2 Proposals

2.1 Need for the Scheme

2.1.1 General

Justification for the Proposed Scheme was set out in the Community Infrastructure Fund (CIF) Bid Submission, which was submitted to the Office of the Deputy Prime Minister in July 2005. Section 4 of that document stated:

“The over-arching purpose of the SLRR will be to facilitate additional and accelerated housing growth in the South West District, Northampton, in accordance with the Milton Keynes and South Midlands Sub-Regional Strategy and the Sustainable Communities Plan. Specific housing (and also employment) areas in the South West District which will benefit from the link in terms of accelerated development and direct access will include:

- Berry Wood Fields;
- A4500 Gateway;
- Upton Lodge; and
- Princess Marina”.

The SLRR will also unlock further housing development potential in the South West District at:

- Land to the west of Berry Wood Fields; and
- Norwood Farm

(Source: Northampton County Council and English Partnerships CIF Bid, 2005)

2.1.2 Strategic Planning Issues

The Proposed Scheme is located within both the South West District of Northampton and South Northamptonshire District. The South West District is guided by a long term strategy of sequential development. The Proposed Scheme was initially identified, as a priority transport scheme to support and manage growth in the County, in the Northampton Local Plan (1997). This strategy was further reinforced in the Preferred South West District Strategy (2004). The South
West District Strategy is illustrated in ES Drawing 2.1. The Proposed Scheme conforms to the Regional Spatial Strategy for the East Midlands (2005) and is a key infrastructure requirement for progressing the Milton Keynes and South Midlands Sub-Regional Strategy (2005) and the National Government Sustainable Communities Plan (2003).

2.1.3

Adoption of Proposed Scheme

The planning application for the Proposed Scheme is being submitted to West Northampton Development Corporation and Northampton County Council at the end of September 2006.

2.1.4

Scheme Objectives

The implementation of the Proposed Scheme seeks to deliver the following objectives:

- Provide improved transport linkages between zones of residential development within the South West District, specifically the development of Upton Lodge and Norward Farm;
- Facilitate access to approved employment areas at Swan Valley and Pineham;
- Provide a critical link between CVLR and SLIN schemes, improving orbital movements around Northamptonshire;
- Provide future access to the Upton Lodge Park and Ride site to the west of SLRR, assisting the development of the public transport network in Northampton as a whole;
- Improved cycling and pedestrian access from the adjacent rural areas to Northampton;
- Provide traffic relief/bypass to the existing Sandy Lane, specifically in terms of HGV movements;
- Provide safety improvements on the basis of reduced traffic volumes on the existing Sandy Lane and the provision of sustainable cycle and pedestrian facilities; and
- Provide environmental improvements in respect of air and noise quality for residents of South View and those fronting the existing Sandy Lane (approximately 50 dwellings).
2.2

**Alternatives Considered**

### 2.2.1

**Introduction**

The Proposed Scheme is the end product of several planning and environmental studies. These reports, and their contribution to the definition of the Proposed Scheme, are detailed below.

The proposed route of the SLRR was first considered during the preparation of the 1997 Northampton Local Plan, at which time a broad range of options were considered, modelled and fully evaluated. A safeguarded corridor for the SLRR was incorporated in the Local Plan when it was formally adopted. Consideration of the road alignment was again reviewed as part of the 2004 South West District Strategy and the 2005 Community Infrastructure Fund (CIF) Bid.

The proposal for SLRR followed as a result of a thorough appraisal of improving the existing Sandy Lane. The appraisal considered addressing Sandy Lane’s current deficiencies and increasing the road’s carrying capacity, in order that it could accommodate the level of traffic that would be generated as a result of development in the South West District. The appraisal concluded that highway safety and residential amenity would be adversely affected for those residents living along the frontage of Sandy Lane and there would be significant environmental impacts that would be more detrimental than providing a new road.

### 2.2.2

**The Proposed Scheme**

**Environmental Considerations**

Prior to preparing this application and defining the Proposed Scheme, a number of alternative detailed alignments were examined with regard to environmental data gathered for the 2005 CIF Bid. Since 2004, options for the SLRR road alignment have been fixed at either end by the proposed Cross Valley Link Road/Weedon Road junction and the proposed Sandy Lane Improvement North/Berrywood junction. Therefore, the alternative alignments concerned only the section of the road between these two junctions.

To assist in choosing the optimum alignment, a constraints plan was prepared using data gathered for the 2005 CIF bid. The constraints plan identified a number of environmentally sensitive sites and considerations that helped to inform the road alignment. The most significant of these included:

- Properties situated along Sandy Lane;
The former St Crispin Hospital;
County Wildlife Sites; and
Topography.

Consideration of the impact on the SLRR on these sites and the topography of the land enabled a number of alignment options to be ruled out, resulting in the chosen alignment. Following an examination of the topography it was decided that the road alignment should be located further west (further away from the residential properties located at St Crispins) and the alignment should be located within the valley and follow the contours of the landscape, than as originally shown in the Northampton Local Plan (1997). As such, the proposed alignment is located within the least visually prominent location and minimises the amount of earthwork movement works required.

**Transport Design Considerations**
A new junction is required on Berrywood Road to connect the northern section of the SLRR to the existing road network. A number of junction options were considered, these included:

- **Option 1** (Two T - Junctions)
- **Option 2** (One 3 arm roundabout to south of Berrywood Road and one T junction to the north, with right turn lane)
- **Option 3** (One 3 arm roundabout to the north of Berrywood Road and one T junction to the south)
- **Option 4** (Traffic Lights)
- **Option 5** (Two 4 arm roundabouts)

An appraisal of these junctions was undertaken that considered the benefits and dis-benefits in terms of operation, constraints and safety. From this analysis, it was concluded that two 4 arm roundabouts was the best solution. The major benefit of this option was that it provided good access, helped linkage between SLRR and proposed SLIN, assisted with orbital movements and the roundabouts would act as a speed reduction half way between A4500 Weedon Road and A428.

A further junction is required on the A4500 Weedon Road to connect the southern section of the SLRR to the existing road network. Two main types of junction options were considered:
• **Option 1** (One 4 arm roundabout)
• **Option 2** (One 4 arm fully signalised crossroad)

An appraisal of the two junction options was undertaken that considered the benefits and dis-benefits in terms of operation, constraints and safety.

From this analysis it was decided that option 2, the signalised crossroad, provided the optimum solution for the junction. The major benefit of the signalised scheme is that it provides the safest solution for pedestrians and cyclists. This, in turn, improves accessibility and reduces the impacts of severance of the road scheme.

2.3

*Proposed Scheme Strategy*

2.3.1

*Design Strategy*

The Proposed Scheme will be classified as a Category A – local distributor road linking the A4500 Weedon Road to the south with Berrywood Road to the north. The proposed Sandy Lane Link Road (SLLR), classified as a Spine Road, will connect the SLRR to the existing Sandy Lane to the west.

The road, 1.7km in length, has been designed to a speed limit of 40 mph with 7.3m wide single carriageways, a minimum horizontal radius of 100m, a maximum longitudinal gradient of 6 % and a minimum vertical grade of 1 %, all in accordance with Northamptonshire County Council’s design guidelines.

The carriageway crossfall has been designed to 2.5% (1 in 40) normal camber with maximum superelevation of 5% (1 in 20) where applicable.

Forward visibility of 120m kerb to kerb along the Proposed Scheme is achieved within the width of the adjacent footpath and verge.

Major /Minor junctions, off the Proposed Scheme, have been designed to provide accesses to the proposed development areas and the Park and Ride Site that are proposed as part of the Upton Lodge development. These junctions have radii of 10.5m and have been designed for a distance of 15m back from the mainline carriageway channel. Junction visibility splays of 4.5m x 90m are achieved within the width of the footpath and verge.
The junctions have been designed with minimum junction spacing of 50m between centrelines of junctions on opposite sides of the carriageway and 100m between centrelines of junctions on the same side of the carriageway.

A conventional roundabout is proposed at the Berrywood Road junction.

2.3.2

Verges, footways and cycleways

Verges form part of the overall highway cross-section and will be provided on either side of the carriageway along the whole length of the scheme. They have two main functions:

- To provide an area in which to locate highway features such as road signs, safety fences, drainage, rock traps and ducting for communications devices/electronics; and
- To provide drivers with sufficient views of the road ahead, particularly on the insides of curves.

The verge width for the Proposed Scheme includes a 1.0m grass strip separating the carriageway from a 1.8m footway on the western side of the road and a 3.0m combined footway / cycleway on the eastern side. The verge is widened as necessary on the inside of the road curvature to ensure forward visibility of 120m is maintained.

An existing Public Right of Way (KP16) runs in the east west direction, crossing the alignment of the Proposed Scheme to join with the existing Sandy Lane. The majority length of this Public Right of Way will be retained except where it crosses the Proposed Scheme where an at grade pedestrian/equestrian traffic signal controlled crossing (Pegasus) will be provided.

2.3.3

Earthworks

The Proposed Scheme includes both cuttings and embankments. The design will attempt to balance the quantity of material removed from the cuttings with that needed to build the embankments.

Structural embankments are to be formed out of imported suitable fill with 1:3 side slopes, allowing for suitable planting of landscaping vegetation.
Based on the preliminary design, the total import fill requirement is approximately 20,000 m$^3$ of suitable fill.

2.3.4 Road Markings and Signage

All road markings and directional signs will be designed in accordance with The Traffic Signs Regulations and General Directions (2002).

2.3.5 Street Lighting

It is proposed that street lighting will incorporate 10m high steel columns with 1m projection brackets with side entry Philips SGS 253 Flat Glass ORP5X with a 150 watt SON (high pressure Sodium) lamp. Installation will be in accordance with BS 7671 and Northamptonshire County Council specifications.

The lighting installation will be designed to BS 5489 Parts 1,2 and 4, ILE Guidance Notes for the reduction in light pollution and ILE Technical Report No.23 Lighting of Cycletracks. The lighting design recognises the sensitive nature of the site.

The selection of these standards will be discussed and agreed with Northamptonshire County Council, and are generally the lowest standards that achieve the requirements of highway safety and personal safety of cyclists and pedestrians.

The scheme has been designed using high pressure sodium luminaries with Curved Tempered Glass to allow accurate control of the light output. Columns will be positioned and orientated, wherever possible, away from the wildlife sensitive features. 10m columns are used as the minimum height possible to achieve the lighting standard required for highway and personal safety.

2.3.6 Highway Drainage Strategy

The Proposed Scheme drainage strategy will comprise of trapped road gullies within the carriageway linked to a piped sewerage network. The networks will outfall at number of outlets from the road into swales and wet ponds situated in the surrounding areas. Multiple outfalls will occur where swales are positioned alongside the road. Other outfall locations will be at the low points along the highway vertical alignment. At all of these outfalls, treatment and attenuation features will be provided to create a sustainable drainage system (SUDS).
The drainage parameters for the SUDS are:

- to limit outflow rates to the equivalent 1 in 10 year Greenfield rate.
- to attenuate all storm events up to and including the 1 in 200 year FEH storm.

Swales will be sized such that they will be able to attenuate the 1 in 200 year storm. This will be achieved with the aid of vegetated bunds built across the swale to form Check Dams. The swales will also provide treatment and enhance water quality followed by a wet pond that will create detention storage to reduce the outflow to an agreed design flow. The swales may incorporate an infiltration trench along the base dependant upon the ground conditions below the swale. This helps to increase infiltration and minimise boggy conditions behind the Check Dams. The swale outlet pipe will then discharge in to the existing water course to the west of the Proposed Scheme, through the proposed Country Park.

The stream running on the west side of the Proposed Scheme will receive all attenuated and treated flows from the road. The proposal is to create pockets of depressed areas along the stream to create wetland habitat. These areas will receive the flows from the Proposed Scheme swales plus the adjacent housing development swales and ponds. The flows entering the stream will be controlled to that equivalent to 1 in 10 year Greenfield runoff rate. At the downstream end of the Country Park the flow capacity of the pipe below the Weedon Road will be assessed. The pipe may need to be upsized to provide the same 1 in 200 year protection, for the existing properties and the lower end of the Country Park, against flooding as a result of construction of new developments.

**Chainage 0 to 375m**

The sewer network will collect the trapped gullies and flow from north to south along the route of the Proposed Scheme. This will then turn and head east towards pond 2 located in the green area beneath the park and ride, next to the existing lay-by.

**Chainage 390 to 670m**

The sewer network will collect the trapped gullies and flow from south to north along the route of the Proposed Scheme. This will then turn to the east and flow into pond 1 through an outfall located approximately at the south east of the pond.
**Chainage 711 to 1150m**

The sewer network will collect the trapped gullies and flow from north to south along the route of the Proposed Scheme. This will then turn to the east and flow into pond 1 through an outfall located approximately at the centre of the pond.

**Chainage 1190 to 1670m**

The sewer network will collect the trapped gullies and flow from north to south along the route of the Proposed Scheme. This will then discharge into a swale that will run along the west side of the road, which will discharge into the most northerly point of pond 1. The swale will attenuate the 1:200 year event and will have the approximate dimensions of 1m deep by 4m wide with side slopes at 1:2.

**Pond 1**

This pond will attenuate the flow for the SLRR during the 1:200 year event, and also the flows from the proposed Upton Lodge development. This would entail that the approximate size of pond 1 will be 8250 m³ with a Hydro-Brake discharging at the consented flows for the contributing areas.

**Pond 2**

This pond will need to have approximately 300 m³ of storage area before it discharges into the ditch north of the pond via the Hydro-Brake manhole.

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**2.3.7 Highway, Footway and Cycleway Foundations**

The route of the Proposed Scheme crosses a number of geological formations including the Whitby Formation (formally called the Upper Lias), the Northampton Sand Formation and the Rutland Formation. To the north of the Proposed Scheme Bounder Clay is likely to be present overlying the Rutland Formation. The Whitby Mudstone Formation is a mudstone with thin limestone and shales, the Northampton Sand Formation is ironstone, ferruginous and sandy limestone and the Boulder Clay is grey brown silty clay with chalk pebbles and quartzite. It is possible that other drift deposits, such as hill wash soils and glacial deposits, may also be present along the Proposed Scheme.

Historical records indicate that the Northampton Sand Formation has a high natural level of arsenic which may require special consideration with respect to human health and river/groundwater risk assessments.

At the interface between the Whitby Mudstone Formation and the overlying Northampton Sand Formation there is a potential for springs to occur. Should
groundwater levels rise and a spring occur beneath the road construction then mitigation measures in the form of a drain could be incorporated beneath the road to ensure no long term impact on the road construction.

Provided that the topsoil and subsoil is removed, the formation inspected and if necessary soft spots removed and infilled with an appropriate fill compacted in layers to the requirements of the earthworks specification, then no special design/mitigations measures should be required.

The thickness of the capping layer should be designed on the basis of weak characteristics of these materials. A sufficiently thick capping layer should be constructed below the road construction in order for the highway loads to be safely borne. To minimise the thickness of the required capping layers stabilisation of the formation using cement and/or lime, or the use of geo-grids reinforcement, could be considered by the designer.

The typical construction of the Proposed Scheme will consist of 40 mm Stone Mastic Asphalt wearing course, 60 mm dense bituminous macadam base course to Clause 6.5 of BS 4987: Part 1, 120 mm dense bituminous macadam roadbase to Clause 5.1 of BS 4987 Part: 1 and 150 mm (minimum) granular material type 1 to Dtp. Clause 803. Capping layer to Dtp. Clause 613 may be required subject to the CBR of the sub-grade.

The typical footway / cycleway construction will consist of 20 mm dense bituminous macadam wearing course to Clause 7.5 of BS 4987: Part 1, 75 mm dense bituminous macadam base course to Clause 6.5 of BS 4987: Part 1 and 150 mm (minimum) granular material type 1 to Dtp. Clause 803.

2.3.8 Landscape Strategy

The basic principles underlying the landscape strategy for the Proposed Scheme are to minimise the visual impact of the scheme and to integrate the road into the surrounding landscape. One of the main aims of the strategy is to conserve and enhance existing features such as hedgerows wherever possible, and also minimise the loss of vegetation due to construction work.

In the short term the planting will help to reduce the impact of the road on the rural landscape. However, the planned development of the South West District of Northampton will see considerable expansion of housing and employment areas to the east of the Proposed Scheme and the creation of a Country Park to the west.
The vegetation along the road will then form a green corridor through an area which will include a mixture of residential, employment and educational uses.

New planting will be used to reduce the visual impact of the scheme and will help to screen traffic from the proposed Country Park and residential areas. The design of the planting associated with the road will be integrated with proposed planting within the Country Park and planting associated with the development at Upton Lodge to create a cohesive landscape environment for the area.

To be effective, the planted areas alongside the Proposed Scheme are to be 10-15 metres wide, and a secondary effect arising from this would be a reduction of traffic noise affecting surrounding areas. Tree and shrub planting associated with the scheme will be planted as a mixture of small planting stock and larger trees, with the latter having more impact in the years immediately following planting.

Where appropriate, new woodland areas and hedges will be planted to enhance the existing hedgerow pattern, and to strengthen the landscape structure of the area. This will include both the visual appearance of the landscape and the wildlife potential of the vegetation.

The species used will be native to the region and, wherever possible, of local provenance supplied by local nurseries. The final species list has been chosen after consultation with the ecological surveys which have been carried out throughout the study area, and is designed to complement and enhance existing habitats.

2.4 Proposed Scheme Description

2.4.1 Introduction

The Proposed Scheme is illustrated in ES Drawing 2.2 covering the route from south to north. Route descriptions are by reference to ‘Chainage’ which refers to the distance in metres from a notional start point (Ch 59) at the southern end to a notional finish point (Ch 1719) at the northern end. The overall length of the Proposed Scheme is approximately 1.7 km and the footprint is approximately 60,000m².

The earthworks quantities for the Proposed Scheme are roughly in balance with necessary fill material needed to build the embankments being received from material removed from the cuttings. The material will need to be improved for use
as embankment fill and either the existing ground under the road construction will be required to be stabilised or a capping layer imported.

The volume of cut is approximately 30,000m$^3$ of which 26,500m$^3$ will be useable. The required fill is approximately 27,500m$^3$ leaving a deficit of approximately 1,000m$^3$ to be imported. If a capping layer is required an additional 15,000m$^3$ of material will need to be imported.

2.4.2 Weedon Road Junction to Berrywood Road Junction

South of Ch 59, the Proposed Scheme connects to the existing Weedon Road at the Weedon Road Junction, which is being constructed as part of the proposed Cross Valley Link Road (CVLR) Scheme. As part of the CVLR a section of the Proposed Scheme will be constructed to a distance 20m past the stop lines on the northern approach to the junction.

At Ch 59 the Proposed Scheme will provide additional lanes on the approach to and exit from Weedon Road Junction. Two lanes are provided on the northbound side and three lanes plus a bus lane are provided on the southbound side. These lanes taper out from approximately Ch 100 to Ch 150.

The bus lane continues from Ch 150 to the Park and Ride Signalised Junction at Ch 250 at which point it terminates. Further north from the Park and Ride Signalised Junction the road is a single carriageway with one lane in each direction except where additional lanes are provided on the approach to junctions and where ghost islands are provided at minor junctions.

The Park and Ride Signalised Junction also provides access to the proposed Upton Lodge development to the east. Signalised pedestrian and cyclist Toucan crossing points are provided at each arm of the junction.

From Weedon Road Junction to the Park and Ride Signalised Junction the road rises in line with the existing ground contours with minimal cut and fill (approximately 1.0m maximum cut, 0.7m maximum fill from existing ground levels at the road centreline). The maximum longitudinal gradient is 6.7% at Ch 106. The road curves to the west on a 360m left hand curve with a superelevation of 5%.

From the Park and Ride Signalised Junction the road rises to a high point at Ch 374 before falling with the existing contours. The alignment follows an existing
valley running north to south reaching a low point at Ch 615 before rising again with the existing contours.

Due to the undulations of the existing land there will be more substantial earthworks in this area with the area of fill from Ch 300 to Ch 3 (approximately 3.9m maximum fill from existing ground levels at the road centreline) and from Ch 420 to Ch 550 (approximately 3.2m maximum fill from existing ground levels at the road centreline). From Ch 555 to Ch 700 there will be an area of cut (approximately 1.0m maximum cut from existing ground levels at the road centreline.)

At Ch 645 there will be a combined pedestrian, equestrian and cyclist Pegasus crossing provided at the intersection of the Proposed Scheme with the existing bridleway KP16.

From the Pegasus crossing the road rises with a maximum longitudinal gradient of 5.2% at Ch 930 to the junction with the proposed Sandy Lane Link Road at Ch 1230. There is a length of embankment from Ch 700 to Ch 1085 as the road maintains required clearance over an existing ditch at Ch 950 which will be culverted.

There is a minor junction to the proposed Upton Lodge development at Ch 1070 which will increase the width of the Proposed Scheme to allow for a ghost island right turning facility. The road will maintain its widened width to allow for ghost island right turning facilities at the Sandy Lane Link Road junction and at the development access at Ch 1350.

A signalised pedestrian and cyclist Toucan crossing is provided at Ch 1148.

From the junction with the Sandy Lane Link Road the road rises at a maximum longitudinal gradient of 3.5% to a high point at Ch 1569 before falling to a maximum longitudinal gradient at 2.0% towards Berrywood Road. The road is in cutting (approximately 2.0m maximum cut from existing ground levels at the road centreline) for this length.

2.4.3

Sandy Lane Link Road

The Sandy Lane Link Road is a short section of single carriageway road linking the existing Sandy Lane to the Proposed Scheme at Ch 1230. The link is 250m in
length and is on embankment with a maximum height of approximately 3.3m as it crosses an existing valley.

A junction back onto the existing Sandy Lane is provided at Ch 95 to allow access to existing properties. It is proposed the Sandy Lane, north of the Sandy Lane Link Road, is closed off and made into a private access for the existing properties.

2.4.4 Berrywood Road Junction
At the junction with Berrywood Road a conventional roundabout is proposed with connections to the existing Berrywood Road to the west, the Proposed Scheme to the south, the proposed Sandy Lane Improvement North (SLIN) to the north and to a smaller roundabout to the east.

The smaller roundabout serves the existing New Duston estate to the north, a proposed residential development to the south and links to the existing Berrywood Road to the east.

2.4.5 Offsite Works
Traffic calming measures to Sandy Lane including: weight restrictions at the northern end; implementation of speed humps at the southern section; and speed restriction of 40mph on the currently unrestricted sections of Sandy Lane

A proposed traffic signal junction on Weedon Road providing a safe entry/exit into the service road serving the South View properties and incorporating a pedestrian/cyclist Toucan crossing.

Additional vehicular access into the Park and Ride site for eastbound traffic from Weedon Road is proposed. This access is provided from the existing lay-by entry point west of the Weedon Road/Proposed Scheme/CVLR Signalised Junction.

The existing lay-by west of the Weedon Road/Proposed Scheme/CVLR Signalised Junction is proposed to be closed off and landscaped. A new lay-by is to be provided adjacent to the existing carriageway.

2.5 Construction and Maintenance Management

2.5.1 Introduction
This section sets out the proposed twelve month programme for the construction of the Proposed Scheme, and the area required for temporary construction
compounds and other temporary works. It also covers maintenance considerations. All construction activities will take place within the planning application boundary as shown in ES Drawing 1.2.

All works on site will be undertaken in compliance with the Contractor’s Environmental Management Plan (CEMP). An outline of the CEMP is contained in Appendix 15A.

2.5.2 Programme

Construction works are currently planned to commence in March 2007 and programmed to last approximately 12 months, ending in March 2008. A chart showing the sequence of construction activities is shown in Table 15.1 in Chapter 15 - Disruption due to Construction.

2.5.3 Site Compound and Work Areas

An assessment has been undertaken of the optimal location for the construction compounds that will be required, and the size and extent of supporting equipment and facilities. ES Drawing 15.1 illustrates the proposed site compound, haul road and site access.

It is anticipated that there will be a single site compound likely to be located to the immediate north of the Weedon Road, east of the Proposed Scheme and close to the existing Upton Lodge Farm. An indicative location for this compound is shown on ES Drawing 15.1. This compound will house most of the plant and equipment, providing a storage area for imported materials and act as location for the main site office.

Access to the site compound and construction corridor is initially likely to be taken from A4500 Weedon Road. It is expected that most of the construction corridor will continue to be accessed from this point for the duration of the works. The exception will be the works to Berrywood Road and the far north of the Proposed Scheme, where an additional access is likely to be created from Berrywood Road.

The exact locations of the access points are still to be determined but it is likely that the access from Weedon Road will be taken from the lay-by to the east of South View. This will require the removal of a length of hedgerow.

A temporary haul road will be constructed along the line of Proposed Scheme, as closely as possible, to provide access to the construction site.
2.5.4 Maintenance of Highways

On completion of the construction works and the defect correction period, the highways will be adopted and maintained by the Highway Authority.