ROAD ACCESS MANAGEMENT IN PRACTICE: THE PORT ELIZABETH CASE

C. J. HOLDERNESS and H. J. STANDER*

Khuthele Projects (Pty) Ltd, F02, Rostra, The Forum, Century City, 7441
*BKS (Pty) Ltd, P O Box 112, Bellville, 7535

ABSTRACT

Road Access Management (RAM) guidelines have been developed in the past decade by a number of local, provincial and also the national roads authority. Some of these guidelines have been applied rigorously to the dislike of developers, but deviations to the requirements of the guidelines also had to be accepted. Whilst retrofitting of existing accesses does occur, it cannot be afforded everywhere. The question is whether transportation and traffic engineers have been realistic in the development of the standards that have been developed.

The statements above also refer to Port Elizabeth (Nelson Mandela Bay Municipality) which has Access Guidelines developed in 1996. In an effort to bring these guidelines in line with the latest thinking on the topic, a study has been done to re-evaluate the guidelines with specific reference to the circumstances prevailing in Port Elizabeth. The study considered the latest overseas and local practices, the experience in Port Elizabeth in the past decade, and specifically addresses the issues of road classification, development environments and retrofitting.

Adjustments to the existing guidelines have been developed which suit the local circumstances best and which endeavours to include the realities of a medium size coastal South African city.

1. INTRODUCTION

The management of the provision of access from the metropolitan road network to individual properties remains a contentious issue. The main reason for this is the conflict that develops between the free flow of traffic and the friction caused by the provision of accesses. For this reason road authorities have developed guidelines or policies to guide access provision in metropolitan areas. These guidelines are by and large based on sound traffic engineering principles (including traffic safety), but practical application and approach remains difficult and differ from place to place. The boundary between acceptable and unacceptable traffic practices is continuously challenged and it has to be acknowledged that grey areas exist. At present guidelines exist in South Africa (and overseas) that have been developed on national, provincial and local level – some variation in the guidelines is present.

In 1996 a document “Guidelines for access to service stations and other commercial developments (Draft)1” was completed for the (then) City of Port Elizabeth. The guidelines (referred to as PEMET Guidelines) were applied with reasonable success since then. In view of recent development pressure, as well as further research work done on access management, it was considered necessary to review the 1996 guidelines.

The departure point from a traffic and transportation engineering viewpoint is that a distinction must be made between roads, based on the function of these roads. The major roads in a metropolitan area therefore can be classified into a number of functional groups. The function of a road can be described/defined by mobility, access, design, traffic volumes and public facilities.

The above characteristics have been used in the recent national access guidelines to distinguish different road classes. These guidelines and other recent literature, both nationally and internationally, have been referred to for the latest developments in access management. These have been applied to the Port Elizabeth area, now the Nelson Mandela Bay metropolitan (NMBM) area, to provide new road access management guidelines for the NMBM. The development of the new guidelines included the review of the route classes, classification of major routes, review of associated access standards and route characteristics, appropriate access environments, if required, and suggested methods for managing access. The paper concludes with some of the possible implications that the new guidelines could have on access management in the Port Elizabeth area.

2. LATEST PRACTICES IN ACCESS MANAGEMENT

There are at least two important recent research efforts directly related to Road Access Management that were considered. One is the "Access Management Manual2", published by the (American) Transportation Research Board (TRB) in 2003, and the other is the "National Guidelines for Road Access Management (RAM) in South Africa3", completed under the auspices of COLTO (Department of Transport Committee for Land Transport Officials) in 2005. The most important approaches contained in these documents are summarised below. However, it is important to note two key issues being highlighted in practice when applying access guidelines in practice:

i) The **function** of roads **changes** over time. Due to the historical development of the city (changes in the form, size, density, type of development, etc) a road that originally serviced a residential area, can become a major through (mobility) route.

ii) The **process of road classification** becomes crucial when strict access requirements are linked to road classes. An important question is how the process should be handled – should it be done purely on a technical basis or should the development objectives be entertained.

2.1 Access Management Manual[2]

This extensive (almost 400 page) document was compiled over a seven year period between 1996 and 2003 by a committee of the TRB. Relevant points made in the document, include:

a) Access management involves trade-offs between competing objectives and therefore the appropriate amount and type of access are ultimately **decided on the basis of policy**.

b) **Inadequate access management adversely affects corridor businesses**. Closely spaced and poorly designed driveways make entering/exiting for customers more difficult and unsafe and they will consequently tend to avoid such businesses.

c) The transportation and land use cycle can only be managed effectively by addressing **both the transportation system and the adjacent land development**. The participation of both the authorities responsible is necessary.

d) Systemwide **access management programs** should include the following key elements:

- Classifying roadways into a logical hierarchy according to function;
- Defining acceptable levels of access for each class of roadway to preserve its function, including criteria for spacing of signalised and unsignalised access points;
- Establishing policies, regulations and permitting procedures to carry out and support the program.

e) **Consistency** in decision making on access management issues **is a challenge**. Access standards, rather than access guidelines, are recommended, as is a policy and criteria for the review of access requests.

f) **Corridor access management plans** are defined as an evaluation of roadway design and access characteristics and the proposal of access changes that improve the safety and operation of the primary roadway.

2.2 South African National RAM Guidelines[3]

This national guideline indicates a shift in dealing with access provision, and therefore reflects some change in the direction of access management.

a) This guideline contains a new variation on the definition of road classes. Routes are defined in terms of a number of physical and technical characteristics. A major difference with previous road classifications is the clear distinction between (a) “mobility” and (b) “activity and access” routes. The proposed allowance of access along the mobility routes is relatively strict and no access to individual properties is allowed. The servicing of, for example, regional shopping centres, with adherence to these guidelines can be expected to be difficult. The requirements for activity arterials can also be considered strict (“intersections 200m to 500m and property access from the side or back”).

b) This guideline excludes the concept of development environments which some other guidelines use to make a distinction between access spacing requirements. In its place the concept of dual classification, seen as a temporary measure, is introduced. This can be confusing particularly to developers who need to know the type of access that developments can enjoy, with certainty.

c) This guideline contains a number of concepts whereby access provision can be managed. These retrofitting techniques have always been available, but remain important to consider when access provision has to be managed:

3. PORT ELIZABETH’S ACCESS SITUATION

Port Elizabeth is a coastal city in the Eastern Cape with a metropolitan population of a little over 1 million. The city is now part of the Nelson Mandela Bay Municipality including the towns of Uitenhage and Despatch. Port Elizabeth’s central business district and historic

area are situated adjacent to the harbour, with major roads radiating out of and providing axes from this central area. These existing roads, together with the planned long term road network, form a partial radial grid of 'higher order' roads centred on the historic area and harbour. The National road (N2) skirts around the edge of the older part of town, dividing the established city from the development corridors growing away from the historic centre. As the higher order grid has not been completed, traffic puts pressure on lower order links and 'dog-leg' road arrangements.

The Nelson Mandela Municipality assesses access applications based on the Guidelines developed for Port Elizabeth in 1996. These guidelines classify roads into a number of classes. These guidelines include provision for development environments, such as CBD, urban, intermediate, and semi-rural. In practice, there have been some difficulties in classifying areas into these environments without a dynamic map or link to something tangible. Likewise, the absence of classified routes on a map and with clear class characteristics left classification of roads open for much debate, particularly with developers.

In the classification of an existing established road network like the one of Port Elizabeth, a number of questions arise, which can partly be answered from a technical viewpoint, but mostly through a policy decision. For example, to what extent should the existing function and access situation of a road determine its classification and to what extent should a vision for the future determine the classification? To what extent will retrofitting of existing routes be possible in future? If existing routes are classified higher than their existing function, will it ever be possible to achieve the higher function being aimed for? Can retrofitting be afforded?

4. ROAD CLASSIFICATION

A number of classification systems, as well as the approach to hierarchical road classification, have been described in the previous Port Elizabeth access guidelines1 in 1996. It is considered that the approach to this issue in two recent documents is worth summarising here. They are the Department of Housing's "Guidelines for Human Settlement, Planning and Design4", published in 2000, and the South African National Road Access Management Guidelines3, published in 2005. The following from these documents are relevant:

4.1 Department of Housing[4]

The introduction to Chapter 5.1 of this document refers to criticism on the road layout planning guidelines ("being car-oriented") of the previous (1995) version of the document. The conclusion reached from Chapter 5.1 is that it is focussed on the lower order street networks in residential neighbourhoods in South Africa and it is an effort to stress the importance of creating street networks that support pedestrians, cyclists and public transport. It is not focussed on the higher order road network of a larger urban area.

Chapter 5.2 addresses public transport in more detail. In the section describing the integration of public transport and movement networks, the conventional road hierarchical system of major arterials, minor arterials, collectors and local streets is defined. The conclusion reached is that the traditional functional road classification is accepted. The need for basing public transport corridors on roads with some mobility function, but mostly commercial activities alongside them (so-called activity streets), is stressed.

Chapter 7 of this document contradicts previous sections and contradicts itself with respect to road classification. This chapter illustrates that there was a desire to move away from

the “conventional road classification” system, but nothing different was eventually proposed. If anything, there is an effort to distinguish roads mainly for traffic movement versus those that handles traffic, but is at the same time also serving (more friendly towards) pedestrians and cyclists.

4.2 National RAM Guidelines

The functional classification system in this document is based inter alia on the Department of Housing’s guidelines (referred to above). The main function of the road network is **connectivity**, which contains two main elements, namely **mobility** and **accessibility.** An appropriate transition system between these two functions is also necessary. It is argued that road authorities should assign either a mobility function or an activity/access function to a road. **Mobility** routes should:

- have continuity;
- limited access;
- sufficient length between activity nodes and streets;
- if impaired, retrofitted.

With respect to **activity/access** routes:

- they are often within and along arterial routes;
- pedestrians and road access users should be protected from through traffic movements (by providing bypasses);
- artificially lowering speed limits is generally ineffective and should only be considered as a last resort

A qualitative indication of the relationship between mobility and activity/access routes has been developed and is shown below. What is clear from this approach, which differs from the one being used elsewhere (e.g. the USA), is that there is not really allowance (space) for transitional routes, i.e. a route is either a mobility or an activity/access route. Whether this is exactly what should be aimed for, remains

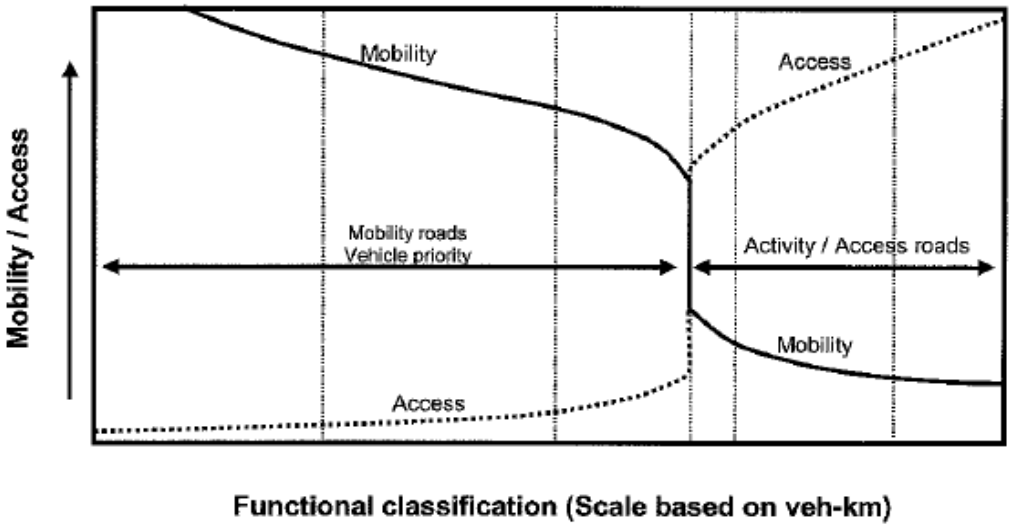

Figure 3.2: Relationship between mobility/access and functional classification based on vehicle-kilometre of travel

debatable. How the need for “an appropriate transition system is met, is not clear. In fact, the figures above illustrate the “jump” in function between mobility and activity routes and in effect show no place for transition routes. The impression that is created is that because mobility and activity functions are in conflict, one route should not attempt to serve both functions.

The approach in the national guidelines has the following consequences for Port Elizabeth:

- in the urban (built up) area, there are in effect only a few pure mobility routes, namely the N2, Settlers Way, portions of Uitenhage Road and portions of Cape Road, as they are the only ones where higher speeds than 60 km/h are allowed and where no property access occurs. A lack of mobility routes is evident should the approach of the national guidelines be followed;

- the largest portions of all other routes should be considered activity streets as they have a 60 km/h travel speed and they currently largely allow direct property access (Cape Road being a good example).

The approach in the national guidelines poses an interesting question regarding the issue of transition routes – do they have to be allowed for, or don’t they exist, i.e. are there routes serving some mobility function and at the same time provide relatively frequent access to property? Current practice in most South African cities includes numerous examples of this type of route.

5. ROUTE CLASSIFICATION OF THE NELSON MANDELA BAY’S ROADS

5.1 Approach to road classification

An iterative approach has been adopted using a proposed classification system, classifying the network and making amendments to the classification system. The main criteria that were applied were the National Road Access Management Guidelines and where this was not possible, or historic accesses existed, the PEMET Guidelines used.

5.2 Considerations

5.2.1 The road network

The network that was classified comprised of the Long Term Road Network (LTRN - from the 2006 ITP). Therefore all Roads of Metropolitan Significance (ROMS), both existing and planned, are included. Both future and existing ROMS were included to indicate the network of roads. It may well be that both the SDF and ITP LTRN will be revised, and as more local SDF’s are undertaken, further refinements can be done to these new NMBM access spacing standards/guidelines. However, it should be noted that moving routes from high mobility classes to lower classes should be avoided unless there is an alternative, as removing accesses is problematic.

5.2.3 Spatial impact

The road network is located within a spatial context. The NMBM is located within the Eastern Cape Province and as such is a destination for national and provincial trips. Within the metro, the existing and future spatial context is provided by the Spatial Development Framework (SDF). This was used as a backdrop for understanding nodes of activity within the metro.

5.2.4 Modes

The road network serves not only private traffic but also public transport, pedestrians and

cyclists. For the purposes of this project the scale used was not sufficiently detailed to give or get meaningful input in terms of non-motorised travel, however, some indication is given of the type of non-motorised facilities that could be found within the reserve of the classified roads.

Recent planning in the metro concerning public transport proposes a number of dedicated public transport routes which could affect access provision. The type of infrastructure required on particular roads will also affect permissible access. Where median bus lanes are provided, marginal property access will only be possible. Where kerbside bus stops are provided, accesses will have to be safely located to take this into consideration.

5.2.5 Access types

These guidelines considered access separation, the distance between two access positions, as the most important consideration in setting standards for access. The road environment will affect this, such as the permissible speed, medians that result in marginal accesses etc. Road intersections with classified roads are also accesses, but are referred to as intersections in these guidelines. Intersections are where public roads intersect and these intersections could require some control such as priority, traffic circles or even traffic signals and are the responsibility of the municipality. Therefore access separations are divided into intersections (road-road) and accesses (property private access – road).

Although access and intersection separations are based on speed, these separations will be affected by the following situations:

a) BRT lanes as dedicated median lanes

The barriers required for these lanes mean only marginal accesses are possible. If intersection spacings make BRT operations difficult, or slow, intersections could be changed to a marginal type layout. However, if no retrofitting is required, intersections may not be affected by median lanes.

The introduction of a median may lead to increases in U turns at intersections or to increased traffic on parallel routes. The effect of u-turns on traffic safety should be considered when a median or a BRT lane are introduced.

b) Kerbside bus stops

In some circumstances, public transport will not be median based but will rather run in mixed traffic with traditional kerbside bus stops or embayments. These embayments will affect the access separation, and therefore, where applicable, access separations for circumstances involving a bus stop are specified separately.

c) Filling Stations

Filling stations have traditionally been given special allowances to have access onto major roads, where other property would not be permitted access, due to the nature of the business and as the assumed traffic is pass-by traffic as opposed to additional generated trips. While filling stations now generally boast small convenience stores, and in some cases restaurants, the filling station component and the attached small convenience shop will still be given special allowance. Any other land use associated with the filling station may not use the filling station accesses, and must be treated as a

separate entity (see NDoT's RAM). The separations applicable to filling stations are therefore considered a special case and are specified separately.

5.2.6 Road classes

The table below indicates the proposed classes of roads in the NMBM. These are based on the National Road Access Management guidelines.

Table 5.1 NMBM Road Classification

Class	
Number	**Name**
1	**Freeway**
2	**Mobility arterial**
3	**Activity arterial**
4	**Activity street**
5	**Residential collector**
6	**Local Street**
7	**Non-motorised**

Classes 5-7 are not considered part of the guidelines but are included for completion and to correlate with the national guidelines.

5.2.7 Primary function of classes

Table 5.2 indicates the primary function of each of the classes and a description of the type of function that it should serve.

Table 5.2 Primary function of classes

Class		Function	
Number	**Name**	**Primary**	**Description**
1	**Freeway**	**Mobility**	Regional mobility
2	**Mobility arterial**	**Mobility**	Metropolitan mobility
3	**Activity arterials**	**Mobility - activity link**	Mobility to significant activity nodes/areas in the metro
4	**Activity street**	**Activity**	Access to land use in adjacent node or corridor, and limited mobility within the neighbourhood (Sustainable Community Unit)
5	**Residential collector**	**Activity**	Residential collector, providing access to residential areas
6	**Local Street**	**Activity**	Residential street, providing access to individual homes
7	**Non-motorized**	**Activity**	Routes for pedestrians and/or cyclists

6. ACCESS ENVIRONMENTS

The spatial context in which a road is located is important to acknowledge and the guidelines should support the spatial planning work that has been undertaken to guide development in the metropolitan area in the future.

6.1 Urban vs rural

The project recently undertaken by the NMBM's land use planners focussed on determining the urban fence/edge as a component of the metro's Spatial Development Framework. The size of erven, in particular the erf boundary fronting onto a road, is affected by the access spacing permissible onto that road, and vice versa. Therefore, the character of rural and urban environments should be promoted by differentiating between them in the access guidelines where appropriate.

Therefore, two environments are acknowledged in the guidelines, namely rural and urban and these are distinguished by the Urban Fence (Edge) as set out on the Spatial Development Framework.

6.2 Ideal vs historic

Within the urban and rural environment, a number of sub-environments occur. In the previous guidelines (PEMET) these environments were listed as: CBD/Urban, Intermediate, Suburban and Semi-rural. These allowed for slight differences in access separations. The variation is not highly significant, but the greatest difference occurs between semi-rural and the other classes. In these guidelines this difference in environment is catered for in the urban/rural differentiation.

In moving towards guidelines that guide access arrangements towards an ideal situation to protect the primary function of the roads as indicated in the National Road Access Guidelines, while acknowledging that some situations can never practically meet these standards due to historic reasons, the environments are further divided into 'Ideal' and 'Historic'.

6.2.1 Ideal

This category is based on the National Road Access Guidelines and is the access standard which all accesses should aim to meet. The standards are applicable to all accesses, particularly green field developments, road planning, road and township designs, retrofitting designs and local spatial development frameworks. These standards should always be applied first to any application for access (and also subdivision).

6.2.2 Historic

If a particular site has existing access that does not meet these standards, then it is classed as a historic access. This category is used to acknowledge an existing situation that has no alternative. However, should rezoning occur or consolidation, or alternative access exists, then the access should be improved or the rezoning limited, always with the aim of improving, or certainly not worsening the situation in light of what the ideal access separation should be. The guidelines provided for historic conditions are an effort to acknowledge "not ideal, but historic" situations that do exist.

6.2.3 Allowable

A third category is included which indicates the access standards that would be permissible on the particular class of road. This category acknowledges that in existing areas, historic access situations can often be improved, but they cannot meet the ideal situation. This category provides guidance on what access separations could be allowed

and can be used when the opportunity exists to improve access arrangements.

7. ACCESS STANDARDS

7.1 Access separation

The access standards proposed for the NMBM are shown in the table at the end of this paper. The distances indicated in the tables are taken directly from the National Road Access Management guidelines. As there is a move to policy based access spacings, rather than precise engineering calculations, these spacings have been adopted with the characteristics and classified routes linked through the speed of vehicles. Therefore, should the assumed conditions not fit those of an application, calculations for safe distances and engineering judgement can be used to motivate special accesses. This, however, should be the exception and not the rule in order to support the policy driven approach to access provision.

7.2 Considerations when adopting these standards

The access spacings proposed by the national guidelines were checked against the PEMET guidelines and against a number of safe distances for particular speeds before being adopted. The following were considerations:

- Mobility route intersections with other roads are spaced in order to permit traffic signals to be installed in future, should they be warranted. Therefore intersection spacing is based on signal progression.

- The national guidelines do not appear to give any engineering back-up for where access separations come from, therefore, these were checked with those calculated in the PEMET guidelines.

- Therefore, the engineering criteria considered, were:

    - Signal spacing for signal progression (aiding progression, or helping limit speed for determining intersection spacing);
    - Stopping sight distance for intersection spacing (non-signalised) and access (very important for safety at these conflict points – the national guidelines appear to be more conservative and therefore acceptable);
    - Gap acceptance for right turning movements – the national guidelines appear to include these distances too, even where they exceed stopping sight distance;
    - Functional boundary distance (FBD) was considered as ideally no intersections or accesses should occur within the functional boundary of an intersection, nor should intersection functional boundaries overlap;
    - Egress conflict was only indicated for local streets. This spacing is only 25m, and was proposed in the PEMET guidelines to avoid this conflict.

The new NMBM guidelines are therefore similar in that the access spacings that can be allowed are both based on safe stopping and manoevering distances at certain speeds. The new guidelines do however, not permit low volume driveways onto roads of higher mobility and therefore do not provide access spacings in these cases. The new NMBM guidelines therefore incorporate policy into the access spacings tables to a greater extent than the PEMET guidelines.

8. MANAGING ACCESS

The new NMBM Access Guidelines have been designed with a number of municipal processes in mind, i.e. when access guidelines are/should be consulted for guidance. These are described below as a suggestion of when and how to employ the guidelines.

8.1 Land applications

The Subdivisions and Land Transactions (SALT) process involves various applications for changes in land use being circulated to various departments, and on which transportation comments must be made. In many instances these applications for changing land use provide an opportunity to improve the access management situation. These involve subdivisions, consolidations, rezoning, sale and lease of erven and can include applications for access onto Roads of Metropolitan Significance. All applications relating to Provincial roads are subject to approval by the Eastern Cape Department of Roads and Transport. Therefore, should the provincial roads department also approve these guidelines, both the NMBM and the Province will use the same standards to assess these applications. Should the Land Use Planning Department also be in agreement, a more integrated and 'predictable' assessment will be possible.

8.2 Land use-transport planning

8.2.1 Local Spatial Development Frameworks

When Local Spatial Development Frameworks (LSDFs) are undertaken, the guidelines can give an indication of the access spacing that would be required in terms of the 'ideal'. If these cannot be achieved, then the 'allowable' spacings can be permitted. Where access spacing falls below the standard of 'allowable', changes in land use that increase trips to those erven should not be considered, i.e. historic access = historic land use. In other words, increased land intensity (more private vehicle trips) should result in improved access if the existing situation is sub-standard.

8.2.2 Corridor development

The National Land Transport Transition Act (NLTTA) supports densification along corridors and it should be understood that an intense land use adjacent to a mobility route is not contradictory. This does not imply the developments must have direct access from the routes of mobility, nor does it mean that the access standards of the mobility route should be compromised. The development should be oriented towards public transport and non-motorised transport (ideally) and vehicle access can be obtained from the supporting network. The implications of additional traffic on the surrounding, more access-oriented roads, must be discussed and agreed with the town planners as this will influence the width of the corridor of higher development.

8.3 Retrofitting programmes

In some cases retrofitting will be undertaken when land use changes. However, it is recommended that **portions** of road that do not meet the allowable standards should be identified and retrofitted. In some cases retrofitting could be done when public transport lanes are implemented or when road widening is undertaken as part of the ITP. As always, the 'ideal' spacings should be aimed for, but 'allowable' spacings are permissible if the ideal cannot be achieved.

Retrofitting techniques are discussed comprehensively in the National Road Access Management Guidelines. The wider impact of installing a median on not only the access points, but the impact on the adjacent network should be catered for in the retrofitting programme designs to accommodate resulting turning movements.

9. IMPLICATIONS OF THE NEW GUIDELINES

The implications of applying the “ideal” access standards to the proposed road classification for the NMBM can mean that many existing roads and environments will not meet the requirements, lessening the usefulness of this document. It is therefore recommended that:

a) Firstly, the above access standards be attempted to be met. As a policy, no direct property access will be permitted onto Class 1 roads, and only onto class 2 roads if no alternative exists. No subdivisions will be permitted if they force access to be provided in sub-standard positions.

b) Secondly, where it is not possible to meet these requirements, then the environment in which the road passes can be acknowledged, bringing other access standards into effect, i.e. the ‘allowable’ and ‘historic’ environments.

c) Retrofitting programmes should be undertaken annually to gradually align existing access standards with that of the ‘ideal’ in conjunction with the spatial planning for those areas (e.g. through the LSDFs).

It is the intention that the guidelines be used by planners in the Nelson Mandela Municipality in conjunction with the map of classified roads for a period of time. Amendments can be made to the classification and standards to provide a final document that is relevant, useful and has the support of municipal transport planners, land use planners and the Provincial Department of Transport. As the guidelines rely on information that is constantly updated, such as the SDF and ITP, it is recommended that they be reviewed periodically.

10. REFERENCES

[1] Port Elizabeth Metropolitan Transport Area, Guidelines for access to service stations and other commercial developments (Draft), BKS (Pty) Ltd, Port Elizabeth, 31 July 1996.

[2] Transportation Research Board, Access Management Manual, Washington DC, 2003.

[3] Committee for Land Transport Officials (COLTO), National Guidelines for Road Access Management in South Africa (RAM), 25 October 2005.

[4] Department of Housing, Guidelines for Human Settlement, Planning and Design, CSIR Building and Construction Technology, Pretoria, 2000.

[5] Eastern Cape Province, Functional Classification of the Road Network of the Eastern Cape Province, Draft report on workshop and proposed network, 21 May 2007.

[6] Provincial Administration Western Cape, Department of Economic Affairs, Agriculture & Tourism: Tourism Branch, Road Access Guidelines, Second Edition, September 2002.

[7] Province of the Eastern Cape , Department of Roads and Transport, Eastern Cape Roads Act, 2003.

[8] Nelson Mandela Bay Municipality, Infrastructure and Engineering Business Unit, Integrated Transport Plan 2006.

[9] Nelson Mandela Bay Municipality, Housing and Land Business Unit, Spatial Development Framework Plan, as included in the 2006 ITP and working knowledge of the urban fence project in 2007.

[10] Nelson Mandela Bay Municipality, Infrastructure and Engineering Business Unit, Proclaimed main roads: reserve widths from list derived from gazetted road width.

NMBM Access Class		Road classification characteristics						Access Environments (Minimum access seperation (m))															
								Urban											Rural (ie outside urban fence)				
Class		Related classification systems				Function		Ideal (based on NDoT)		Allowable (see assumption for median)							Historic	Ideal (based on NDoT)		Allowable (based on NDoT)			Historic
		PEMET	National Road Access Management Guidelines							Road intersection	Property access			Filling station access						Road intersection	Access		
Number	Name	Class name (design speed)	Class no.	Class name (urban travel speed) (rural travel speed)	Route no.	Primary	Description	Road intersection	Property access	Intersection seperation	Access Downstream of an intersection with a bus stop	Access Downstream of intersection with no bus stop	Uaccess upstream of an intersection	Access Downstream filling station with bus stop (see fig. 7.5 of NDoT)	Access Downstream filling station, no bus stop	Access Upstream filling station		Road intersection	Property access	Unsignalised intersection seperation (signals not permitted)	Property access	Filling station	
1	Freeway	N/A (highest order just below a freeway)	1	Principal arterial (80-120 km/h) (100-120 km/h)	N/R	Mobility	Regional mobility	Approx. 4 km in NMBM, interchanges only (Dependent on SANRAL)	not permitted	interchanges >1.6 km (NDoT)	N/A Minimum spacing required			(340 m NDoT - intersection not an interchange)	Fig. A1, Table 2.7 (PEMET) (235 m (NDoT - intersection not interchange))	Fig. A1, Table 2.7 (PEMET) (260 m (NDoT - intersection not interchange))	Existing sub-standard intersections must be retrofitted. If not possible, no contstraint to through traffic, side traffic to have sufficient acceleration/deceleration lanes.	> 4km in NMBM, interchanges only.	not permitted	interchanges: 1.6-2.4 km side roads: 15-30 km (NDoT), priority to through traffic, or one access per large farm/ adjacent farm accesses combined as far as possible	not permitted	Fig. A1, Table 27 (PEMET)	Existing farm access may remain. If land use changes, ideal should be aimed for or if large redevelopment, evironement should be considered for reclassification
2	Mobility arterial	Strategic Arterial / Major arterial (80 - 90 km/h)	2-3a	Major arterial/ Minor arterial (70-90 km/h) (80-120 km/h)	MR	Mobility	Metropolitan mobility	600-800m (i.e.60-80km/h: signalised ultimately)	not permitted	600-800m (+_ 20%- NDoT) Based on practical signal spacing for progression at these speeds	285 m	200 m	230 m	245 m	160 m Fig A1, A2, A3 (PEMET)	205 m Fig A1, A2, A3 (PEMET)	Where no alternatve exists, permit access without additional trips (min spacing for existing low vol. driveways = 40m(PEMET)), consolidate with adjacent erven to reach 'allowable' seperation (Min. property access:90m min. spacing for larger than low vol. driveways as LiLo, ie a single Res 1 site, Min intersection spacing: 130m ie gap in median)	1.6 km	not permitted	1.6 km-800m min (priority)	800m min	Fig. A1, Table 27 (PEMET)	Retrofit existing accesses to allowable (at least to urban conditions) Existing farm access may remain. If land use changes, ideal should be aimed for, or allowable, or if large redevelopment, evironment should be considered for reclassification
3	Activity arterials	Minor Arterial (70km/hr)	3b	Activity arterial (50-60km/h) (N/A)	N/a	Mobility - activity link	Mobility to significant activity nodes/areas in the metro	250-500m	None. (Property access restricted to side and back of property)	200m - 500m (spacing signal co-ordination difficult, hence lower speeds - NDoT) (500m limits signal progression to about 60km/h)	145 m (190m preferred)	105 m (130m preferred)	135 m (160m preferred)	115 m (165m preferred)	75 m (105m preferred) Fig. A2, A3 (PEMET)	125 m (145m preferred) Fig. A2, A3 (PEMET)	Where no alternatve exists, permit access without additional trips (min spacing for existing low vol. driveways = 30m(PEMET)), consolidate with adjacent erven to reach 'allowable' seperation (Min. property access:90m min. spacing for larger than low vol. driveways as LiLo, ie a single Res 1 site, Min intersection spacing: 90m upstream, 130m downstream ie gap in median)	1.6 km	not permitted	1.6 km-800m min (priority)	800m min	Fig. A1, Table 27 (PEMET)	Existance of these are questionable (Fitches corner possibly)
4	Activity street	Collector (60 km/hr)	4	Activity street (40-50 km/h) (N/A)	N/a	Activity	Access to land use in adjacent node or corridor, and limited mobility within the neighbourhod (SCU)	250-300m	60m	200-300m (300m limits signal progression to about 45km/h)	45-65m recommended for stopping sight distance, and combined accesses are recommended.			(Filling station: Fig A4(PEMET)			Where no alternatve exists, permit access without additional trips (min spacing for existing low vol. driveways = 25m(PEMET)), consolidate with adjacent erven to reach 'allowable' seperation (Min. property access:90m min. spacing for larger than low vol. driveways as LiLo, ie a single Res 1 site, Min intersection spacing: 90m upstream, 130m downstream ie gap in median)	N/A	N/A	N/A	N/A	N/A	N/A
5	Residential collector	Collector (60 km/hr)	5	Residential street (40-50 km/h)	N/a	Activity	Residential collector, providing access to residential areas	150-200m	150-200m		Access separations of the order of 45 m (NDoT)												
6	Local Street	Local Streets (50-60km/h)	5	Local Street (30-40 km/h)	N/a	Activity	Residential street, providing access to homes	150-200m	45 m		25 m are recommended (PEMET - Egress conflict) (outside scope of guideline)												
7	Non-motorized	N/A	6	Non-motorised (80m/min)	N/a	Activity	Routes for pedestrians and/or cyclists	Outside scope. See *Pedestrian and bicycle facility guidelines* (Department of Transport, 2002)															

ISBN Number: 978-1-920017-34-7
Produced by: Document Transformation Technologies cc
Pretoria, South Africa
Conference organised by: Conference Planners