Neath Port Talbot County Borough Council

Fabian Way Corridor Transport Development Study

Study Report (Draft)

Draft 1 | 10 May 2013

Job number 229187

4 Pierhead Street
Capital Waterside
Cardiff CF10 4QP
United Kingdom
11111111111111111111111111111

ARUP

Document Verification

ARUP

Job title		Fabian Way Corridor Transport Development Study			**Job number** 229187
Document title		Study Report (Draft)			**File reference**
Document ref					
Revision	**Date**	**Filename**	Stage 1 Report draft 130510.docx		
Draft 1	10 May 2013	**Description**	First draft		
			Prepared by	Checked by	Approved by
		Name			
		Signature			
		Filename			
		Description			
			Prepared by	Checked by	Approved by
		Name			
		Signature			
		Filename			
		Description			
			Prepared by	Checked by	Approved by
		Name			
		Signature			
		Filename			
		Description			
			Prepared by	Checked by	Approved by
		Name			
		Signature			
				Issue Document Verification with Document	✓

Contents

Appendices

1 Introduction

1.1 The commission

In 2009-10, a study was completed, on behalf of the Welsh Government, which established a transport strategy for the A483 Fabian Way corridor on the eastern approach to Swansea (Fabian Way Transport Assessment, 2010, Welsh Government). Arup was commissioned in January 2013 (by Neath Port Talbot County Borough Council) to undertake a review of the previous transport strategy, and associated measures.

The Study area (See Figure 1.1) encompasses areas of the Fabian Way corridor within Neath Port Talbot CBC (NPT) and City and County of Swansea (CCS), and the Study has thus been managed by representatives of both NPT and CCS.

The basis for the Study is that the Fabian Way corridor is scheduled to experience significant development in the next 20-25 years, generating increased travel demand, and a balanced transport strategy will enable sustainable development to take place, and facilitate wider economic regeneration in the surrounding catchment area. The output of this Study, that is, a revised transport strategy, should thus provide a blueprint for both authorities to manage the systematic implementation of strategy measures.

The study process has consisted of undertaking a reassessment of traffic capacity for future development scenarios, reviewing the previous transport strategy to identify a realistic and prioritised programme of measures, and identification and design of short-term deliverable measures i.e. quick-win measures.

1.2 Development Plans

Land-use development along Fabian Way corridor is ongoing, and is expected to continue over the next 20 years; in particular:

- Expansion of Coed Darcy Urban Village on the site of the former BP oil refinery: The proposed village would comprise approximately 4,000 dwellings; B1 employment use (offices, research and development and light industrial), retail food stores; schools at Primary and Secondary level; health care facilities; community and neighbourhood facilities and a variety of public open spaces. The southern access link, including public transport route from this development to the Amazon Phase 2 road, is due to be constructed by 2020.
- Swansea University campus, former BP tank farm site south of Fabian way: A university campus including innovation park, university residential accommodation (up to 4000 beds) and ancillary student/staff facilities. Phase 1 is due to open in September 2015.
- Further development within the SA1 waterfront: Approximately half of planned development has now been completed. The SA1 Waterfront development comprises a mix of residential, leisure and offices uses to form a new quarter adjacent to Swansea City Centre delivering up to 2000 new residential units and 4000 office jobs.

1.3 Report Contents

The report is set out in the following sections:

2 Land Use and Transportation

3 Transport Assessment

4 Review of Transport Strategy

5 Updated Strategy

6 Updated Strategy Programme

7 Quick-Win Measures

Appendices are included as follows:

- Appendix A: Traffic Count Data
- Appendix B: Traffic Impact Analysis
- Appendix C: Land Ownership Plans
- Appendix D: Quick Win Outline Design
- Appendix E: Bus Stop Upgrades

Figures are included as follows:

- Figure 1.1: Study Area
- Figure 2.1: Existing Bus Stop Locations
- Figure 2.3: Existing Bus Routes
- Figure 2.4: Walking and Cycling Routes
- Figure 5.1: Core Measures
- Figure 6.1: Quick Win Measures

2 Land Use and Transportation

2.1 Review of Networks

2.1.1 Introduction

A review has been undertaken of the key elements of the transport network, such that any changes to the network since the previous study in 2009 are identified.

2.1.2 Highway Network

The A483 Fabian Way runs on an east-west alignment across the Study area. It is dual carriageway with two lanes in each direction along its length. Fabian Way provides an eastern access to Swansea City Centre, linking the M4 motorway at junction 42 with the Tawe Bridges. The Study area includes the B4290 New Road that links Fabian Way with junction 43 of the M4, and the M4 itself between junctions 42 and 43. There are also various minor roads associated with the existing commercial, industrial and residential areas within the site area.

2.1.3 Key Road Junctions

There are five major junctions and several entrances to individual commercial or industrial plots accessed directly off Fabian Way. The five major junctions are as follows:

Fabian Way / Jersey Marine gyratory	The Jersey Marine gyratory links Fabian Way with the B4290 New Road. It has (in 2009-10) been significantly enlarged to include for signalisation and addition of an arm giving access to the Amazon development to the north. The circulatory is segregated from the east to west straight ahead movement enabling vehicles travelling from the M4 towards Swansea to avoid entering the junction.
Fabian Way / Elba Crescent signalised T-junction	The Elba Crescent signalised priority junction allows vehicles to turn into and out of Elba Crescent and the former British Petroleum (BP) site from either direction on Fabian Way.
Fabian Way / Baldwin's Bridge left-in / left-out junction	The Baldwin's Bridge junction gives access to the former BP site and the community of Elba Crescent via slip roads. Vehicles can pull off and pass beneath Fabian Way along a series of local roads in either direction.
Fabian Way / Park and Ride signalised crossroads	The Fabian Way Park & Ride signalised crossroads at Port Tennant has dedicated right turn lanes for traffic entering the Park and Ride site and Swansea Docks.
Fabian Way / Port Tennant Road / SA1 signalised crossroads	The Fabian Way / SA1 signalised crossroads has dedicated right turn lanes for vehicles entering the SA1 development and the Port Tennant residential area.
Tawe Bridges signal-controlled gyratory	The two Tawe Bridges have signalised junctions at each bank. The bridges form a one-way gyratory system over the river with generally three or more lanes in each direction (except for the southern bridge which carries two-way traffic on the east-west axis).

Fabian Way is currently managed and maintained by the two local authorities, CCS and NPT. The County Boundary is at Baldwin's Bridge. Proposals to trunk Fabian Way as far as the Swansea Docks access have been suggested but this is currently not being taken forward.

2.1.4 Traffic Flows

2.2 Traffic Flows

A comprehensive set of classified traffic surveys were commissioned for this Study at the key junctions along Fabian Way, which provides current data for a typical weekday AM and PM peak. The surveys classified the observed traffic into Light vehicles (cars, vans etc) and Heavy vehicles (buses, HGVs etc) to account for the traffic composition within the traffic modelling exercise. Pedal cycles were also recorded, which has been used to inform the cycle strategy. Table 2.1 presents an overview of the traffic surveys undertaken.

Table 2.1: Details of traffic surveys

Location	Count Type	Classification	Period (All in 15 minute intervals)	Notes
SA1/Port Tennant Cross Roads	Classified turning Count	Lights (Car, LGV) Heavies (HGV, Bus) Pedal Cycle	AM peak (07:00-10:00) PM Peak (16:00-19:00)	Record Pedal cycles on carriageway or adjacent on segregated cycle path
Park and Ride/Docks Cross Roads	Classified turning Count	Lights (Car, LGV) Heavies (HGV, Bus) Pedal Cycle	AM peak (07:00-10:00) PM Peak (16:00-19:00)	
Baldwins Bridge	Classified turning Count	Lights (Car, LGV) Heavies (HGV, Bus) Pedal Cycle	AM peak (07:00-10:00) PM Peak (16:00-19:00)	Left in Left out in both directions onto the A483. Record Pedal cycles on carriageway or adjacent on segregated cycle path
Elba Crescent Signals	Classified turning Count	Lights (Car, LGV) Heavies (HGV, Bus) Pedal Cycle	AM peak (07:00-10:00) PM Peak (16:00-19:00)	Record Pedal cycles on carriageway or adjacent on segregated cycle path
Jersey Marine Amazon junction	Classified turning Count	Lights (Car, LGV) Heavies (HGV, Bus) Pedal Cycle	AM peak (07:00-10:00) PM Peak (16:00-19:00)	Record Pedal cycles on carriageway or adjacent on segregated cycle path

The results of the traffic flows were interrogated to ascertain the typical peak hours along the corridor. It was determined the AM peak hour is typically between 08:00-09:00 and the PM peak between 16:30 and 17:30.

The flows are represented diagrammatically in Appendix A.

2.2.1 Traffic Speeds

Fabian Way is subject to national speed limit from the M4 to the eastern approach to the Jersey Marine roundabout. The speed limit is 50mph from east of Jersey Marine to west of the Park and Ride junction, where it drops to 30mph on the approach to Swansea city centre. The speed limit change locations are shown in Figure 1.1.

2.2.2 Road Safety

Accident data for the Study area was obtained from CCS and NPT for the previous study, and it was concluded that there were accident clusters centred on the key junctions. However, the recorded accident rates are not at a level which suggests a significant road safety problem.

An overview of recent major accidents has been supplied as follows:

- Fatal pedestrian collision (02/02/12) was to the west side of the Park and Ride over bridge on the east bound lane.
- Fatal motorcycle collision (11/03/12) occurred on the eastbound lane close to Baldwin's Bridge and the junction for Gower Chemicals
- Serious pedestrian collision occurred (09/02/13) involving a pedestrian colliding with a taxi close to the junction of SA1/Port Tennant Road.
- Fatal pedestrian accident occurred (recently, date not specified) at Fabian Way between the Tawe Bridges junction and the SA1 junction, involving a pedestrian crossing and being hit by a vehicle travelling westbound.

There have been a number of other fatal pedestrian accidents over the last 20 years involving pedestrians crossing Fabian Way. Although the accident rate (i.e. the number per year) does not indicate a major 'Blackspot' problem at a single location, it is clear from observation that pedestrians often cross Fabian Way (towards its western end) at uncontrolled locations – and that the road represents a significant (and unsafe in respect of the pedestrian experience) barrier to movement between St. Thomas and SA1. As development in SA1 proceeds, and more jobs and services are located there, then the pedestrian movement from and to St. Thomas will increase (e.g. work trips, visits to medical facility, retail trips). It is therefore desirable therefore that measures are introduced which both increase pedestrian permeability between St. Thomas and SA1 and improve the safety characteristics of the pedestrian environment.

A detailed breakdown of accident data is provided in Appendix B: Traffic Impact Assessment.

2.2.3 Variable Message Signs

There are Variable Message Signs (VMS) on Fabian Way for vehicles travelling eastbound towards junction 42 of the M4. VMS are also present on the B4290 approach to junction 43 of the M4. Both sets of VMS form part of the Motorway Communication System (Traffic Wales). They were installed in the mid-1990s primarily to warn of closures and restrictions on the M4 and A48 Briton Ferry Bridges.

A 'car park availability' VMS sign has been installed recently on Fabian Way, facing city-bound vehicles and located east of the Park & Ride junction. The sign face is however not in accordance with highway standards (TSRGD); the lettering is relatively small and thus the sign is not likely to be useful, and appears to be currently not in operation. CCS has indicated that this sign was supplied and installed as part of an Air Quality monitoring system and is thus not operated as part of the Council's standard VMS system (which includes a number of parking signs on radial routes on the edge of the city centre).

2.2.4 Traffic Signal Control

The signalised junctions on Fabian Way are operated using either:

- SCOOT (Split Cycle Offset Optimisation Technique). SCOOT is a tool designed specifically for urban areas to manage the flows on a particular section of network; or
- MOVA (Microprocessor Optimised Vehicle Actuation) – mainly used for isolated junctions.

The key signal-controlled junctions are operated as follows:

Fabian Way / Jersey Marine gyratory	MOVA controlled
Fabian Way / Elba Crescent signalised T-junction	Operated within the 'Fabian Way' SCOOT UTC system.
Fabian Way / Park and Ride signalised crossroads	Operated within the 'Fabian Way' SCOOT UTC system.
Fabian Way / SA1/ Port Tennant Road signalised crossroads	Operated within the 'Fabian Way' SCOOT UTC system.
Tawe Bridges signal-controlled gyratory	Operated within the 'City Centre East' SCOOT UTC system

The signals at junction 43 of the M4 are controlled using MOVA.

Maintenance of the signal equipment is undertaken by CCS in Swansea and Neath Port Talbot. Periodic maintenance and upgrade of systems is undertaken as funds allow.

2.2.5 Parking

There are various existing car parks within the Study area for use by patrons and employees only. These include the Tower Hotel and Swansea Bay Golf Club on the B4290 north of the Jersey Marine roundabout, the Amazon development; and the Village and Ibis Hotels near the docks.

Parking in the SA1 development is privately operated (i.e. enforced by the development company and not by the local authority). There are two permit holder car parks and two pay and display car parks within the development. Permit holder parking is generally occupied by employees working at SA1 during the week, but is quieter at weekends. All parking areas are staffed and secure with wardens, wheel clamping control, lighting and CCTV monitoring. The cost of parking in SA1 all day is currently £4. The provision and location of parking will change continuously as development proceeds, with current car parks being replaced by development and new formal car parks built.

There is on-street parking within the communities of Port Tennant, St Thomas and Elba Crescent that is generally uncontrolled normally used by local residents. However, some employees at SA1 are parking on-street in Port Tennant / St Thomas to avoid paying for parking in formal SA1 car parks. Introduction of widespread resident permit parking at Port Tennant / St Thomas (to reduce parking by SA1 employees) address parking is unlikely to be welcomed by residents there due to the inconveniences caused in respect of residents' visitors. This issue is thus presently best addressed through employer travel plan processes, giving advice to employees on where to park. However, a resident permit scheme (within a Controlled Parking Zone, CPZ) should be kept as a an option for future implementation should the SA1 parking encroachment increase.

2.2.6 Rail

Passenger rail: There are no passenger rail interchanges within the Study area. Swansea High Street is the nearest major station, less than 1km northwest of the Tawe Bridges. It has a taxi rank, a large National Car Parks (NCP) controlled car park, cycle storage and frequent bus services. It is staffed on a full time basis and has been fully refurbished recently (2012), and has waiting rooms, seating, toilets, a payphone, electronic timetable display for trains and buses, CCTV and refreshment facilities. Swansea station is served by both Arriva Trains Wales and First Great Western.

Rail Freight: There is an existing freight line to the north of Fabian Way that runs east-west along the corridor. It is a 4 mile long single track line from Jersey Marine Junction South to Swansea Docks.

The Swansea Burrows sidings lie between the freight line and Fabian Way to the north of Baldwins Bridge. There is an array of 10 sidings plus reception lines. All trains to and from Swansea Docks have a reliance on the Swansea Burrows sidings for loco-release (enabling wagons to be left in the sidings for a period of time) and as a run-round function (to enable a locomotive to change which end of the train it is attached to).

2.2.7 Bus

Bus Stops: There are 26 operational bus stops along the Fabian Way corridor itself, and there is also a comparable number on the adjacent road system at St Thomas, Port Tennant and Jersey Marine. A number of bus stop locations have been changed in recent years, following changes to road layouts on Fabian Way alongside SA1 and at the Tawe Bridges junction. Most bus stops have raised kerbs, some have shelters, while none have real time information (and at present the bus fleets operating in Swansea do not have Automatic Bus Location (AVL) capability). The locations of bus stops are shown on Figure 2.1.

The current bus stops have been classified according to facilities available into the following categories:

- Good quality – shelter, timetable and lighting
- Standard – shelter, timetable or lighting
- Poled stops – no shelter

On the 'core' section of Fabian Way between Tawe Bridges and the Amazon Roundabout (at Jersey Marine) there are 14 bus stops (i.e. seven in each direction), as well as two stops in SA1 and two stops on Elba Crescent near the proposed University Campus. Most of these stops have shelters and high kerbs, although most of the shelters have been in place for some time and are of a much lesser quality than, for example, the new bus shelters within SA1 (which offer a more attractive and comfortable environment for waiting passengers).

Bus Lanes: There is a dedicated westbound bus lane linking the existing Park and Ride site to the Tawe Bridges. It incorporates a Bus Only bridge across Fabian Way before running along the southern side of Fabian Way to the Tawe Bridges junction.

Observation on site has identified that a significant number of buses travelling westbound into Swansea do not make use of the nearside bus lane on the approach to the SA1 junction and Tawe Bridges junction. This is understood to be due to the relatively limited Green time given to buses in the signal cycle, with a consequence that buses using the bus lane would often need to wait (signalled on Red) while the main traffic stage is proceeding (on Green).

Bus Gates: There are two bus gates east of Baldwin's Bridge on side road parallel to Fabian Way; that is, on Elba Crescent and on the western end of Amazon Road. These are located to ensure that only bus services travel on these routes, which could otherwise be used as 'rat runs' during periods of congestion on Fabian Way. These bus gates will become more relevant once the Coed Darcy development is in place, and bus services will operate through Coed Darcy and connect to Fabian Way via the western section of Amazon Road and Elba Crescent.

Bus Services: In respect of bus services, several bus services run in both directions along the A483 Fabian Way, some of which travel through the SA1 development. The network coverage of these services is quite wide, connecting to many of the nearby urban conurbations. Most of the services are hourly and are operated by First. Table 2.1 below gives a summary of key destinations and frequencies, which are shown diagrammatically in Figure 2.1.

Table 2.1: Buses serving the Study Area

Service	Route	Frequency (Bus Per Hour, peak)	Operator
X1	Quadrant Bus Stn > Bridgend	1 bph	First
X3	Quadrant Bus Stn > Maesteg	1 bph	First
X5	Quadrant Bus Stn > Glynneath	2 bph	First
100	Quadrant Bus Stn > Cardiff	2 bph (incl 1bp2h to Brstl Arprt)	First
6	Quadrant Bus Stn > Port Tennant	3 bph	First
44	Quadrant Bus Stn > Grenfell Park	1 bph	First
224	Quadrant Bus Stn > Porthcawl	1 bph	First
157	Quadrant Bus Stn > Neath	1 bph	First
158	Quadrant Bus Stn > Banwen	1 bph	First
502	Fabian P&R > St Mary's Church	5 bph	First (CCS contract)

2.2.8 Park and Ride

The Fabian Way Park and Ride site lies to the north of the A483 opposite the access to Swansea Docks. The 550-space car park opens between 06.45 and 19.30 Monday to Saturday, as well as Sundays in the five weeks prior to Christmas. Low floor buses operated by First Group every 15 minutes provide a link to the City Centre with an average journey time of 10 minutes. Westbound buses use the bus-only bridge and a dedicated westbound bus lane adjacent to the SA1 development as far as the Tawe Bridges. Outbound buses travel in mixed traffic on Fabian Way.

The Park & Ride service has stops on Fabian Way adjacent to SA1 although passengers travelling back to the car park need to cross Fabian Way (at either Tawe Bridges or the main SA1 junction), and from observation this stop is lightly used.

2.2.9 Coach

The nearest National Express coach stop is at Swansea bus station. Services between Swansea and Cardiff travel along Fabian Way, at approximately hourly intervals with a number of destinations (e.g. Cardiff, Heathrow, London).

First operates the express 'Greyhound' service between Cardiff and Swansea at two services per hour in the peak period. Since March 2013, one service every 2 hours extends to Bristol and Bristol Airport. The Greyhound (100) service has stops on Fabian Way (although from observation very few services stop there) – and a single service in the peak hour travels via SA1 (Langdon Road).

Arriva Cymru operates the X40 Trawscambria service between Cardiff and Aberystwyth. There are two services a day from Swansea bus station in each direction - however, these services do not stop within the Study area (although the advent of the University campus may create a local market for this service).

2.2.10 Cycling and Walking

Cycling: The Celtic Trail, part of National Cycle Network (NCN) Route 4, runs 84 miles from the Severn Bridge to Swansea via Chepstow, Newport, Pontypridd and Port Talbot. There are two branches within the Study area (as shown in Figure 2.2).

The Sail Bridge is a pedestrian and cycle bridge that links the SA1 development with the City Centre. The Celtic Trail crosses the Afon Tawe using the Swansea Marina lock entrance (south of the Sail Bridge linking to SA1). At Tawe Bridges, the cycle route crosses Fabian Way, with a cycle route extending north to the Hafod area. At the western (city) end of Fabian Way the cycle route runs to the south of Fabian Way along an off-road combined footpath / cycleway (alongside SA1). The route crosses over to the north side of Fabian Way via the Park & Ride overbridge. The route is effectively discontinuous between the Park & Ride site and the Elba Crescent junction on the western side of Baldwins Bridge – and cyclists travel on a narrow (approximately 1m wide) shared footway alongside Fabian Way.

The cycleway is routed along Elba Crescent, on road and in mixed traffic, and connects to a shared footway/cycleway just east of the Elba Crescent signal controlled junction. The shared footway/cycleway provides a reasonable level of service, but is prone to localised ponding in rainy weather.

The recently modified Jersey Marine roundabout is well-signed but cyclists have to dismount to cross the junction, or travel north and approach the roundabout via Amazon Road. There is an underpass near the motorway slips towards Junction 42.

There is a secondary, incomplete branch of the Celtic Trail that follows the Tennant Canal to the north of Fabian Way. This off-road route is missing a section on the western approach to the Jersey Marine roundabout. Sustrans has an aspiration to complete this additional section to link the branch route along the canal to the main NCN 4 route along Fabian Way at the Jersey Marine roundabout (as a leisure route rather than for regular commuting journeys).

Walking: There are footways along both sides of Fabian Way for much of its length. The recently modified Jersey Marine roundabout incorporates a shared cycleway / footpath with signalised crossings to the north.

There are signalised at-grade pedestrian crossings of Fabian Way at the Park and Ride junction, the SA1 junction and immediately east of the Tawe Bridges. There are also three bridge crossing points over Fabian Way. Two bridge crossings are dedicated pedestrian footbridges linking the community of Port Tennant north of Fabian Way to the settlements on the south side. Neither footbridge incorporates fully ramped access.

The Park & Ride overbridge used by westbound Park and Ride buses provides a smooth gradient shared path link between the SA1 development and the residential community of Port Tennant. The SA1 development has been designed to facilitate movement by non-car users. It includes raised highway crossings and footpaths.

There is an existing footpath along the Tennant Canal, and recent improvements to this route have been undertaken – as part of the Wales Coastal Path project. However, as stated above, use of this route by cyclists is presently not allowed by the canal owners.

2.2.11 Canals

The Tennant Canal is 12 km long and runs from its junction with the Neath Canal at Aberdulais, through Neath town to Crymlyn Bog. It currently terminates at the western end of the bog near Swansea Docks, on the north side of Fabian Way. Much of the Tennant Canal is managed by a private company as an industrial water supply. The managed length includes the section running below the M4 viaduct westwards through Jersey Marine village as far as its junction with the Glan-y-Wern canal.

The following canal sections are extant but in an abandoned condition:

- the full extent of the Glan-y-Wern Canal from its junction with the Tennant Canal northwards into Crymlyn Bog;
- the Tennant Canal west of the Glan-y-Wern Canal; and
- the short spur of the Tennant Canal at Jersey Marine that provides access to the tidal reaches of the River Neath.

The integrated restoration of this network remains a long-term aspiration for the IWP (Vale of Neath and Swansea Valley Integrated Waterway Partnership). This is reflected in development plan policies safeguarding the waterway routes from proposed developments. Swansea's SA1 development retains land reserved for access into the Prince of Wales Dock, both from the east and into the Afon Tawe to the west. It is understood that current situation is that there are no active proposals for the restoration of the waterway network within the Swansea part of the Study area.

2.2.12 Port

Swansea Docks is an active port operated by Associated British Ports (ABP). It handles freight cargo including containers, dry bulks, minerals and ores, forest products, steel and other metals and other general cargo. It is also equipped to accept passenger cruises visiting the Bay and Gower areas. A passenger ferry to Cork has operated in the past (and the most recent operation was terminated in 2011).

The main vehicular entrance on Langdon Road has a 24-hour security gate. Access to this entry is via the Park and Ride junction at Port Tennant on Fabian Way. A second access to the east provides a link via Baldwins Bridge, but the security gate is only manned from 6am to 6pm. Swansea Docks also utilises the existing railway line for movement of freight.

2.2.13 Utilities

Information was gathered for the previous Welsh Government study of Fabian Way. All major services were present within the Fabian Way corridor. Prior to any construction design, the presence of utilities should be re-visited.

2.3 Corridor Development Proposals

The Welsh Government, NPT and CCS have aspirations to maximise the potential of the Fabian Way corridor from an economic, environmental and social perspective. The area has been identified as a sub-regional focus for economic growth and there are several major regeneration schemes ongoing at present and proposed for the future.

In Swansea's draft Local Development Plan (LDP), the Fabian Way corridor is considered as an area which may be suitable to accommodate future growth scenarios.

The draft LDP Strategic Options document (2012) states that corridor is:

> *a major gateway into Swansea and a significant part of the Swansea Bay waterfront regeneration area. It represents one of the largest brownfield sites in the County; however key to the future of this corridor will be decisions regarding the ongoing use of the port and docks. The existing commercial docks make an important contribution to the economic infrastructure of the County. It is possible however that land within, and adjacent to, the existing Queens Dock may become surplus to operational requirements in future. The redevelopment of this area for alternative uses presents a significant opportunity.*
>
> *Also of significance at this location are the proposals for a second campus for Swansea University on former industrial land south of Fabian Way adjoining the authority boundary. The campus proposals give rise to opportunities for linked development. Some parts of this area may be at risk of flooding, which would need to be assessed along with possible requirements for mitigation*

2.3.1 Ongoing Major Developments

Major development along Fabian Way is expected to continue over the next 20 years. Key developments are planned as follows:

Coed Darcy Urban Village: Expansion of Coed Darcy Urban Village on the site of the former BP oil refinery is current proceeding. The proposed village would ultimately comprise approximately 4,000 dwellings; 41,200m² of B1 (offices, research and development and light industrial) employment use, with up to 20% of this being office use; up to 3,800m² of retail food stores (gross floorspace) and 8,000m² of other commercial; educational facilities comprising three Primary School with 2 form entry, plus a Secondary School for up to 900 pupils; health care facilities comprising a doctor and dental surgery; community and neighbourhood facilities and a variety of public open spaces.

The southern access link, including a bus-based public transport route linking Coed Darcy with Fabian Way via the western portion of Amazon Road, is due to be constructed by 2020. The 'bus gate', to prevent rat-running through Coed Darcy and the Amazon Road area, is already in place at the western end of Amazon Road (near its junction with Elba Crescent).

Swansea University Campus: A new additional campus for Swansea University is planned for the former BP tank farm site south of Fabian way.

The campus will include and innovation park, mixed academic, research and development facilities (Use Class B1) , university residential accommodation (up to 4000 beds) and ancillary student/staff facilities. Phase 1 of which has the benefit of reserved matters approval, and is due to open in September 2015.

The approval includes;

- Phase 1A, to be operational by September 2015, providing a financial contribution of £1.05m works identified in this commission.
- A contribution of £1.05m that is due in September 2020.
- A contribution of £825,000 that is payable on development of Phase 2.

The main access by road to the university campus will be via a new signal controlled junction to be constructed to the west of the existing Fabian Way/Elba Crescent junction.

SA1 waterfront: Further development within the SA1 waterfront is planned. Approximately half of the anticipated 700,000 m² of proposed development has now been completed. The SA1 Waterfront development comprises a mix of residential, leisure and offices uses to form a new quarter adjacent to Swansea City Centre delivering up to 2000 new residential units and 4000 office jobs. In addition to a number of planned residential developments, some of the more prominent proposals which have currently secured outline consent include the provision of a large multi-storey car park, health centre and residential home for the elderly on the north side of the Prince of Wales Dock.

Swansea Docks: ABP owns a significant amount of land around the docks area. Although much of the land bordering Fabian Way and the Prince of Wales dock is now part of the SA1 development, ABP has aspirations to further develop its site. ABP operate a clear separation between dock traffic and public vehicles primarily due to a security issues.

3 Transport Assessment

3.1 Introduction

A Traffic Impact Assessment has been undertaken of the Fabian Way road corridor to establish the likely impacts of future development on traffic capacity and congestion. The full Assessment is presented in Appendix B, and a summary is presented in Section 3 of this Report.

3.2 Land Use and Timeline assumptions

Two land use scenarios have been analysed namely:

- 5 Year Assessment (2018)
- 10 Year Assessment (2023)

Information on likely development has been obtained through collaboration with officers at CCS and NPTCPC. Information from the previous study was used as a base for discussions with the relevant local authority officers. Figure 3.1 shows the location of development areas.

Assumptions on the likely phasing and scale of individual developments have been made, in order to forecast the likely levels of overall occupied development within the study area in 2018. Where developments are partially built, or recently completed, traffic will have been captured within the traffic surveys. Therefore forecasts are based on the remaining vacant land; land parcels along the Fabian Way corridor that unlikely to be developed within the 5 year period have been omitted. Tables 3.1 and 3.2 present this information for the '5-year' and '10-year' assessment respectively. Land parcels along the Fabian Way corridor that unlikely to be developed within the 10 year period have been omitted.

Table 3.1: Assumed development schedule for the 5 year scenario

Development	Short term quantum	Source/Assumption
SA1 – Large dockside redevelopment.	Residential – 247 Units Employment – 4046m2 Leisure – 1758m2 Local Retail – 1758m2 Medical Centre – 3300m2	Information on overall remaining land allocations within SA1 obtained from Welsh Government. Assumed that 10% of overall remaining allocation will be constructed during the 5 year period. 'Mixed Use' allocation has been divided 50/50 between leisure and retail.
Swansea University Second Campus	899 Residential Students	Information on phasing obtained from NPTCBC officers and formal planning documents submitted as part of the granted planning permission. University expected to open in 2015, therefore assumed that Phase 1A to be completed by 2018.
Science Park (Elba Crescent) 1 – Employment and warehousing	4250m2 – Employment (Office) 4250m2 – Employment (Light industrial) 4250m2 - Warehousing	Information on emerging Local Development from NPTCBC officers. Scale of overall land availability based on previous study; assumed that 20% of land allocation to be constructed during the 5 year period.
Science Park (Elba Crescent) 2 – Employment and warehousing	4250m2 – Employment (Office) 4250m2 – Employment (Light industrial) 4250m2 – Warehousing	Information on emerging Local Development from NPTCBC officers. Scale of overall land availability based on previous study; assumed that 20% of land allocation to be constructed during the 5 year period.
Coed Darcy – Urban Village development	302 units – with southern access	Information obtained from NPTCBC officers on development timescales. Southern access expected to be completed in 2015/16. Therefore assumed that phase 1 of development will be occupied by 2018.

.

Table 3.2: Assumed development schedule for the 10 year scenario

Development	Medium term quantum	Source/Assumption
SA1 – Large dockside redevelopment.	Residential – 387 Units Employment – 10115m2 Leisure – 4395m2 Local Retail – 4395m2 Medical Centre – 3300m2	Information on overall remaining land allocations within SA1 obtained from Welsh Government. Assumed that 25% of overall remaining allocation will be constructed during the 10 year period. 'Mixed Use' allocation has been divided 50/50 between leisure and retail.
Swansea University Second Campus	2000 Residential Students	Information on phasing obtained from NPTCBC officers and formal planning documents submitted as part of the granted planning permission. University expected to open in 2015, therefore assumed that 50% of university to be completed by 2023.
Science Park (Elba Crescent) 1 – Employment and warehousing	10625m2 – Employment (Office) 10625m2 – Employment (Light industrial) 10625m2 - Warehousing	Information on emerging Local Development from NPTCBC officers. Scale of overall land availability based on previous study; assumed that 50% of land allocation to be constructed during the 10 year period.
Science Park (Elba Crescent) 2 – Employment and warehousing	11250m2 – Employment (Office) 11250m2 – Employment (Light industrial) 11250m2 – Warehousing	Information on emerging Local Development from NPTCBC officers. Scale of overall land availability based on previous study; assumed that 50% of land allocation to be constructed during the 10 year period.
Coed Darcy – Urban Village development	1000 units Employment Office – 1176.75m2 Employment Light Industrial – 8583.25m2 Retail – 950m2 Commercial – 2000m2 Education Primary - 1537.5m2 Education Secondary – 1625m2	Information obtained from NPTCBC officers on development timescales. Information from original TA used regarding the number of units from second phase. Assumed that 25% of district centre will be developed by 2023.

3.3 Trip generation

Trip generation has been forecast using the development information presented in Section 3.2, and information obtained from the previous study. The trips rates have been reviewed and are considered to be representative of trip generation from the future land uses.

Full details on the trip rates, internal movement assumptions, demand matrix and route assignment are provided in Appendix B: Traffic Impact Assessment. It is assumed that the new link to Coed Darcy will be opened to traffic within the 10 year period, and thus a proportion of the associated traffic will use this new route.

Historic traffic data between 2008 and 2012 was obtained from CCS, which gave an indication of background traffic growth in the area. The data suggests that there has been limited growth in background traffic over this time period. It is assumed that this trend will continue over the next 5 to 10 years, and as such, no background traffic growth rate has been applied to the traffic survey data. It is considered reasonable that any growth in traffic will result specifically from development along the corridor. The resulting network flows for the AM and PM peaks are presented as PCUs in Appendix B: Traffic Impact Assessment. These flows have been derived by adding the development flows onto the 2013 observed traffic flows.

3.4 Traffic Capacity Analysis

Conditions at the key junctions have been simulated using LinSig3 traffic signals software. The models have been built using geometries obtained from junction plans provided by the CCS and NPTCP. Where plans were not available, Ordinance Survey data and information from the previous study has been used.

Baldwins Bridge and the Jersey Marine Amazon junction have been omitted from the junction analysis; Baldwins Bridge is a priority type junction which operates similar to a merge/diverge junction, and therefore cannot be simulated using modelling software. The Jersey Marine Amazon junction has recently been reconfigured, and it is assumed that the junction will have been designed with sufficient capacity to accommodate short to medium term traffic as a minimum.

The full model outputs are provided in Appendix B. Summary results tables for the existing and future scenarios are presented in Tables 3.3, 3.4, and 3.5.

Table 3.3: Existing Conditional model results summary

Junction	Overall Practical Reserve Capacity		Total Delay (PCU/Hr)	
	AM	PM	AM	PM
SA1/Port Tennant Cross Roads	-10.6%	16.2%	67.84	43.31
Park and Ride/Docks Cross Roads	-4.9%	6.4%	50.98	34.62
Elba Crescent Signals	33.1%	12.2%	11.25	13.61

Desirable Practical Reserve Capacity (PRC) is typically considered to be at 90% saturation; i.e. a junction operating at 85% saturation will have 5% PRC, whereas a junction operating at 95% saturation will have -5% PRC. The maximum theoretical capacity of a junction is 100% saturation (and therefore -10% PRC).

3.4.1 Existing Conditions

The models replicate the observed site conditions, indicating that the corridor is operating at or capacity during the AM peak hour in particular (see Table 3.3). The corridor operates efficiently during the PM peak.

The SA1 access currently exceeds overall practical capacity during the AM peak; which is associated with the high volumes of westbound traffic into Swansea. The model shows the westbound Fabian Way arm approaches capacity, with a queue length of up to 43 vehicles and 99% saturation.

The Park and Ride cross roads are also approaching capacity during the AM peak, with the maximum observed saturation of the westbound Fabian Way arm being 94%,with a queue length of 37 vehicles. The southern arm of the cross roads is also at 90% saturation, however the queue length is limited to 7 vehicles.

3.4.2 Future Scenarios

The key junctions along the Fabian Way corridor have been tested. To account for the Swansea University second campus, a new model has been developed to simulate the proposed junction being implemented as part of the University development. This includes an additional arm at the signalised Elba Crescent junction, leading into the university site. The model is based on the permitted design plan, obtained from officers at NPTCBC.

An additional junction is introduced to the west of Elba Crescent as part of the University second campus; which will serve as the primary access into the site. The junction takes the form of a three armed signalised junction, and the permitted design plan has been obtained from officers at NPTCBC.

2018 Scenario: The full model outputs are provided in Appendix B. A summary is shown in Table 3.4, which provides details on the overall spare capacity of the junctions.

Table 3.4: 2018 junction model results summary

Junction	Overall Practical Reserve Capacity		Total Delay (PCU/Hr)	
	AM	PM	AM	PM
SA1/Port Tennant Cross Roads	-13.7%	4.6%	95.22	51.05
Park and Ride/Docks Cross Roads	-5.7%	5.9%	46.78	38.43
Primary University access	9.6%	37.8%	13.98	13.54
Elba Crescent Signals (four arm)	6.3%	18.9%	21.46	17.76

The results show that the SA1 junction would continue to operate above capacity in the AM peak, with the PRC decreasing to -13.7% and delay increasing to 95 PCU/Hr in the AM peak. The Park and Ride access has a -5.7% PRC, but continues to operate within theoretical capacity. The westbound arms continue to be subjected to the highest demand, and therefore are the arms that are most saturated during the AM peak. The two junctions at the University operate within capacity, with a minimum of 6% PRC in the AM peak.

The corridor continues to operate efficiently during the PM peak.

2023 Scenario: The full model outputs are provided in Appendix B, with a summary provided in Table 3.5, which provides details on the overall spare capacity of the junctions.

Table 3.5: 2023 junction model results summary

Junction	Overall Practical Reserve Capacity		Delay (PCU/Hr)	
	AM	PM	AM	PM
SA1/Port Tennant Cross Roads	-22.4%	-13.3	201.93	99.64
Park and Ride/Docks Cross Roads	-15.1%	-0.7%	99.06	47.11
Elba Crescent Signals (four arm)	-11.4%	-0.6%	63.85	34.69
Primary University access	3.5%	8.3%	24.12	28.00

The results show that the capacity problem at the SA1 junction would worsen, with the junction operating above capacity in both AM and PM peaks. There is major delay in the AM peak, which is largely associated with westbound traffic. The Park and Ride and Elba Crescent signals also exceed capacity in the AM peak, and are approaching capacity in the PM peak. The primary University access operates within capacity in both peaks.

3.5 Conclusion and Recommendations from Traffic Analysis

The traffic analysis demonstrates that the Fabian Way corridor is currently operating at or close to capacity. It is clear that measures to increase use of non-car modes should be promoted as the way forward to address congestion issues e.g. enhancement of public transport and walking/cycling facilities.

Mitigation of congestion impact can also be undertaken by introducing minor alterations to local junctions, which should also include measures to assist non-car modes. Recommendations are as follows:

- **Improve pedestrian crossing opportunities, bus priority and traffic management at SA1 junction:** The dedicated bus lane currently has its own signal stage which creates inefficiency in signal timings. Traffic using the left turn lane currently has to cut across the path of the bus lane which prevents the bus lane and left turn lane phases being run in the same signal stage.

  It is proposed to realign the bus lane, and left turn lane on the westbound approach arm; so that the bus lane is situated next to the westbound general traffic, and the left turn lane situated in the current location of the bus lane. This provides the potential to run the bus lane phase and left turn phase within the same signal stage. It is likely that this will increase the capacity of the junction, due to the improved efficiency of the signal timings

- **Improve pedestrian crossing opportunities, bus priority and traffic management at SA1 junction: Tawe Bridges junction:** It is considered that a similar efficiency improvement could be achieved within the short term period at this junction. It is recommended that the bus lane should merge with general traffic in front of the stop line on the westbound Fabian Way approach. This would allow the bus only stage to be removed from the signal cycle, potentially increasing the capacity of the junction, providing more efficient bus priority and better pedestrian crossing opportunity.

The above measures represent a balanced approach to managing travel demand – that is, major improvements to traffic capacity along Fabian Way are not recommended as this would tend to induce further traffic growth, and would also reduce the opportunities for, and potential effectiveness of, sustainable and environmentally friendly transport measures.

4 Review of Transport Strategy

4.1 Problems and Objectives

In the 2010 Transport Strategy a number of problems and objectives were identified, through an examination of the transport and environmental conditions in the corridor and from consultation with stakeholders and the community. These are summarised in Tables 4.1 and 4.2.

Table 4.1: Fabian Way Transport Problems

Ref	Problem
P1	Congestion near Tawe Bridges
P2	Baldwins Bridge: poor junction arrangement, existing structure requires heavy maintenance
P3	Park and Ride too close to City Centre
P4	Lack of eastern gateway to Swansea
P5	Negative local perception of transport
P6	Fabian Way forms a barrier between areas to the north and south
P7	Social exclusion
P8	Lack of continuous cycle facilities
P9	Lack of linkages between green areas
P10	Pollution from traffic
P11	Flood risk
P12	Land contamination
P13	Insufficient capacity of existing utilities

Table 4.2: Fabian Way Transport Objectives

Ref	Objective
1	To maintain or improve the duration, reliability and predictability of journey times on the corridor for business, commuting and freight
2	To reduce congestion and delay at the Tawe Bridges
3	To actively promote ultra-low carbon alternatives such as walking and cycling and low carbon alternatives such as public transport options in order to double the modal share for alternative modes of travel along the length of the corridor
4	To increase public transport capacity along the corridor
5	To define a clear gateway into Swansea from the east for transport users along the corridor
6	To improve connectivity and accessibility between communities and developments north and south of Fabian Way
7	To protect, enhance and improve access to green space within the Study area, particularly Crymlyn Bog and Crymlyn Burrows
8	To minimise the adverse impacts on air quality for local residents arising from transport

4.2 Review of 2010 Transport Strategy Measures

Table 4.3 sets out the full programme of measures for the 2010 Transport Strategy (with the relevant measure reference number). A review of the measures has been undertaken in respect of their current affordability, as well as their beneficial impact in respect of addressing the Transport Objectives set out in Table 4.2. The review for each mode is set out in Sections 4.2.1 to 4.2.7, and for each measure, comments are made as to their suitability and recommendation for retention, modification or deletion.

4.2.1 Review of Highway Strategy

The Highway Strategy aimed at striking a balance between maintaining efficient access and promoting an environment suited to travel by more sustainable modes such as walking and cycling. The key measures include:

- **Capacity Improvements at Tawe Bridges (H1b):** This scheme has been implemented and is operating successfully, and can thus be removed from the Updated Transport Strategy.
- **New grade separated junction at Baldwin's Bridge (H4c):** Since the previous 2010 study, CCS has carried out checks on the structural integrity of the Fabian Way overbridge, and concluded that the structure is in reasonable condition and is 'maintainable' in the foreseeable future with no plans or necessity to replace the structure[1]. This scheme would in any case be extremely expensive and would bring limited benefits compared to the current junction operation. It is thus concluded that a new grade-separated junction at Baldwin's Bridge should not be included as a measure to be taken forward in the long-term.

  However, Baldwin's Bridge will be subject to traffic pressures if development takes place around Fabian Way in this area. As development proceeds it is recommended that traffic signals are installed on Fabian Way on the westbound and eastbound on-slips (which are currently of a sub-standard length and not suitable for carrying increased traffic flows). Bus priority at the signal control junctions should also be included.
- **Reduce speed limit to 30mph from Jersey Marine gyratory (H9):** This measure should be modified to introduction of a 40mph Speed Limit at Jersey Marine (westbound) – as a reduction from the current 50mph Speed Limit (as shown in Figure 1.1). This 40mph Speed Limit is in any case included as part of the proposed highway mitigation for the University Campus, and will thus be in place shortly as a Short-term measure.

[1] Discussions with CCS Structures team; April 2013

Table 4.3: Measures and Implementation Programme for the 2010 Fabian Way Transport Strategy

Measure Type	2010 Ref.	Description	Implementation timescale	Capital Costs (£M at 2009 prices)
Roads	H1b	Capacity Improvements at Tawe Bridges	M	3 - 4
	H4c	New grade separated junction at Baldwin's Bridge	L	5 - 10
	H5b	New grade separated junction at Jersey Marine gyratory	LL	-
	H7d	Segregated busway north of Fabian Way between P&R site and Baldwin's Bridge	S	5 - 7
	H9	Reduce speed limit to 30mph from Jersey Marine gyratory	L	0.5
	H10	Parallel development access road	L	0.5 - 1
	H11	Remove / reduce development accesses on Fabian Way	L	0.5
Public Transport	B2	Bus only bridge at Tawe Bridges	S	3 - 5
	B3a	Expand existing Park & Ride site	M	0.2
	B3b	Two-way buses across P&R bridge	S	0.1
	B4a	New P&R at Amazon development	L	2 - 3
	B4c	Convert existing P&R to Park & Walk	M	0.1
	B5	Divert services 155 156 to Coed Darcy	L	Bus operator
	B6	Divert services 31,32,33 (Swansea Birchgrove) to SA1.	S	-
	B7	Divert regional bus services to SA1	M	-
	B8	Extend existing University bus services to new university campus	M	-
	B10a	New bus routes between Coed Darcy and City Centre	M	Development
	B12a	New shuttle bus between University, SA1 and city centre	M	Bus operator
	B13a	Transport Hub for interchange adjacent to University campus	S	0.3
	B14	Bus priority measures for buses at University junction entrances	S	0.2
	B16a,b	Improved bus stop facilities	S	0.5
Walking / Cycling	W2a	Extend canal shared pedestrian / cycle route from Wern Fawr Road to Jersey Marine	S	0.2
	W2b	Extend canal shared route from Celtic Trail NCN 4 to the M4	L	0.5
	W3a	New cycle way through Coed Darcy	M	Development
	W3b	New off-road pedestrian and cycle route linking Coed Darcy and Fabian Way along eastern side of Crymlyn Bog	L	0.8
	W3c	New off-road pedestrian and cycle route linking Coed Darcy and Port Tennant Way along western side of Crymlyn Bog	L	0.6
	W4b	New off-road pedestrian and cycle route from Jersey Marine through golf course (Wales Coastal Path)	S	0.3
	W5a	New on-road cycle path through SA1 north of Prince of Wales Dock linking to Sail Bridge	S	0.1
	W6	New pedestrian and cycle route through University campus	M	0.2
	W7	Continuous pedestrian and cycle route on both sides of Fabian Way	S	0.5
	W9a	Extend On-road cycleway on B4290 north of Jersey Marine Roundabout through Jersey Marine as far as picnic site	L	0.1
	W10	Extend on-road cycleway north of Jersey Marine Roundabout on Fabian Way along the minor unclassified road through Jersey Marine as far as Llandarcy	L	0.3
	W11	Extend footway / cycleway along Amazon Road	M	Development
	W12	Bridlepath link from canal shared route to Pant y Sais stables	L	0.2
	W14	New cycleway over P&R bridge at Tawe Bridges	L	Included in B2
	W15	New pedestrian/cycle bridge between St Thomas and SA1	M	1 - 2
	W17	Upgrade existing footbridge (west of P&R junction) and provide ramped access for use by cyclists	M	0.2
	W18	New on-road cycle route through St Thomas / Port Tennant	S	0.1
Demand management	S2	CPZ throughout are area with Residents Parking	S	0.3
	S3, S4	Limited car parking spaces and car pooling in new developments	S	-
	S5	All new developments to conform to Travel Plan	S	-
	S6, S7	Residential Travel Plan for communities north of Fabian Way	S	-
	S8	Smart Ticketing	S	
ITS	ITS2	VMS to show traffic conditions and P&R availability	S	0.5
	ITS3	Signal optimisation	M	-
Rail	R2	Maximise use of freight line	S	-
	R4	Combined passenger / freight line	LL	-
Canal	C5	Protect route of canal restoration proposals	LL	-
		Cost (£m)		**27.0 – 39.5**

- **New grade-separated junction at Amazon Roundabout (H5b):** The need for this measure would be driven by the need to accommodate future traffic generated by development on the Amazon Road. Grade-separation would be extremely expensive and would have a major environmental (and visual) impact on the local area - and given the likelihood of limitations on funding it is considered appropriate to designate this measure as a 'long-term' element.

  In order to emphasise the need for a sustainable approach to dealing with future increases in travel demand, it is recommended that this measure is re-defined as a long-term 'multi-modal' improvement measure; that is, the measure should include provision for bus priority, pedestrian and cycle facilities, and need not be grade-separated (e.g. re-modelling the junction layout to address measured travel demand).

  However, in the short-term, measures to improve cycle access through the Jersey Marine junction would be beneficial. Presently, access through the gyratory junction is relatively indirect, such that cyclists are diverted from Fabian Way via Ffordd Amazon - to avoid crossing the segregated free-flow left-turn lane from Fabian Way (west) to Ffordd Amazon. It is proposed therefore that minor rearrangement of traffic lanes and signal stoplines is undertaken in order to provide a more direct and fully-signal-controlled cycle route through the junction.
- **Parallel development access road (H10):** The current poor outlook for site development (as a result of the financial recession in 2013) suggests that when development takes place, the level of financial contributions for 'development-funded' transport measures will be limited. Thus it is considered that introducing additional 'service road' infrastructure would reduce the availability of funding for 'core' measures. Furthermore, introduction of 'service roads' would tend to emphasise the 'expressway' nature of Fabian Way – which will have a detrimental effect on measures to improve road safety, reduce speeds, improve pedestrian and cycling conditions along the route.

  It is this recommended that this measure is removed from the strategy.
- **Remove / reduce development accesses on Fabian Way (H11):** The current poor outlook for site development (as a result of the financial recession in 2013) suggests that obligations for site development should focus on the 'core measures'. Thus it is recommended that this measure is removed from the Strategy. Furthermore, it is considered that the presence of site accesses can induce lower speeds in comparison with an 'expressway with slip roads' arrangement.

4.2.2 Review of Public Transport Strategy

The overriding aim is to improve public transport connectivity and to enhance its attractiveness as an alternative to the private car. The Preferred Public Transport Strategy focuses on enhancing and expanding the existing bus network and Park and Ride facilities to encourage use of more sustainable modes. The key measures include:

- **Segregated busway north of Fabian Way between P&R site and Baldwin's Bridge (H7d)[2]:** This measure will provide a means for buses to bypass any congestion on Fabian Way west of Baldwin's Bridge. The scheme has a relatively high capital costs and would need agreement from Network Rail and Rail Freight Operators to proceed (in order to build a new busway bridge crossing of the freight railway just north-west of Baldwin's Bridge).

  It is considered that this measure would only be justifiable with a greater number of buses travelling along Fabian Way, and thus should only be introduced in association with either:

  - Opening of the Coed Darcy southern bus only access road; or
  - Relocation of the Fabian Way Park & Ride site to a location off Amazon Road.

  This measure would provide a substantial benefit in respect of travel time for buses using the 'busway'.
- **Bus only bridge at Tawe Bridges (B2):** This proposed scheme has a high capital cost, and a significant element of bus priority is already in place in the form of a westbound bus lane on the westbound approach to Tawe Bridges. The feasibility and cost of construction of a bus bridge (on existing historical railway pillars) would be likely to depend on the scope of works to the river embankment. On the basis of its high cost, and limited bus priority benefits with measures already in place, it is recommended that this measure is removed from the Strategy.

  However, as part of a measure to improve pedestrian crossing opportunities, bus priority and traffic management (on the western end of Fabian Way), it is recommended that the bus lane and junction layout on the westbound approach to Tawe Bridges are modified. The recommended modification involves removing signal control from the bus lane (which then operates as a Give-way merge), insertion of a pedestrian crossing across Fabian Way, and insertion of a signal-controlled stop line some 50m back from the main Fabian Way/Tawe Bridges junction (to act as a Bus Gate).
- **Expand existing Park & Ride site (B3a):** The previous 2010 strategy included for expansion of the existing Park and Ride site into vacant land to the west; this element should be retained in the strategy as a medium/long-term measure to deal with additional travel demand as it arises.
- **Two-way buses across P&R bridge (B3b):** This proposed scheme should only be implemented in association with measures H7d (Segregated busway north of Fabian Way between P&R site and Baldwin's Bridge), and B4a (New P&R at Amazon development Measure); that is, the main benefits will accrue when buses travel via the Coed Darcy southern 'bus only' access road.
- **New P&R at Amazon development (B4a):** It is recommended that the current Park and Ride site is operated until development traffic generation is such that there are significant congestion pressures on Fabian Way – especially on the western portion. An alternative Park & Ride site is proposed, to the north of the Amazon Distribution Centre (on Amazon Road).

  In order to be operationally feasible, efficient and attractive to users, this measure would require associated measures to be in place, namely H7d (Segregated busway north of Fabian Way between P&R site and Baldwin's Bridge), and B3b (Two-way buses across P&R bridge).
- **Convert existing P&R to Park & Walk (B4c):** It was originally proposed that the existing Park and Ride facility could be utilised as a Park and Walk site if/when a new Park & Ride site is established on Ffordd Amazon. This measure would not encourage sustainable travel patterns and could be detrimental to the commercial viability of a new Park & Ride site. It is thus recommended that this measure is removed from the Updated Strategy.

[2] This measure was included under the 'Highway Strategy' heading in the 2010 Strategy

- **Diversion and new bus services (B5, B6, B7, B8, B10a, B12a):** A number of diverted and new services could better serve the corridor in future. Discussions with operators should be maintained with a view to introducing services as follows:
    - New bus routes between Coed Darcy and City Centre Divert and divert services 155 156 to Coed Darcy,
    - Divert regional bus services and local services 31,32,33 (Swansea Birchgrove) to SA1,
    - Extend existing University bus services to new university campus, and new shuttle bus between University, SA1 and city centre.
- **Transport Hub for interchange adjacent to University campus (B13a):** The 'Transport Hub' should be incorporated in the measure to improved bus stop facilities (B16a,b). The purpose of the 'transport hub' was to provide a location where bus services coincide and provide passengers with route choice and interchange opportunities. In order to create the 'hub' effect, it is desirable that future bus services to/from Coed Darcy are routed near the University Campus to both enhance accessibility for the student population, and to improve commercial viability of local bus services. It is proposed therefore that a bus-only road link is provided between Ffordd Amazon and Fabian Way (probably to the east of the ex-Visteon site). This 'Ffordd Amazon – Fabian Way Bus Link' which would allow buses from Coed Darcy to travel close to the University campus, with associated benefits to Fabian Way in terms of bus frequency, and reducing the need for any subsidy of services.
- **Bus priority measures for buses at University junction entrances (B14):** It is understood[3] that the University were unable to agree to any intra-campus bus routes and hence bus priority from the University access roads is not necessary.
- **Improved bus stop facilities (B16a,b):** Improved facilities at bus stops such as seating, lighting and digital real-time passenger information are essential in order to attract travellers to use buses. Bus shelters and facilities will also tend to provide an environmental uplift to the pedestrian realm.

4.2.3 Review of Walking and Cycling Strategy

The Preferred Walking and Cycling Strategy aims to encourage walking and cycling through improvements to the existing network and facilities, with particular emphasis on crossing points along Fabian Way. The key measures include:

- **New on-road cycle path through SA1 north of Prince of Wales Dock linking to Sail Bridge:** A cycle route from the Tawe to Baldwin's Bridge should be a long-term aim as development east of the current SA1 proceeds. The cycle route should be routed away from Fabian Way and through SA1 / Langdon Road. This should be delivered as part of SA1 and adjacent development infrastructure.
- **Continuous pedestrian and cycle route on both sides of Fabian Way:** It is desirable that a high quality off-road cycleway is provided from the Tawe to the New University Campus (and hence to the Amazon area). A shared cycle/footway is deliverable on the north side of Fabian Way between Wern Fawr Road and Baldwin's Bridge. This scheme would then extend under Baldwin's Bridge and a cycleway constructed at the foot of the bridge embankment (on the south side of Fabian Way) to give a connection to the University campus. Treatment to all side road accesses (e.g. raised crossing) would be needed to provide a safe and continuous cycle route.

  It would also be beneficial to extend this improvement of cycle facilities to the section or road between Elba Cresent and the Amazon Roundabout. Presently the existing shared cycle/footway on the north side of Fabian Way (east of Elba Crescent junction) is prone to localised flooding, and access through the Ffordd Amazon / Fabian Way junction is relatively poor and indirect for cyclists. This is discussed in Section 4.2.1.
- **New pedestrian and cycle route through University campus:** It would be beneficial to have an east-west cycle link through the University Campus as a means to link to Baldwin's Bridge – and thereafter to a cycleway on the north side of Fabian Way. This measure could be addressed by inclusion within a proposed improved Fabian Way Cycleway extending from Wern Fawr Road via Baldwin's Bridge.
- **Extend footway / cycleway along Amazon Road:** This has been installed.
- **New cycleway over P&R bridge at Tawe Bridges** Deletion of the proposal for a bus-only bridge makes this scheme non-deliverable.
- **New pedestrian/cycle bridge between St Thomas and SA1:** A historical accident problem (involving serious and fatal injuries to pedestrians crossing Fabian Way) necessitates implementation of a scheme to control pedestrian crossing activity. A review of the feasibility of an overbridge scheme has identified that it would necessarily need to link at high level to either Sebastopol Street or Lewis Street in St Thomas – which would require pedestrians to negotiate a ramp between the overbridge set down and the Fabian Way footway. Thus, concerns about the feasibility and likely usage of an overbridge, and its high cost, have prompted an alternative option to be developed, consisting of an at-grade pedestrian crossing; it is recommended that this option be proceeded with.

  In addition, it is desirable that a pedestrian crossing is provided across Fabian Way as it approaches the Tawe Bridges junction – in addition to the indirect crossing route already in place (which involves crossing via a pedestrian island on Ffordd Glan-y-Dwyrain). Rearrangement of the Fabian Way / Tawe Bridges junction is proposed, which can also improve bus priority at the junction. It would also be beneficial to undertake a similar re-arrangement of the westbound approach to the SA1 junction (Note: These measures are also noted in the Review of Public Transport Strategy).
- **Upgrade existing footbridge (west of P&R junction) and provide ramped access for use by cyclists:** There is a 'missing' link for local cycle access between St. Thomas (Port Tennant Road) and the scheme will include increasing the height of barriers on overbridge and construction of a ramp facing east on the north side of the bridge.
- **New cycle way through Coed Darcy:** This facility will be introduced as part of Coed Darcy ongoing development.
- **Other walking/cycling measures:** A number of measures primarily aimed at leisure cycling/walking were included in the Strategy, and a review of these suggests that although some measures have a significant capital cost, most are still desirable in the medium/long-term, and should be implemented as funding sources are identified, as follows:
    - **New on-road cycle route through St Thomas / Port Tennant**

[3] NPT Development Control

- **Extend canal shared pedestrian / cycle route from Wern Fawr Road to Jersey Marine**; This measure is mainly aimed at leisure cycling and negotiations with the canal owns in respect of cycle access should continue.
- **Extend canal shared route from Celtic Trail NCN 4 to the M4**
- **New off-road pedestrian and cycle route linking Coed Darcy and Fabian Way along eastern side of Crymlyn Bog**
- **New off-road pedestrian and cycle route linking Coed Darcy and Port Tennant Way along western side of Crymlyn Bog**
- **New off-road pedestrian and cycle route from Jersey Marine through golf course (**Wales Coastal Path)
- **Extend On-road cycleway on B4290 north of Jersey Marine Roundabout through Jersey Marine as far as picnic site**
- **Extend on-road cycleway north of Jersey Marine Roundabout on Fabian Way along the minor unclassified road through Jersey Marine as far as Llandarcy**; This route is parallel to the future Coed Darcy cycleway and is therefore not necessary and should be deleted.
- **Bridlepath link from canal shared route to Pant y Sais stables** (This scheme has effectively been provided by construction of the Amazon Road and future construction of the southern access bridge to Coed Darcy**).**

4.2.4 Intelligent Transport Systems Strategy

The ITS Strategy supports the strategies proposed for the other modes:

- **VMS on Fabian Way:** Variable message signs will be installed to show traffic conditions and give information on Park & Ride availability and bus times.
- **Signal optimisation:** Traffic signals within the site area should be monitored at regular intervals and optimised to match traffic demand and increase efficiency (for pedestrians and buses as well as general traffic).

4.2.5 Review of Demand Management Strategy

The Demand Management Strategy incorporates various 'soft' measures to encourage use of alternative modes of travel and thus reduce traffic levels and resolve existing parking conflicts. Key measures include:

- **CPZ throughout are area with Residents Parking**
- **Limited car parking spaces and car pooling in new developments**
- **All new developments to conform to Travel Plan**
- **Residential Travel Plan for communities north of Fabian Way**
- **Smart Ticketing for public transport users**

The overall goal of the Travel Plan process is to achieve a situation where residents, employees and visitors can make intelligent travel decisions based on high quality information and a choice of transport modes.

4.2.6 Review of Other Transport Measures

Other measures, not critical in respect of sustainable transport, should be maintained as ongoing processes:

- **Canal Strategy:** The Canal Strategy for the Fabian Way Corridor Transport is to protect the route of canal restoration proposals by not proposing alternative uses for the land.
- **Rail Strategy:** The Rail Strategy seeks to maximise the use of the existing railway as a freight line, and to continue to consider a long-term possibility of passenger rail.

4.3 Measures to be Deleted

Based on the discussion set out in Section 4.2 a number of measures are recommended for 'deletion' from the Updated Strategy – due to either their high cost, difficulty in delivering, or a relative lack of impact. These are shown in Table 4.4.

Table 4.4: Items Removed from 2010 Implementation Programme

Mode		2010 Ref	Measure	Comment
REMOVED	Roads	H10	Parallel development access road	To be removed. No benefits and will not be in compatible with proposed reduction in Speed Limit.
	Roads	H11	Remove / reduce development accesses on Fabian Way	To be removed. Each development proposal should be dealt with on its own merits.
	Public Transport	B4c	Convert existing P&R to Park & Walk	This scheme would potentially undermine commercial viability of future relocated Park & Ride site.
	Public Transport	B14	Bus priority measures for buses at University junction entrances	Bus priority should be include where possible on Fabian Way
	Public Transport	B2	Bus only bridge at Tawe Bridges	This scheme will have limited impact without further bus lane provision along Victoria Road / Oystermouth Road, which appears to be difficult to deliver due to the lack of roadspace. Also, impacts on river flow conditions may impact its feasibility. This scheme also has a substantial capital cost, and it is thus considered prudent to remove the measure – and improvements to bus priority achieved instead by introducing a revised westbound bus lane approach.
	Walking / Cycling	W10	Extend on-road cycleway north of Jersey Marine Roundabout on Fabian Way along the minor unclassified road through Jersey Marine as far as Llandarcy	This route is parallel to future Coed Darcy cycleway and is therefore not necessary.
	Walking / Cycling	W12	Bridlepath link from canal shared route to Pant y Sais stables	This scheme has effectively been provided by construction of the Amazon Road and future construction of the southern access bridge to Coed Darcy.
	Walking / Cycling	W14	New cycleway over P&R bridge at Tawe Bridges	Deletion of the proposal for a bus-only bridge makes this scheme non-deliverable.
COMPLETE	Roads	H1b	Capacity Improvements at Tawe Bridges	The road layout at Tawe Bridges has been modified and improvements made to traffic management. The revised road network is operating successfully.
	Walking / Cycling	W11	Extend footway / cycleway along Amazon Road	This measure has been completed and is in place.

5 Updated Strategy

5.1 Development of Core and Supporting Measures

Section 4.2 set out a review of all measures and describes recommended changes to a number of measures.

In order to introduce an element of prioritisation, the Updated Strategy has been developed as a series of Core Measures and Supporting Measures. The Core Measures are those which should be prioritised to reflect their importance in respect of delivering the necessary step-change of sustainable transport provision in the corridor. The Core Measures also represent a coherent set of measures which can be implemented in parallel (at the same time) or as funds become available.

The Supporting Measures are those elements which are not individually crucial, but when taken together will consolidate the overall sustainable transport provision on the Fabian Way corridor. Also, the Supporting Measures are inherently flexible in nature and can be modified according to the prevalent transport conditions and priorities, and to suit progress and location of land development.

The review of measures (described in Section 4) has been summarised in Tables 5.1 for the Core Measures (and how they relate to the original 2010 strategy measures), and a list of Supporting Measurers are shown in Table 5.2.

Table 5.1: Review of 2010 Strategy Measures for Updated Strategy Core Measures

Measure Type	2010 Ref.	Proposed Measure (2010 Strategy)	Updated Measure (Revised Strategy)
Public Transport	B3b	Two-way buses across P&R bridge	Combine with Segregated busway north of Fabian Way between P&R site and Baldwin's Bridge' (H7d)
Public Transport	B13a	Transport Hub for interchange adjacent to University campus	Combine 'transport hub' with Improved bus stop facilities (B16a,b) Ffordd Amazon Bus Link (between Ffordd Amazon and Fabian Way).
Public Transport	B16a,b	Improved bus stop facilities	Upgrade main bus stops on Fabian Way with improved facilities (shelter, real time information)
Roads	H4c	New grade separated junction at Baldwin's Bridge	Signal control junctions with bus priority at Baldwin's Bridge
Roads	H7d	Segregated busway north of Fabian Way between P&R site and Baldwin's Bridge	Off-road busway between Wern Fawr Road and Baldwin's Bridge, with two-way bus movement (visa shuttle signals) across P&R bridge (B3b)
Roads	H9	Reduce speed limit to 30mph from Jersey Marine gyratory	Reduce speed limit to 40mph to the west of Jersey Marine gyratory
Walking / Cycling	W3a	New cycle way through Coed Darcy	This facility will be introduced as part of Coed Darcy ongoing development
Walking / Cycling	W5a	New on-road cycle path through SA1 north of Prince of Wales Dock linking to Sail Bridge	Cycle route from Tawe Sailbridge to Baldwin's Bridge (to the south of the Fabian Way corridor)
Walking / Cycling	W7	Continuous pedestrian and cycle route on both sides of Fabian Way	A shared cycle/footway on the north side of Fabian Way between Wern Fawr Road and Baldwin's Bridge, with connection to University Campus. A further section of improved cycle facilities is proposed bertween Elba Crescent and the Amazon Roundabout, which would include improving existing cycleway and installing signal control of crossings at Amazon Roundabout.
Walking / Cycling	W15	New pedestrian/cycle bridge between St Thomas and SA1	Signal-controlled at-grade pedestrian crossing between St Thomas and SA1 Pedestrian crossing and bus priority improvement at Fabian Way (at Tawe Bridges junction and at SA1 junction).
Walking / Cycling	W17	Upgrade existing footbridge (west of P&R junction) and provide ramped access for use by cyclists	Upgrade existing footbridge (west of P&R junction) and provide ramped access for use by cyclists

Table 5.2: Supporting Measures for Updated Strategy

Mode	2010 Ref	Measure
Canal	C5	Protect route of canal restoration proposals
Demand management	S2	CPZ throughout are area with Residents Parking
	S3, S4	Limited car parking spaces and car pooling in new developments
	S5	All new developments to conform to Travel Plan
	S6, S7	Residential Travel Plan for communities north of Fabian Way
	S8	Smart Ticketing
ITS	ITS2	VMS to show traffic conditions and P&R availability
	ITS3	Signal optimisation
Public Transport	B3a	Expand existing Park & Ride site
	B4a	New P&R at Amazon development
	B5	Divert services 155 156 to Coed Darcy
	B6	Divert services 31,32,33 (Swansea Birchgrove) to SA1.
	B7	Divert regional bus services to SA1
	B8	Extend existing University bus services to new university campus
	B10a	New bus routes between Coed Darcy and City Centre
	B12a	New shuttle bus between University, SA1 and city centre
Rail	R2	Maximise use of freight line
	R4	Combined passenger / freight line
Walking / Cycling	W2a	Extend canal shared pedestrian / cycle route from Wern Fawr Road to Jersey Marine
	W2b	Extend canal shared route from Celtic Trail NCN 4 to the M4
	W3b	New off-road pedestrian and cycle route linking Coed Darcy and Fabian Way along eastern side of Crymlyn Bog
	W3c	New off-road pedestrian and cycle route linking Coed Darcy and Port Tennant Way along western side of Crymlyn Bog
	W4b	New off-road pedestrian and cycle route from Jersey Marine through golf course (Wales Coastal Path)
	W6	New pedestrian and cycle route through University campus
	W9a	Extend On-road cycleway on B4290 north of Jersey Marine Roundabout through Jersey Marine as far as picnic site
	W18	New on-road cycle route through St Thomas / Port Tennant
Roads	H5b	New grade separated junction at Jersey Marine gyratory

5.1.1 Core Measures

Core measures are set out in the following paragraphs and are also shown in Figure 5.1. Each individual measure is described in detail below.

Extension of Segregated Busway to Baldwin's Bridge: This measure combines two measures:

- Segregated busway north of Fabian Way between P&R site and Baldwin's Bridge, and
- Two-way buses across P&R bridge

This measure will provide a means for buses to bypass any congestion on Fabian Way west of Baldwin's Bridge. The scheme has a relatively high capital costs and would need agreement from Network Rail and Rail Freight Operators to proceed (in order to build a new busway bridge crossing of the freight railway just north-west of Baldwin's Bridge).

It is considered that this measure would only be justifiable with a greater number of buses travelling along Fabian Way, and thus should only be introduced in association with either:

- Opening of the Coed Darcy southern bus only access road; or
- Relocation of the Fabian Way Park & Ride site to a location off Amazon Road.

This measure would provide a substantial benefit in respect of travel time for buses using the 'busway'. However, it is strongly recommended that when buses through Coed Darcy and a re-located Park & Ride are imminent, then review is undertaken of the proposed busway scheme (say in 2016). In this way the likely usefulness of the scheme can be better gauged, and changes made as necessary to suit bus services.

Improved bus stop facilities and bus hub at University: 9 no. bus stops to be upgraded with high quality shelters with capability to addition of real time information, including a high quality facility at Fabian Way / Elba Crescent opposite the University Campus site (to create a 'bus hub' there; that is, a location which is convenient for buses to stop at from all directions, including from Coed Darcy).

Baldwin's Bridge junction improvement: Modified to signal control junctions to replace existing poorly laid out merge layouts. This should only be implemented when development takes place around Baldwin's Bridge such that generated traffic flow requires junction capacity improvement. Bus priority at the signal control junctions should also be considered.

Continuous pedestrian and cycle route along north side of Fabian Way between Wern Fawr Road and Baldwin's Bridge with a link to the University Campus: A shared cycle/footway is deliverable on the north side of Fabian Way between Wern Fawr Road and Baldwin's Bridge. This scheme could be extended under Baldwin's Bridge and a cycleway constructed at the foot of the bridge embankment on the south side of Fabian Way (giving a connection to the University campus).

Improved pedestrian and cycle route along north side Fabian Way between Elba Crescent (opposite new University Campus) and Amazon Roundabout: A shared cycle/footway is already in place on the north side of Fabian Way between Elba Crescent (opposite new University Campus) and Amazon Roundabout. The footway/cycleway needs improvement as it is prone to localised flooding. In addition, it bis proposed that signal control of cycle/pedestrian crossings is installed at (a) the segregated left-turn lane from Fabian Way (west) to Ffordd Amazon, and (b) across the exit lane from the roundabout to Jersey Marine.

New on-road cycle path through SA1 north of Prince of Wales Dock linking Sail Bridge to Baldwin's Bridge: This cycle route from the Tawe to Baldwin's Bridge, along Langdon Road, should be a long-term aim as development east of the current SA1 proceeds.

At-grade pedestrian crossing between St Thomas and SA1: An at-grade signal-controlled pedestrian crossing is feasible to be installed around midway between the Tawe Bridges and the main SA1 junction. Careful planning of the signal cycle offset from the adjacent junctions will enable the signals to be operated with limited impact on the principle traffic movements.

Upgrade existing footbridge (west of P&R junction) and provide ramped access for use by cyclists: There is a 'missing' link for local cycle access between St. Thomas (Port Tennant Road) and the scheme will include increasing the height of barriers on overbridge and construction of a ramp facing east on the north side of the bridge.

Pedestrian Crossing / Bus Priority / Traffic Management at SA1 junctions: It is desirable that a pedestrian crossing is provided across Fabian Way as it approaches the Tawe Bridges junction. Rearrangement of the Fabian Way / Tawe Bridges junction is proposed, which can also improve bus priority at the junction. It would also be beneficial to undertake a similar re-arrangement of the westbound approach to the SA1 junction.

The components of the signal operation will include a signal-controlled stop line (for general traffic) located some 50m back from the main Fabian Way/Tawe Bridges junction (to act as a Bus Gate), such that signal control is removed from the bus lane (which then operates as a Give-way merge), and a pedestrian crossing is inserted at the main stop line across Fabian Way. The main traffic flow from Fabian Way into the Tawe Bridges signal junction would operate as single traffic stage (instead of two separate stages for general traffic and buses at present).

Core Measures to be undertaken by third parties: Measures to be implemented as part of planning permission agreements are:

- **Reduce speed limit to 40mph from Jersey Marine gyratory:** Signalisation of Baldwin's Bridge junction will assist in creating conditions to reduce speed along the relatively 'open' section of road from Elba Crescent to Wern Terrace.
- **New bus and cycle way through Coed Darcy:** This facility will be introduced as part of Coed Darcy ongoing development

5.1.2 Supporting Measures

A description of supporting measures is set out in the following paragraphs.

Demand management and ITS measures: It is important that travel behaviour and parking availability are considered in seeking to develop more sustainable travel patterns on the Fabian Way corridor. Measures are as follows:

- CPZ throughout are area with Residents Parking
- Limited car parking spaces and car pooling in new developments
- All new developments to conform to Travel Plan
- Residential Travel Plan for communities north of Fabian Way
- Smart Ticketing
- VMS to show traffic conditions and P&R availability
- Signal optimisation

Park & Ride measures: Usage / Demand for Park & Ride should be regularly monitored. If/when usage increases then two measures should be taken forward in the medium or long-term as necessary:

- Expand existing Park & Ride site using adjacent available land
- New P&R at Amazon development as major development proceeds in the area around the ex-Visteon plant and Amazon site.

Bus services: As development proceeds along the corridor, in particular in respect of implementation of the Coed Darcy bus link and opening of the University Campus, discussions with key operators should be undertaken to enable early implementation of improved bus services, which should include:

- New and diverted bus services via Coed Darcy
- Divert regional and local bus services (e.g. 31,32,33 Birchgrove) via SA1.
- Extension or new University Bus Services to new university campus

Walking / Cycling: There are a number of mainly leisure cycling measures which will improve sustainable travel opportunities:

- Extend canal shared pedestrian / cycle route from Wern Fawr Road to Jersey Marine
- Extend canal shared route from Celtic Trail NCN 4 to the M4
- New off-road pedestrian and cycle route linking Coed Darcy and Fabian Way along eastern side of Crymlyn Bog
- New off-road pedestrian and cycle route linking Coed Darcy and Port Tennant Way along western side of Crymlyn Bog
- New off-road pedestrian and cycle route from Jersey Marine through golf course (Wales Coastal Path)
- New pedestrian and cycle route through University campus
- Extend On-road cycleway on B4290 north of Jersey Marine Roundabout through Jersey Marine as far as picnic site
- New on-road cycle route through St Thomas / Port Tennant

Road-based Measures: No major road improvements are proposed as part of the Core Measures, as the corridor is already well served in respect of a high quality road network. However, the Jersey Marine / Ffordd Amazon / Fabian Way junction will in future be subject to congestion pressures due to local development traffic generation effects, and hence a long-term *potential* strategy measure aimed at dealing deal with additional movement through this junction should be retained as a long-term possible measure, as follows:

- **Fabian Way / Jersey Marine Junction Improvement:** In order to emphasise the need for a sustainable approach to dealing with future increases in travel demand, it is recommended that this measure is defined as a 'multi-modal' improvement measure; that is, the measure should include provision for bus priority, pedestrian and cycle facilities, and need not be grade-separated (e.g. re-modelling the junction layout to address measured travel demand).

Other Transport Measures: Other measures, not critical in respect of sustainable transport, should be maintained as ongoing processes:

- The Canal Strategy for the Fabian Way Corridor Transport is to protect the route of the canal restoration proposals by not proposing alternative uses for the land
- The Rail Strategy seeks to maximise the use of the existing railway as a freight line, and to continue to consider a long-term possibility of passenger rail.

6 Updated Strategy Programme

6.1 Programme, Costs and Funding

The proposed Programme of measures is presented in Table 6.1 and 6.2 for Core Measures and Supporting Measures respectively. This gives a provisional programme for implementation of the Updated Strategy over the next 20 years and includes the local authority (or other) key implementing authority, and 'order of magnitude' costs. The Core Measures are also shown diagrammatically in Figure 5.1.

Implementation periods are designated as

- short term (over the 5 years to 2018)
- medium term (between 2019 and 2023)
- long-term (after 2023)

These timescales are indicative and measures may need to be brought forward or delayed depending on transport conditions, development progress, and availability of funding.

The estimated capital cost of the Preferred Strategy is approximately £14M. A breakdown of costs by measure is provided in Table 6.1. A summary of the costs of implementation of measures for each phase is as follows:

- £1.6M over the short term (over the 5 years to 2018)
- £8.0M over medium term (between 2019 and 2023)
- £4.4MM over long-term (after 2023)

It should be noted that a long-term scheme to improve the Fabian Way / Jersey Marine junction (for general traffic, buses and pedestrians/cyclists) is not included in the above costs, as it is an *aspiration* rather than a scheme which can presently be identified as a future necessity.

The costs shown are to indicate 'order of magnitude' only, and further more detailed estimates should be made as the measures are defined in more detail.

Table 6.1: Core Measures Timescale and Costs

Updated Measure (Revised Strategy)	Timescale	Capital Costs (£M)
Upgrade main bus stops on Fabian Way with improved facilities (shelter, real time information)	S	0.3
Reduce speed limit to 40mph to the west of Jersey Marine gyratory	S	0.1
A shared cycle/footway on the north side of Fabian Way between Wern Fawr Road and Baldwin's Bridge, with a link to University Campus.	S	0.5
Improved pedestrian and cycle route along north side Fabian Way between Elba Crescent (opposite new University Campus) and Amazon Roundabout	S	0.3
Signal-controlled at-grade pedestrian crossing between St Thomas and SA1	S	0.2
Pedestrian crossing and bus priority improvement at Fabian Way (at Tawe Bridges junction and at SA1 junction).	S	0.3
Signal control junctions with bus priority at Baldwin's Bridge	M	0.5
Off-road busway between Wern Fawr Road and Baldwin's Bridge, with two-way bus movement (visa shuttle signals) across P&R bridge (B3b)	M	6
Upgrade existing footbridge (west of P&R junction) and provide ramped access for use by cyclists	M	0.2
Ffordd Amazon Bus Link (between Ffordd Amazon and Fabian Way).	M	Possible development infrastructure -
Bus and cycle route through Coed Darcy to Ffordd Amazon	M	Committed development infrastructure
Cycle route from Tawe Sailbridge to Baldwin's Bridge (to the south of the Fabian Way corridor)	M	Possible development infrastructure
Short-term Cost		£1.7M
Medium-term Cost		£6.7M
Total Cost		**£8.4M**

Table 6.2: Supporting Measures Timescale and Costs

Mode	2010 Ref	Measure	Timescale	Capital Costs
Canal	C5	Protect route of canal restoration proposals	-	-
Demand management	S2	CPZ throughout are area with Residents Parking	M	0.3
	S3, S4	Limited car parking spaces and car pooling in new developments	S	-
	S5	All new developments to conform to Travel Plan	S	-
	S6, S7	Residential Travel Plan for communities north of Fabian Way	S	-
	S8	Smart Ticketing	S	-
ITS	ITS2	VMS to show traffic conditions and P&R availability	S	0.2
	ITS3	Signal optimisation	M	0.2
Public Transport	B3a	Expand existing Park & Ride site	M	0.2
	B4a	New P&R at Amazon development	L	2.5
	B5	New and Diverted bus services to Coed Darcy	M	-
	B6	Divert bus services local and regional services to SA1.	S	-
	B8	New and extended existing University bus services	S	-
Rail	R2	Maximise use of rail freight line	M	-
	R4	Investigate Combined passenger / freight rail line	M	0.1
Walking / Cycling	W2a	Extend canal shared pedestrian / cycle route from Wern Fawr Road to Jersey Marine	M	0.1
	W2b	Extend canal shared route from Celtic Trail NCN 4 to the M4	L	0.4
	W3b	New off-road pedestrian and cycle route linking Coed Darcy and Fabian Way along eastern side of Crymlyn Bog	L	0.8
	W3c	New off-road pedestrian and cycle route linking Coed Darcy and Port Tennant Way along western side of Crymlyn Bog	L	0.6
	W4b	New off-road pedestrian and cycle route from Jersey Marine through golf course (Wales Coastal Path)	M	0.3
	W9a	Extend On-road cycleway on B4290 north of Jersey Marine Roundabout through Jersey Marine as far as picnic site	L	0.1
	W18	New on-road cycle route through St Thomas / Port Tennant	M	0.1
Roads	H5b	Improved junction at Jersey Marine gyratory	L	Not included
Short-term Cost				£0.2M
Medium-term Cost				£1.3M
Long-term Cost				£4.4M
Total Cost				**£5.9M**

6.2 Roles and Responsibilities

Implementing the strategy will be the responsibility of a number of authorities and organisations, as follows:

- Neath Port Talbot County Borough Council;
- City and County of Swansea;
- SWWITCH;
- Welsh Government
- Public transport operators.

NPT and CCS are the local highway authorities and therefore responsible for all public highways within the Study area, other than the motorway network. Thus although individual measures within the Strategy may involve other parties, particularly the public transport/regeneration projects, NPT and CCS will drive the measures forward.

6.3 Development timescale

The realisation of specific developments will be a key driver in the implementation of measures.

In particular the occupation of the Swansea University second campus will generate large numbers of person-trips to and from the site. Bus services and walking and cycling routes linking the second campus to the City Centre and the Park campus should be in place once the site is fully operational to assist students, staff and visitors in making smarter transport choices.

Similarly, bus services and walking and cycling routes serving the Coed Darcy Urban Village development need to be in place once there is a significant resident population to encourage modal shift away from the private car and to avoid congestion issues.

6.4 Action Plan and Risks

An Action Plan and risk assessment is set out in Tables 6.3 for the Core Measures. The lead organisations, the actions needed to take the scheme forward, and any associated risks in respect of implementation, are shown in Table 6.3. Table 6.4 provides the lead organisations and actions needed to take the Supporting Measures forward.

Table 6.3: Action Plan and Risks for Core Measures

Updated Core Measure (Revised Strategy)	Cost (£M)	Lead Organisation	Actions	Risk
Upgrade main bus stops on Fabian Way with improved facilities (shelter, real time information)	0.3	CCS/NPT	●Identify shelter type ●Liaise with Adshel or similar and seek funding from advertisement ●Develop real time system with bus operators	●Difficulty with arranging funding via advertisement ●Bus operators do not progress real time systems
Reduce speed limit to 40mph to the west of Jersey Marine gyratory	0.1	CCS/NPT	●Traffic Order ●Speed survey to provide Before and After data	●Public opposition to lower speed limit
A shared cycle/footway on the north side of Fabian Way between Wern Fawr Road and Baldwin's Bridge, with connection to University Campus.	0.5	CCS/NPT	●Check highway land and land ownership ●Topographical survey to enable scheme feasibility to be established ●Negotiate with University/St Modwen's regarding cycle route between Campus and Baldwin's Bridge	●Extent of land ownership less than expected ●University and / or developer reject proposal for cycle route between Campus and Baldwin's Bridge
Improved pedestrian and cycle route along north side Fabian Way between Elba Crescent (opposite new University Campus) and Amazon Roundabout	0.3	NPT	●CCS signals team establish principles of revised signal control cycle are acceptable	●Some impact on left-turn traffic ●Longer intergreen for gyratory/Ffordd Amazon junction
Signal-controlled at-grade pedestrian crossing between St Thomas and SA1	0.2	CCS	●Topographical survey to establish physical feasibility ●CCS signals team establish principles of signal control cycle and offsets from adjacent junctions	●Complications in respect of signal operation feasibility and impact on adjacent junctions ●Level difference between carriageways
Pedestrian crossing and bus priority improvement at Fabian Way (at Tawe Bridges junction and at SA1 junction).	0.3	CCS	●CCS signals team establish principles of signal control cycle	●Complications in respect of signal operation feasibility and impact on adjacent junctions
Signal control junctions with bus priority at Baldwin's Bridge	0.5	CCS/NPT	●CCS signals team establish principles of signal control cycle ●Speed survey to provide visibility requirements of signal heads	●Complications in respect of signal operation feasibility ●Physical difficulty in fitting bus lanes on side roads
Off-road busway between Wern Fawr Road and Baldwin's Bridge, with two-way bus movement (visa shuttle signals) across P&R bridge (B3b)	6	CCS/NPT	●Check highway land and land ownership ●Topographical survey to enable scheme feasibility to be established ●Negotiate with Network Rail regarding access to land and rail overbridge planning ●Liaise with bus operators well before detailed design to ensure route will be well used	●Busway not attractive to general scheduled bus service and thus not well used ●Complications in respect of access to Network Rail land and agreement on new rail overbridges
Upgrade existing footbridge (west of P&R junction) and provide ramped access for use by cyclists	0.2	CCS	●Outline design to identify feasibility ●Check land ownership of adjacent small park	●Footbridge parapet not suitable for height extension ●Local opposition to use of small park as access ramp for bicycles
Ffordd Amazon Bus Link (between Ffordd Amazon and Fabian Way).	Possible development infrastructure -	NPT	●Discussion with land owners and developers in respect of a potential bus through-route ●Early planning of Coed Darcy and University bus routes to ensure that proposal matches with likely operations	●Complications in respect of gaining agreement from land owners for through-bus-link. ●Difficulty in introducing additional signal control junction on Fabian Way.
Bus and cycle route through Coed Darcy to Ffordd Amazon	Committed development infrastructure	NPT	●Early planning of Coed Darcy and University bus routes to ensure that proposal matches with likely operations ●Establish likely timeline of Coed Darcy bus only route implementation	●delays in development at Coed Darcy results in delay in new bus services and potential linkage with University Campus
Cycle route from Tawe Sailbridge to Baldwin's Bridge (to the south of the Fabian Way corridor)	Possible development infrastructure	CCS	●Early planning of cycle route with SA1 management organisation and ABP to agree on principle of route. ●Agree with SA1 and ABP that development will include cycle way within standard infrastructure.	●Difficulty in gaining agreement of land owners / developers to provision of cycle route

Table 6.4: Action Plan for Supporting Measures

Updated Supporting Measure (Revised Strategy)	Cost (£M)	Lead Organisation	Actions
Protect route of canal restoration proposals	-	CCS/NPT	CCS/NPT to ensure canal corridor is protected.
CPZ throughout are area with Residents Parking	0.3	CCS	CCS to carry out monitoring of parking impacts of SA1 within St Thomas / Port Tennant
Limited car parking spaces and car pooling in new developments	-	CCS/NPT	CCS/NPT development control teams to consider parking restraint in future developments
All new developments to conform to Travel Plan	-	CCS/NPT	CCS/ NPT development control and travel plan teams to ensure good quality and compliance with Travel Plan.
Residential Travel Plan for communities north of Fabian Way	-	CCS	CCS to liaise with local residents regarding the needs and benefits of s formal travel plan.
Smart Ticketing	-	Welsh Govt	NPT/CCS to liaise with Welsh Government regarding timescale for all-Wales smartcard.
VMS to show traffic conditions and P&R availability	0.2	CCS	CCS to investigate VMS feasibility and costs
Signal optimisation	0.2	CCS	CCS to carry out ongoing monitoring of signal efficiency including bus priority
Expand existing Park & Ride site	0.2	CCS	CCS to monitor usage of Park & Ride and respond accordingly if usage increases to capacity
New P&R at Amazon development	2.5	CCS/NPT	CCS to monitor usage of existing Park & Ride and ongoing development and traffic pressures, and if demand is sufficient, activate new Park & Ride proposal in partnership with NPT.
New and Diverted bus services to Coed Darcy	-	NPT/Bus Operator	CCS and NPT to carry out early planning with bus operators of future bus routes
Divert bus services local and regional services to SA1.	-	CCS/Bus Operator	
New and extended existing University bus services	-	CCS/NPT/Bus Operator/Univ	
Maximise use of rail freight line	-	CCS/NPT/ Network Rail	NPT/CCS to liaise with Network Rail in respect of use of freight rail line.
Investigate Combined passenger / freight rail line	0.1	CCS/NPT/ Network Rail	NPT/CCS to consider whether passenger rail line study should be carried out.
Extend canal shared pedestrian / cycle route from Wern Fawr Road to Jersey Marine	0.1	CCS/NPT	NPT/CCS to liaise with Canal trust to establish agreement for cycle use on the canal-side.
Extend canal shared route from Celtic Trail NCN 4 to the M4	0.4	NPT	NPT to identify external funding for NCN4.
New off-road pedestrian and cycle route linking Coed Darcy and Fabian Way along eastern side of Crymlyn Bog	0.8	CCS/NPT	CCS.NPT to assess potential funding from non-transport sources e.g. nature trails.
New off-road pedestrian and cycle route linking Coed Darcy and Port Tennant Way along western side of Crymlyn Bog	0.6	CCS/NPT	
New off-road pedestrian and cycle route from Jersey Marine through golf course (Wales Coastal Path)	0.3	NPT	NPT to liaise with Welsh Government regarding further improvement to WCP.
Extend On-road cycleway on B4290 north of Jersey Marine Roundabout through Jersey Marine as far as picnic site	0.1	NPT	NPT to progress this measure
New on-road cycle route through St Thomas / Port Tennant	0.1	CCS	CCS to undertake local observations to consider need and practicality of cycle lanes in St Thomas / Port Tennant
Improved junction at Jersey Marine gyratory	Not included	NPT	CCS/NPT to monitor and liaise in respect of traffic congestion and development pressures at this junction.

7 Recommendation for Quick-Win Measures

7.1 Identification of Quick-Wins

The client organisations (NPT, CCS) are keen to identify measures which can be implemented quickly in the short term, and specifically wishes to identify 'quick Win' measures which can be funded from committed development funds. The Brief identified that a sum of around £1M will be available in the short-term to undertake transport measures on the Fabian Way corridor.

A review of the Core Measures has been undertaken to identify a suitable selection of Quick Win measures. The criteria for selection of Quick-Win measures are:

- Ease of delivery
- No third part land impacts (Appendix C shows land ownership information)
- Effectiveness and usage of proposed measure
- Cost can fit with £1M budget

Table 7.1 shows the recommended Quick-Win measures and their approximate costs; these are also shown diagrammatically in Figure 7.1. The schemes shown have an aggregate cost of approximately £1.7M. Comparison with the likely level of funding in the short-term indicates that a £1.7M set of measures could be deliverable, provided that some £0.5M can be identified from alternative sources; that is, £1.2M of funding from current committed development S106 funding, and £0.5M from a mixture of:

- Additional development-related funding
- Advertising revenue (for bus shelters)
- Road Safety Grant (Welsh Government funded to CCS).

Table 7.1: Quick Win Measures and Costs

Quick Win Measure (Updated Strategy)	Capital Costs (£M)	Potential alternative Funding Sources
Upgrade main bus stops on Fabian Way with improved facilities (shelter, real time information)	0.3	Advertising revenue may offset costs
Reduce speed limit to 40mph to the west of Jersey Marine gyratory	0.1	Paid for by University/Developer
A shared cycle/footway on the north side of Fabian Way between Wern Fawr Road and Baldwin's Bridge, with connection to University Campus.	0.5	£100,000 has already been allocated to this scheme by University/Developer
Improved pedestrian and cycle route along north side Fabian Way between Elba Crescent (opposite new University Campus) and Amazon Roundabout	0.3	Could include as requirement for adjacent development plannimg conditions
Signal-controlled at-grade pedestrian crossing between St Thomas and SA1	0.2	Road Safety Grant could partially fund this measure
Pedestrian crossing and bus priority improvement at Fabian Way (at Tawe Bridges junction and at SA1 junction).	0.3	Road Safety Grant could partially fund this measure
Total	**£1.7M**	**Assume £0.3-0.5M**

7.2 Design of Quick-Win Measures

The Quick-Win measures have been designed on an outlined basis as a means to test their feasibility. Appendix D shows the design layouts, which are based on providing a coherent whole-corridor solution. Appendix E provides further details on the proposed bus stop and shelter upgrades.

Appendix A

Traffic Data

Appendix B

Traffic Impact Assessment

Appendix C

Land Ownership Plans

Appendix D

Quick Win Outline Design

Appendix E

Bus Stop Upgrades