

THE DEVELOPMENT OF A COMPREHENSIVE CYCLE PLAN FOR STELLENBOSCH

R Gordge, G Laing and E Wentzel*

Transport Futures, 41 Herte Street, Stellenbosch 7600
Tel: +27 21 8833697; Email: richard@transportfutures.co.za

*Stellenbosch Municipality

Tel: +27 21 8088111

ABSTRACT

The town of Stellenbosch has the potential to grow cycling into a major mode. To date the town has made significant advances in the provision for non-motorised transport (NMT) enabling the creation of a partial network of cycleable town routes. It is also a growing international centre for recreational and competitive cycling.

The town is facing challenges in transport terms as a result of decades of myopic private car centred provision as the only transport policy based response. Given the town's popularity with an expanding university, a growing commercial centre, the wine farming capital and as a tourism node, car based trips into and around the town have grown dramatically.

Cycling development is being seen as one major component in a much more sustainable and appropriate range of solutions to transport and urban planning challenges for the town and its catchment.

The Cycle Plan details the full programme of measures to advance cycling to become a main mode for local travel. Short term interventions recommend a focus on low income access to bicycles, the development of safe cycling routes and the promotion of school/university and large employer based programmes of travel demand management.

Short term network improvements for safe cycling focus on the extension of shared use pathways, the reduction in town centre traffic speeds and the gradual introduction of cycleways in the roadway

The action plans recommend a joint public and private approach to funding, recognizing the fiscal constraints and demands on transport budgets. However, the plan should be treated as a first phase input to Stellenbosch area IPTN and Stellenbosch wishes to source PTIS funding in due course to progress with its bold and sustainable plans.

1. INTRODUCTION

In 2014 Stellenbosch Municipality commissioned a study for the development of the first comprehensive cycling plan for the town of Stellenbosch. The plan will provide guidance on how cycling can be developed and its modal share increased as a component of a sustainable transport system for the town.

While some significant advances in the provision of an initial non-motorised transport (NMT) network have been realised in the town, these have had mostly positive pedestrian impacts. The town has great potential for cycling due to its size, topography, student population and tourist appeal. Furthermore, the very high level of private vehicle commuting and the lack of public transport makes the need for an alternative transport solutions urgent.

The cycling plan is focussed on stimulating cycle use and in particular, increasing the commuting (journey to work, college and school) mode share. It describes the full scope of interventions that are necessary within an overall cycling development programme, over and above the provision of a cycling and outlines short and long term interventions for incremental rollout of the plan.

2. SUSTAINABLE TRANSPORT AND CYCLING

Worldwide, no town or city has succeeded in achieving well-functioning, connected and vibrant urban areas through a transport policy based on unconstrained car use. The negative impacts of motor vehicle dependency are well-documented, and include huge investments and high running and energy costs, accidents, urban sprawl, pollution, congestion and community severance. Decades of car-centric planning has displaced pedestrians and cyclists the previous dominant road users.

Major policy shifts are occurring to constrain private vehicle use and create liveable cities through transport and land use planning responses that are sustainable. Cycling is recognised as a central component of an effective transport system with a renaissance occurring across many cities of the world, with increasingly greater proportions of transport budgets going into cycle development.

Significant growth in cycling participation can be expected to bring major functional, economic and social benefits, a virtuous cycle which include:

- Zero emissions and meeting of sustainability objectives
- A decrease in traffic congestion and in traffic accidents
- Providing affordable fast access within local areas
- Contributing to urban rehabilitation particularly within disenfranchised communities empowering people through improved access and enabling their increased participation in society the economy.
- Community belonging and the creation of liveable streets that accommodate many activities.
- Creating job opportunities including cycle network development, bicycle shops, maintenance and service, tourism, communications and events
- Health promotion – walking and cycling are physical activities and therefore important for health and well-being. This can save the economy by reducing work absenteeism and reducing health risks due to inactivity.

3. CYCLING IN LOCAL TRANSPORT POLICY

3.1 National Policy

At the National level, transport policy supports the promotion of public transport over private transport. However, whilst policy strongly suggests the advancement of NMT, to date there are very few examples of significant recent NMT catalytic interventions being included in IPTN's. The vast majority of available funding is being channelled into BRT style bus systems and reinvestment into commuter rail. However, international case studies and appraisal of cycling development show social and economic return for these schemes having by far the greater and more immediate benefits.

3.2 Transport in Stellenbosch

Cycling is recognised as a key component of sustainable transport. Both the Stellenbosch Municipality's Spatial Development Framework (SDF) and Comprehensive Integrated Transport Plan (CITP) recognise the importance of promoting and properly providing for cycling and walking.

Stellenbosch has experienced very high population and economic growth in the last ten to fifteen years and continues to attract investment. Transport into Stellenbosch is overwhelmingly dominated by the use of the private vehicle, increasing annually at 3%-4%. The busy and often heavily congested roads do not easily allow for major growth of cycling unless significant traffic constraint measures are in place. Hence despite having a huge cycling potential bringing this to fruition will require a fundamental strategy shift and series of strong actions.

The Stellenbosch Municipality undertook major improvements to the NMT network between 2009 and 2013 utilising conditional grant funding received in 2007. Figure 1 below indicates thoroughfares which have had past or recent NMT focus. As a result, motorists attitude in the town are changing and there is growing tolerance and acceptance, at least towards pedestrians at designated road crossings. This initial NMT network is however not cycling specific and is generally inadequate to support local end to end cycle trips.

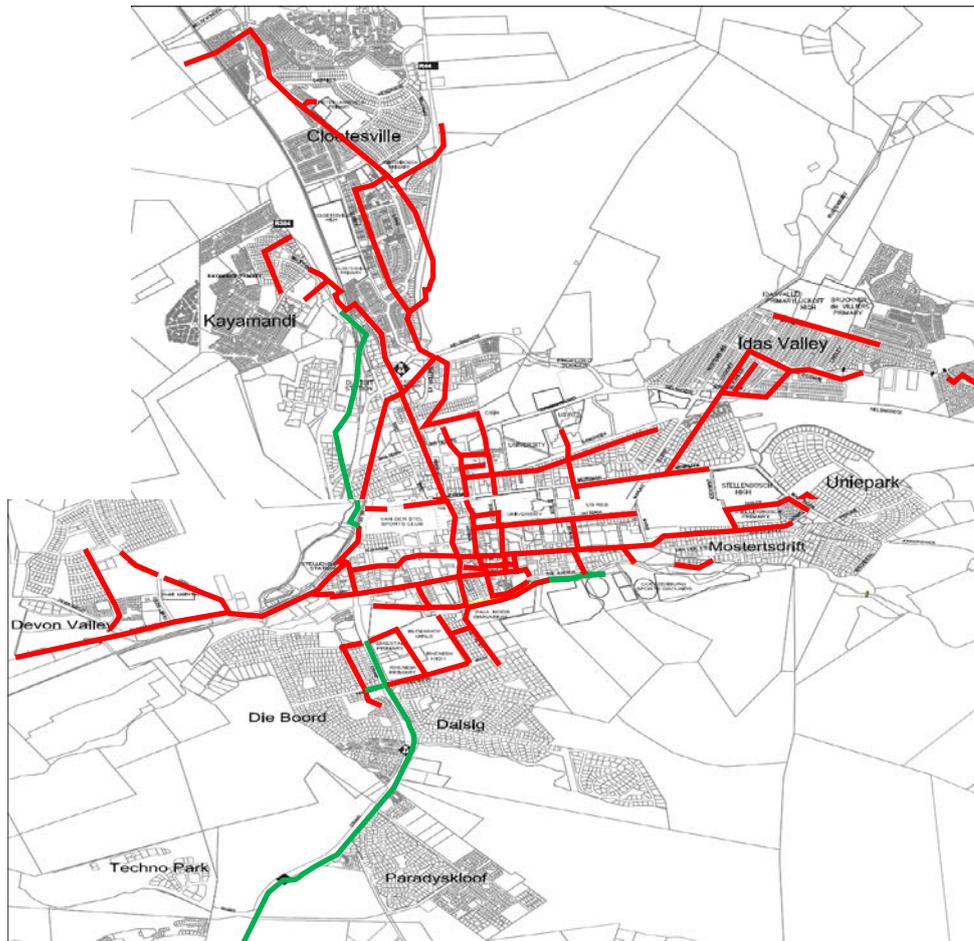


Figure 1: Recently Improved NMT thoroughfares across Stellenbosch

4. CYCLING STRATEGY

To ensure that progressive improvements for cycling are achieved, whilst the broader transport strategy for public transport promotion and traffic restraint can take shape, a multi-gear cycling plan is being prepared with:

- A range of shorter term interventions and quick wins which are undertaken within the current traffic and transport conditions
- Recommendations on the necessary traffic and road network management measures required to support a much more sustainable
- Medium and longer term measures achievable once progressive improvements in terms of road network management and traffic restraint have been achieved.

In outlining this strategy it is critical to reflect on the progressive cycling cities (mainly of Europe) which are now heralded as benchmark standards for urban cycling. It has taken typically 30+ years of promotion and ongoing improvements in cycling priority to reach the strong cycle mode shares apparent today. In all cases strong policies in private vehicle access restrictions and speed reductions have been vital.

5. FULL CYCLING PROGRAMME

Physical infrastructure provision whilst vital is not alone enough to attract and retain a major population switch to regular cycling. As for the design and provision of quality public transport systems there is a full range of programmes required in order to encourage more people to cycle and for this shift to be permanent. An indication of the range of integrated activities is shown in Figure 2 below, followed by a short description of some key components.



Figure 2: Requirements for a comprehensive cycle strategy

A Strategic plan offers a transparent policy instrument and it provides a road map for the way forward for all integrated components.

Cycle network, facilities and signage- a continued growth of the cycle route network and infrastructure and provision of secure bicycle parking. This will create a dedicated, safer and more accessible cycling environment and indicate to all road users the valid place and permanence that cycling deserves.

Workplace travelplans and facilities is a campus/precinct level focus on appropriate travel demand management options and may include aspects such as staggered work hours, shared staff transport, cycle to work promotions, staff incentives, showers, lockers, etc.

Education, Compliance and Enforcement – active campaigns to ensure safety, respect and adherence to the laws, for both motorists and cyclists. Development of a comprehensive bicycle proficiency education and tests to increase understanding of rules and responsibilities and reduce conflicts

Bicycle distribution/hire – provision of easy access to bicycles through low cost entry distribution and formal bike share/loan schemes. Focused principally towards disadvantaged populations with low current cycle ownership levels.

Programme Management—includes the institutional structures and responsibility for the rollout of the plan, infrastructure maintenance and management of the various aspects of the plan.

Communication and Events – Coordinated and comprehensive information on cycling provision and its benefits. Showcase cycling through major mass participation and sporting events to promote cycling and to strive towards ensuring it as a socially acceptable mode of transport.

Funding – A sustainable, increasing and continuous source of financing to support the above aspects.

6. MARKET ANALYSIS

6.1 Surveys Design

In order to assess initial preferences regarding cycling in Stellenbosch and to understand the possible future market for cycling in the town, surveys were conducted targeting, residents, employees (via large organisations) and University students.

The survey questionnaire was designed to be administered online. The questionnaire distribution included local paper announcements with a link to the online survey as well as targeted email.

A useful component of the survey was the inclusion of an open-ended question to gather respondents' comments on anything related to cycling in Stellenbosch.

6.2 Survey Results

Some key findings are listed below:

- 500 responses were received, many from low income households
- The vast majority of respondents can ride a bicycle.
- 70% of respondents from lower income suburbs do not have access to a bicycle
- A small proportion of current trips are made by bicycle.
- Respondents currently having access to a bicycle indicated they will cycle significantly more in the future if cycling conditions are improved.
- When asked about barriers to cycling, traffic safety was ranked highest barrier. Other concerns include lack of cycling infrastructure and facilities as well as personal safety.
- An overwhelming majority of respondents support initiatives to improve cycling and the provision of cycling facilities in Stellenbosch.

The two most significant findings from the local survey pointing to priorities for intervention is firstly the emphasis that needs to be placed on providing lower income communities with access to bicycles and the ability to ride and secondly the concerns regarding cycling route safety in current traffic conditions. Figure 3 below outlines the sequence of development steps necessary and again indicates the multiple focus for a comprehensive cycling programme.



Figure 3: Growing Cycling: The Chain of Necessary Steps

7. LOW INCOME TARGETED BICYCLE DISTRIBUTION

Getting bikes to needy populations must be a top priority. There are a few successful cases of distribution programs locally but also a good few failures. The key is ensuring a fully integrated approach. The program must target those who will benefit most from having access to a bike. It must provide appropriate bikes for the age of user and the terrain. The potential users must be trained and educated to be proficient cyclists. There must be a locally available trained mechanisms for repairs. The bikes must be distributed at a low purchase cost or rental/lease fee yet there needs to be some user fee to ensure that they are properly looked after. An initial target for the town should be to aim for a distribution of 500 to 1000 bicycles into low income communities.

8. ROAD NETWORK AND APPROPRIATE TREATMENT

Road traffic speeds levels and speed limit enforcement are critically important aspects of a safe cycling programme. If a cycling network is to be developed within an existing road carriageway, it may well be necessary to lower current traffic speeds as well as provide significant safety improvements. Referencing a “gold standard” for cycling, over 30% of all road length in the Netherlands have a speed limit of 30 km/h or lower, most 50 km/h roads provide cyclists with a segregated path, as do many 30 km/h roads with higher volumes of traffic. In South Africa the default speed limit for all town roads and neighbourhood streets, unless indicated otherwise is 60km/h. For local streets and most town collector roads this is simply too fast and must be revised downwards for safe cycling and safer communities.

Segregated / separated facilities will also address safety concerns associated with cycling especially on high-speed roads, and these can either be built away from the road or separating them from the road using hard infrastructure such as a kerb or other barrier. Where on-road lanes are developed, they should be clearly demarcated by paint or other markings. Four (4) cycleway classes are envisaged for Stellenbosch. Examples of these are also indicated in Figure 5.

- Class 1 – Separate cycleway, not connected to a road
- Class 2 – Cycleway alongside a road but with hard infrastructure separating it
- Class 3 – A cycleway in the road normally indicated with painted markings

- Class 4 – Cycling in the general carriageway with no separation or delineation.



Figure 5: Examples of Cycleways

The following table (Table 1) provides a general guideline for cycleway treatment being recommended for development in Stellenbosch. It shows that a full range of different cycleway types are needed as the town proceeds.

Table 2 presents the general proposal for the required speed reductions in town. The current default 60km/h limit on neighborhood streets as well as town centre smaller roads are entirely inappropriate and a reduction to 30 km/h is strongly recommended which will allow safe cycling in the shared roadway with no markings. On collector streets and minor arterials the general recommendation is for speed reductions from 60km/h to 40 km/h along sections or the full length of the routes. This then provides a safer co-existence between cyclists and cars on streets where cycling is to be promoted and provided for via class 3 cycle ways.

Table 1: Guideline for Cycleway Development in Stellenbosch

Road Class	Function	Examples of Stellenbosch roadways	Proposed Cycleway Class	Description
Principal arterial	Mobility	R44, R310	Class 1	Separate cycleway (away from road)
Major arterial		R304, Helshoogte Rd		
Minor arterial		Bird, Martinson, Merriman, Cluver	Class 2	
Collectors	Accessibility	Marais, Van Riebeeck, Piet Retief, Lang, Dorpsig, Jonkershoek	Class 3	In roadways – separation by paint
Local street		Much of CBD and Most residential streets	Class 4	Shared space on street

Table 2: Recommended Speed Limits to Accommodate NMT priorities and Safe Cycling

Road Class	Description	Examples	Current Speeds	Possible future speeds
Class 1	Principal arterial	R44, R310	100-60	80-60
Class 2	Major arterial	R304, Helshoogte Rd	100-60	80-60
Class 3	Minor arterial	Bird, Martinson, Merriman, Cluver	60	60 / 40
Class 4	Collectors	Marais, Van Riebeeck, Piet Retief, Lang, Dorpsig, Jonkershoek	60 unless indicated	40
Class 5	Local street	Much of CBD and Most residential streets	60 unless indicated	30

Stage 1

The images on the right are of Piet Retief Street connecting Stellenbosch south to the urban centre. With NMT investments in 2011 the pathway was ungraded to a 2m width which is now used by walkers as well as many cyclists. The roadway is busy and cars travel at up to 80km/h.



Stage 2

The short term intervention going forward is recommended to be a widening of the current pathway to a width of 3m where possible to allow 2 way safer cycling and walking. Also widening the pinch point at the Eerste River Bridge.



Stage 3

The longer term recommended interventions will be to reduce the speed on this link down to 40km/h, remove on street parking bays (closer to the CBD) and provide a 1.5m wide marked cycle lane in each direction. Possible to upgrade to Class 2 with in the road separators. This will then represent the appropriate shared function of one of the busiest links into Stellenbosch and offer much improved cycled priority for the schools precinct close by.



Figure 6: Progressive Development of Minor Arterial

9. SHORTER TERM NETWORK IMPROVEMENT APPROACH

Linking communities to the town by safe cycling route, continue the expansion of the cycle route network through:

- Safe provision of cycle-able linkages between all neighbourhoods of the town and within the urban core
- For travel along arterial routes and main collectors this implies a NMT route or a dedicated cycle facility separated from the roadway
- For crossing points at grade this requires signal phasing to include NMT and/or option for safe advance crossing for cyclists in the main carriageway.
- Progressive / showpiece / demo routes promoting the priority to be given to commuter and recreational cycling
- Upgrade existing routes to better standard
- Re-design intersections and roundabouts to accommodate cyclists and give priority (at grade) to pedestrians and cyclists at all designated crossing points
- residential roads calming and speed reductions (shared space “woonerf” status)

10. TARGETED USER GROUPS AND PRECINCT PLANS

In addition to municipal driven programmes of development, particular target groups and organisations must follow bold action plans to support the shift towards cycling and sustainable travel solutions. The University must significantly change its student car acceptance and provision policy to belligerently containing car use around campus and promoting cycling. Workplaces and business parks should promote cycling and managed travel planning with the municipality providing support for this. School precincts need to be safe for walking and cycling access and should work through the governing bodies, parents with the municipality to ensure cycling and walking for scholars becomes a priority goal to achieve with the relevant interventions laid out.

11. CONCLUSIONS and WAY FORWARD

The emerging plan, being finalised in June 2015, will provide a prioritised set of interventions with outline costings. The cycle plan is being seen as a component of the overall IPTN solution. As such it is possible, and strongly recommended, that a significant advancement is made as an incremental step towards overall integrated transport improvements in Stellenbosch. Under this approach Stellenbosch, with the support of the Western Cape Provincial Government, will be motivating for PTIS funding to partially support its bold vision for fully comprehensive NMT and public transport solutions.

12. REFERENCES

Government Gazette Republic of South Africa, Vol. 599 Pretoria, 11 May 2015

Benefits of Investing in Cycling, Dr Rachel Aldred, British Cycling 2014 (Internet)

Cycling Design Guide, Nottinghamshire County Council, October 2006

Promoting Safe Walking & cycling by Reducing Traffic Speed, Jan Garrard, Safe Speed Interest Group, Australia 2008