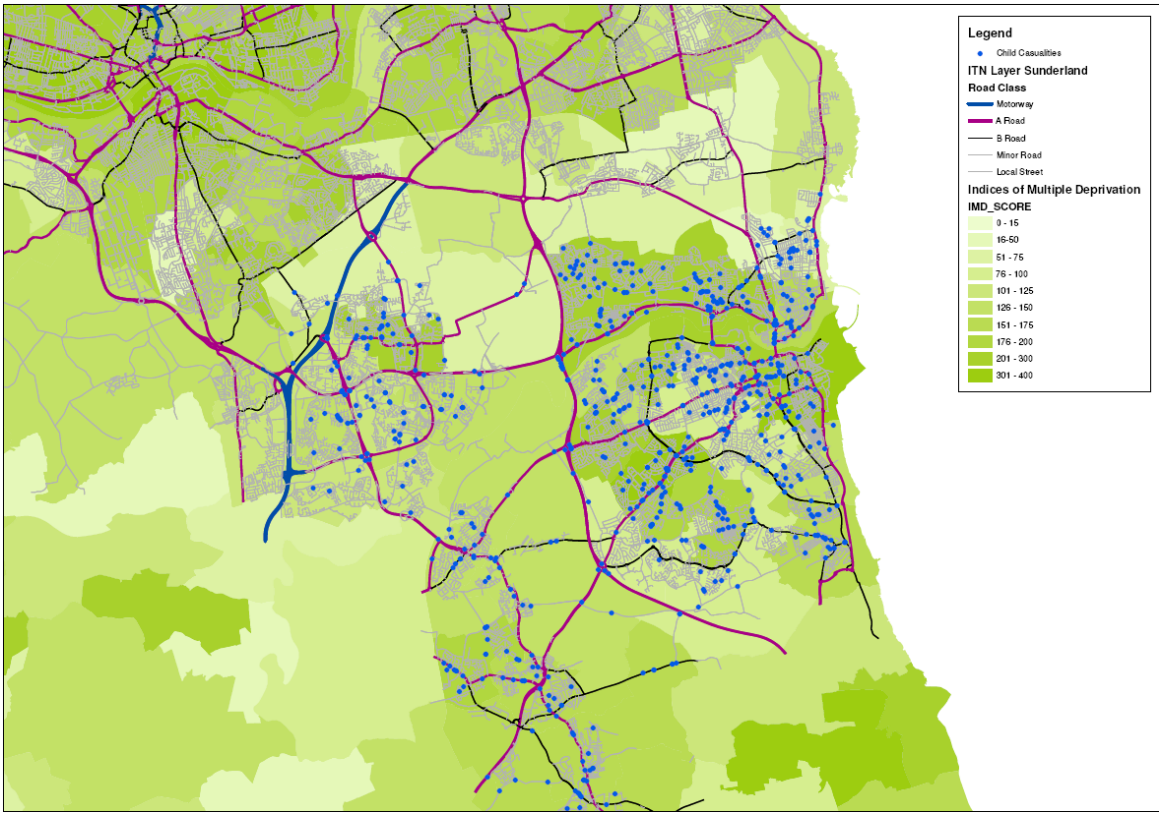
out in the current policy framework and datasets that are readily available, relevant and comprehensive for the City. Our Assessment Framework takes account of the following parameters;

- **Residential / household density**
- **Levels of deprivation (Indices of Multiple Deprivation)**
- **Proximity to schools**
- **Road accident casualties over previous 5 years**
- **Child road accident casualties**
- **Road classification**
- **Principal bus routes**

A summary of the application of these parameters within the Multi Criteria Assessment framework is as below;

Parameter	Rationale	Data Source
Residential / household density	High household density to identify predominantly residential areas	Census data, Office of National Statistics
Levels of deprivation	High deprivation indices correlate with greater risk of child casualties	Indices of Multiple Deprivation published by Dept of Communities & Local Government
Proximity to schools	Proximity of local schools correlates with prevalence of child casualties. Also encourages greater levels of walk-to-schools	City-wide schools database from Department of Learning, Children & Families
Road accident casualties	High incidence of casualties over 5-years gives opportunity for casualty reduction as result of 20mph	Tyne & Wear Traffic & Accident Data Unit at Gateshead Council
Child road accident casualties	High incidence of child casualties over 5-years gives opportunity for casualty reduction as result of 20mph	Tyne & Wear Traffic & Accident Data Unit at Gateshead Council
Road classification	20mph is more appropriate for local roads / residential streets, hence avoiding classified roads	Roads classification in OS National Land-use Database
Bus routes	20mph treatments (especially involving vertical traffic-calming) are more deliverable if they avoid core bus routes	Tyne & Wear Joint Transport Statistics Website

Jacobs applied these different data sources to identify a set of prospective 20mph zones across Sunderland, using GIS mapping techniques to overlay the distribution of each parameter. An illustration of one of the overlays, showing child casualties and the multiple deprivation index is shown below,



These overlays were used to define a series of discrete, self-contained areas, each exhibiting the following characteristics;

- High residential household density
- Relatively high levels of deprivation
- Close proximity to schools
- Relatively high incidence of road accident casualties in past 5 years
- Relatively high incidence of child road accident casualties in past 5 years
- Avoiding classified roads
- Avoiding high frequency bus routes

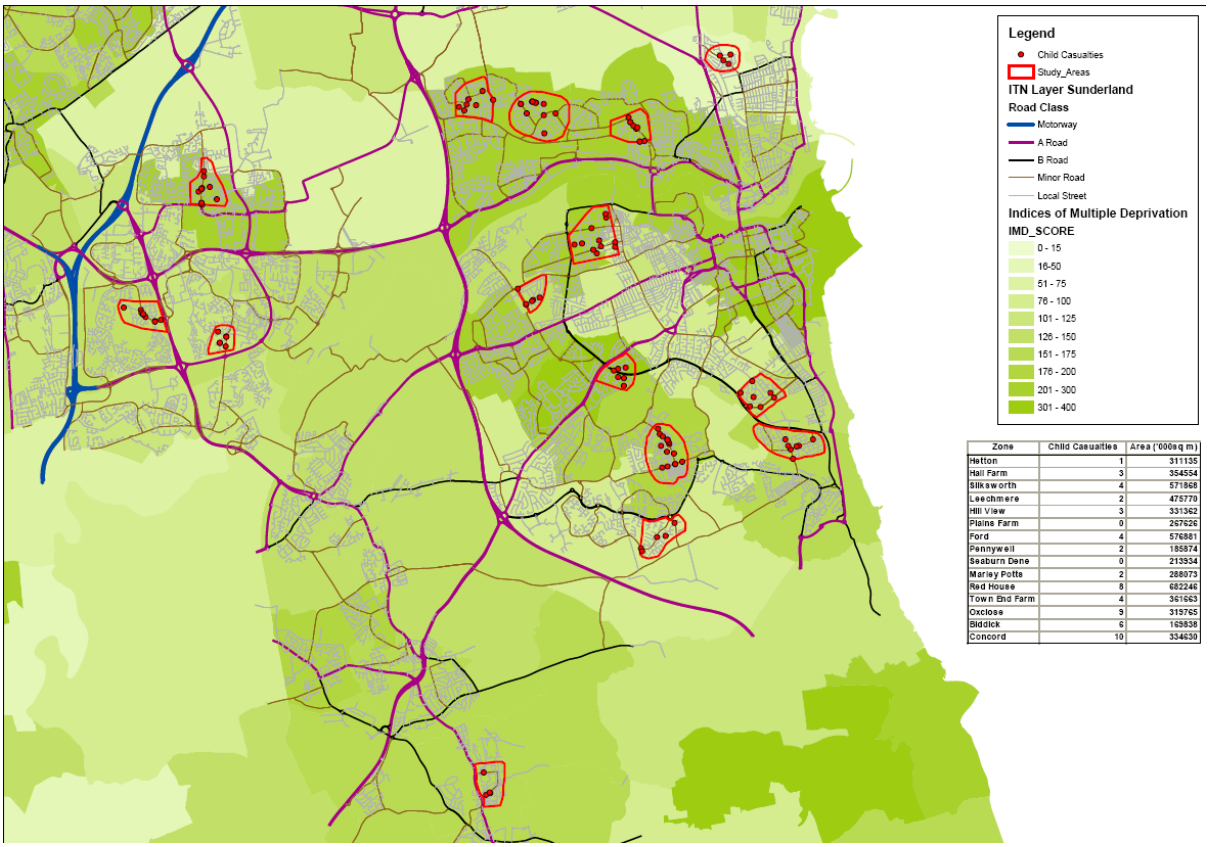
The outcomes of this approach are reported in the following section.

9.3 Prospective Pilot Projects

Jacobs has applied the Multiple Criteria Assessment framework to provide a preliminary City-wide perspective on the applicability of 20mph treatments within the City's neighbourhoods. The purpose of this approach is to provide a high-level, strategic assessment to identify those localities within Sunderland where 20mph treatments have good prospects of helping to achieve local policy objectives.

Through this approach, we have identified 15 local areas in Sunderland where the criteria defined in Section 9.2 coincide sufficiently to suggest 20mph treatments should be given further consideration. These localities are summarised below and outlined graphically in the following figure.

Name	Area ('000sq m)	5-year casualties - fatal	5-year casualties - serious	5-year casualties - slight	5-year child casualties	Schools within zone
Hetton	311	0	4	12	1	0
Hall Farm	355	0	5	3	3	0
Silksworth	572	0	16	40	4	3
Leechmere	476	0	7	11	2	0
Hill View	331	0	7	15	3	0
Plains Farm	267	0	6	15	0	0
Ford	577	0	11	15	4	0
Pennywell	186	0	6	11	2	0
Seaburn Dene	214	0	4	6	0	2
Marley Potts	288	0	9	20	2	0
Red House	682	0	13	22	8	2
Town End Farm	362	0	7	16	4	1
Oxclose	320	0	6	11	6	2
Biddick	170	0	0	9	6	1
Concord	335	1	2	21	10	1



Zone	Child Casualties	Area ('000sq m)
Hetton	1	311135
Hall Farm	3	354554
Silksworth	4	571868
Leechmere	2	475770
Hill View	3	331362
Plains Farm	0	267626
Ford	4	576881
Pennywell	2	185874
Seaburn Dene	0	213554
Marley Potts	2	288073
Red House	8	682246
Town End Farm	4	361663
Oxclose	9	319765
Biddick	6	169858
Concord	10	334630

A full set of mapping overlays is included in the Appendices to this report, illustrating the outcomes of the Multi Criteria Assessment as a basis for defining the prospective pilot zones.

9.4 Next Steps

This part of the 20mph review has completed a series of high level, City-wide analyses to inform further thinking on the delivery of 20mph treatments on residential street in Sunderland. We have completed this analysis with reference to a series of readily available data sets that are comprehensive across the whole City. We are content that these data sets are relevant, in the context of our review of local transport policies, to inform thinking on the deployment of 20mph treatments. Accordingly, a set of prospective 20mph zones has been identified (see Section 9.3, above).

That said, we recommend that the following tasks be included in any subsequent development phase for local schemes within Sunderland. Inevitably, our analysis has been constrained by availability of comprehensive local data and time. Consequently, a small number of preferred data sets were unavailable to us to inform our identification of potential 20mph zones. We do not believe that this materially affects the outcome at this stage; however it does cause further work to be necessary to ensure that there is an accurate attribution of causes-and-effect before 20mph zones are introduced on roads in Sunderland.

In particular, we would recommend the following further work be completed as part of scheme development;

9.4.1 Verification of local data

We have utilised city-wide data that is available from a series of local and national databases. Each of these databases is verified accurate at the time of publication but inevitably each becomes progressively less accurate through time. Jacobs have completed a series of checks on the data sets to ensure that gross errors are avoided. However, we recommend that the data is verified by local officers in Sunderland City Council, who are likely to have additional detailed local knowledge of any recent changes within neighbourhoods that might impact on the outcomes of this study. In particular, we would recommend that officers with local knowledge consider the current nature of the 15 proposed pilot areas, with a view to identifying any material changes – both positive and negative - that might influence the rationale for and delivery of 20mph treatments in these localities.

9.4.2 Road accident casualty analysis

In our identification of prospective 20mph zones, we have considered the number and severity of road accident casualties over a recent 5-year period (2004-08). Additionally, we have identified those accident casualties involving children (under 16 years old) within these records. These analyses underpin our recommendations on prospective pilot zones.

We recommend that for each prospective 20mph zone, a more in-depth analysis of road accident casualties be completed to verify that traffic speeds and/or pedestrian behaviours were contributing factors to the recorded casualties. Road safety practitioners will routinely complete a safety appraisal based upon the detailed road safety records compiled by Northumbria Police in STATS19, as held by Tyne & Wear's Traffic and Accident Data Unit based at Gateshead Council.

Further analyses need to verify that traffic speeds were a contributory cause in most (or all) of the casualties arising in each prospective 20mph zone. The work can also be invaluable in determining the location and nature of any traffic calming measures associated with a 20mph zone. We would recommend that this work be part of a preliminary design approach for prospective zones.

9.4.3 Local speed surveys

A key consideration in the success of 20mph treatments in neighbourhoods is the prevailing average speeds of traffic already using the affected streets. For 20 mph Speed Limits, national guidance states that prevailing average speeds should not exceed 24mph. For 20mph Zones, traffic calming measures should be introduced in such a way that traffic does not routinely travel at speeds in excess of 20mph.

The applicability of either measure and, in the case of 20mph zones, the nature of necessary traffic calming features will be determined, in part by existing patterns and speeds of traffic.

The lack of readily available local data on traffic speeds has precluded detailed consideration of speeds within our Multi Criteria Assessment Framework. Nevertheless, we would recommend that speed analyses be completed for potential 20mph areas prior to any commitment to introduce such measures.

City-wide data on traffic speeds is available through the Traffic Master database – which is used by Tyne & Wear for the purpose of monitoring congestion within its

Local Transport Plan. This data may be suitable for this task, although further work is needed to determine the extent and detail that this data provides on residential streets. Jacobs completed a preliminary inspection of this data as part of this study but time constraints and data-handling issues precluded its use in this strategic assessment.

Alternatively, localised speed surveys could be conducted to provide the necessary information and to guide a design process for 20mph zones. Subject to agreement of a modest number of pilot areas, local speed surveys could be a cost-effective means of completing this analysis. Moreover, speed surveys prior to implementation will provide an important benchmark against which future success of 20mph treatments can be assessed.

9.4.4 Public acceptability

Best practice in delivering 20mph treatments indicates a greater chance of success where schemes are developed with the detailed participation of local residents, businesses, community leaders and other interested parties.

On residential streets, people have a particular interest in the design of traffic calming measures, the management of traffic flows and the overall development of the "streetscape". People are directly affected by the impacts of traffic calming and speed management, both as road-users and as residents of the locality. Often, people are willing to actively participate in the development of traffic schemes which potentially enhance the liveability and safety of their neighbourhoods.

Should the City Council decide to proceed with a set of pilot 20mph projects, we recommend that consideration be given to the early engagement with local people – raising awareness of the background issues, evidence-base and options for traffic management. This early engagement should facilitate the on-going participation of local people during the design process, thereby developing a high degree of local buy-in that will greatly enhance opportunities for success and public acceptance. We would advise that proceeding with the design of a potential scheme to any significant detail without recourse to an initial test of local public acceptability can incur a significant risk to the deliverability of that scheme.

Appendix A Multi Criteria Assessment Mapping

(a) **Figure 1: Prospective 20mph zones relative to Child Casualties and Areas of Deprivation**

(b) **Figure 2: Prospective 20mph zones relative to Total Casualties and Areas of Deprivation**

(c) **Figure 3: Prospective 20mph zones relative to Schools and Household Density**