

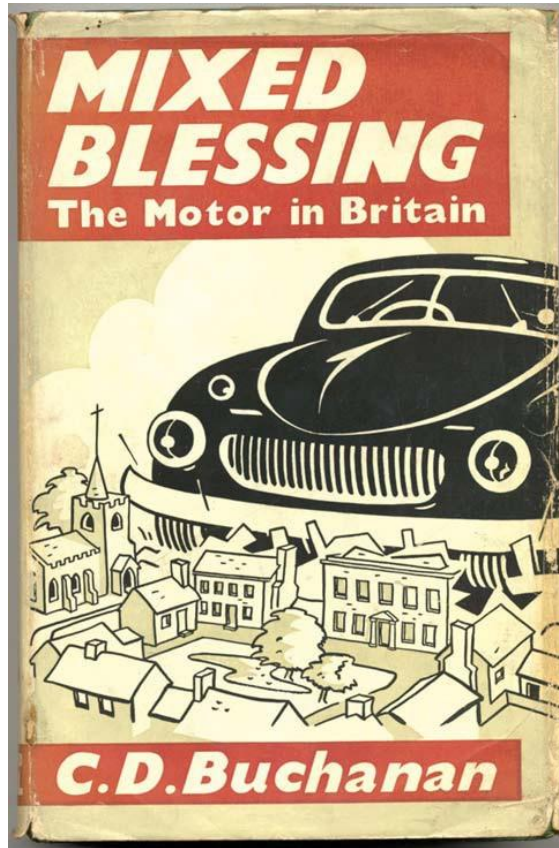
50 Years since the Buchanan Report -Proposal of areal traffic speed management-

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(ATRANS 2013.8.23)

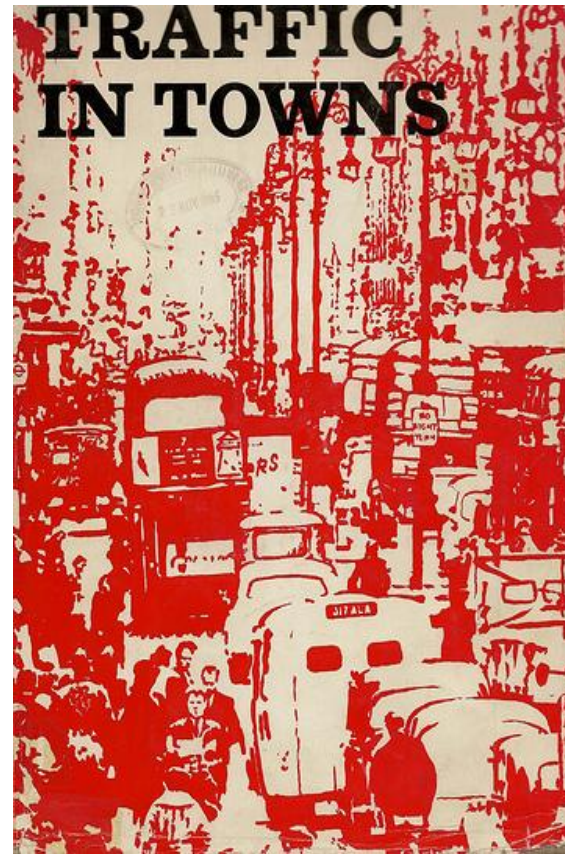
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1. The Buchanan Report (HMSO, 1963)



▶ 1958

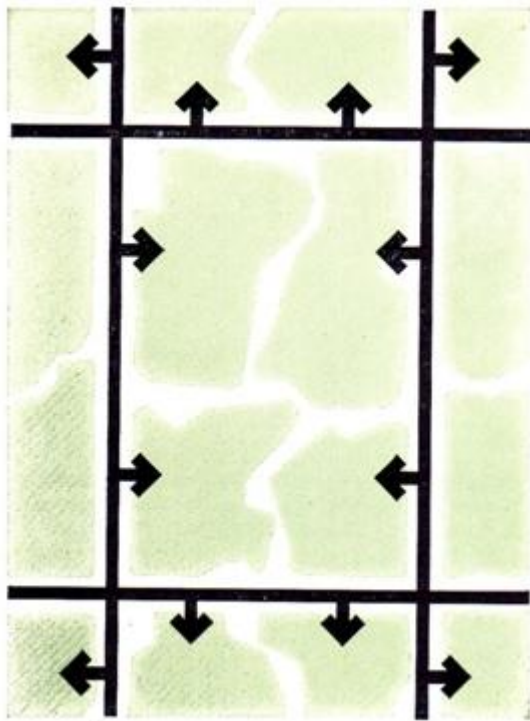


▶ 1963

Car : “The beloved monster” ⇒ 2013 Even, today? YES.

▪ The Buchanan Principles

- Clear separation of urban rooms (environmental areas) from corridors (distributors)
- Functional hierarchy of urban distributors
(Primary, District and Local distributors, and access roads)
- The balance of Accessibility, Environment and Costs (3 Key Factors)



▶ a. Urban rooms and corridors



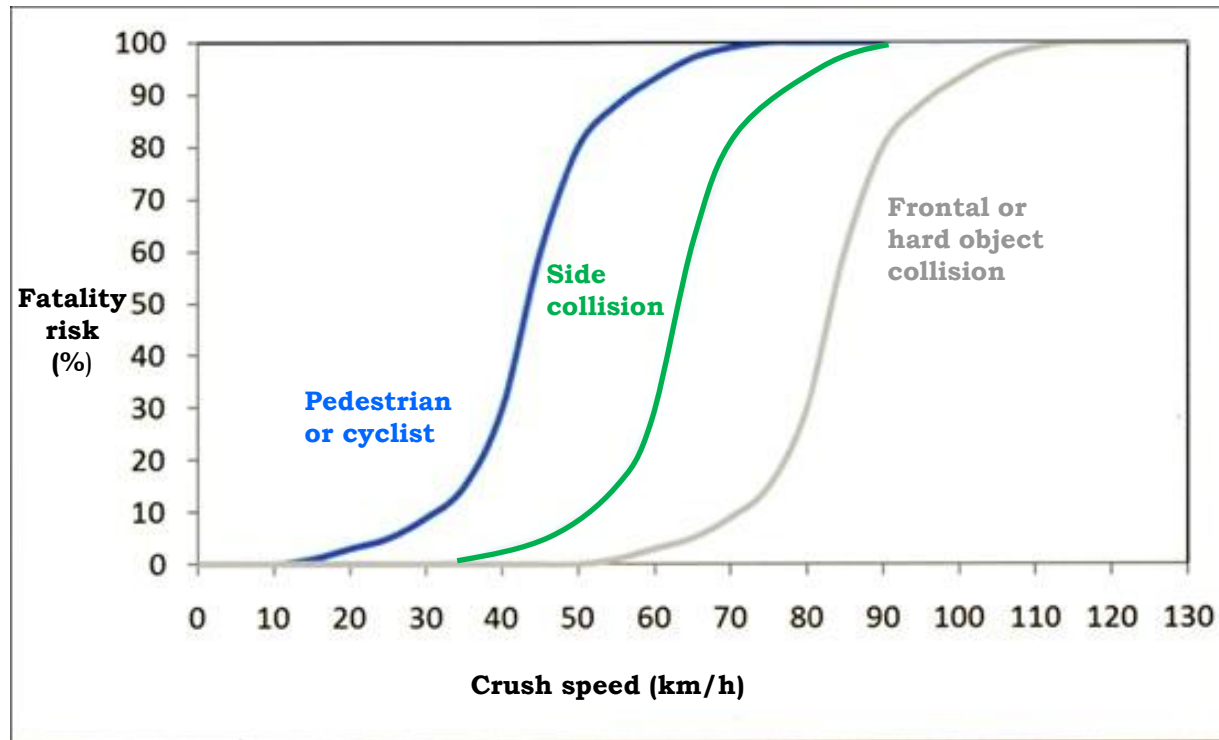
- Primary distributors
- District distributors
- Local distributors
- Environmental area boundaries

▶ b. Environmental areas and distributor system

2. Applications of the Concepts since 1963

- Development of traffic calming measures
 - Woonerf (1970's, the Netherland) :
 - ”Living court” (mixed use) concept spread in European cities
 - Developments of various traffic calming devices
 - Zone 30 (1984, the Netherland, then European cities around 1988-1991. 1995, Japan) : Lower speed limit for residential streets with separation of pedestrian from vehicle.
 - Zone 20 (Meeting zone) – Swiss (2002) and France (2008)
 - ”Shared space” to reduce street clutter (mixed use)

Fig.A The Relation of the Traffic Fatality Risk and Speed



Source : Wramborg. P (2005) from Commission for Global Road Safety, MAKE ROADS SAFE.2008

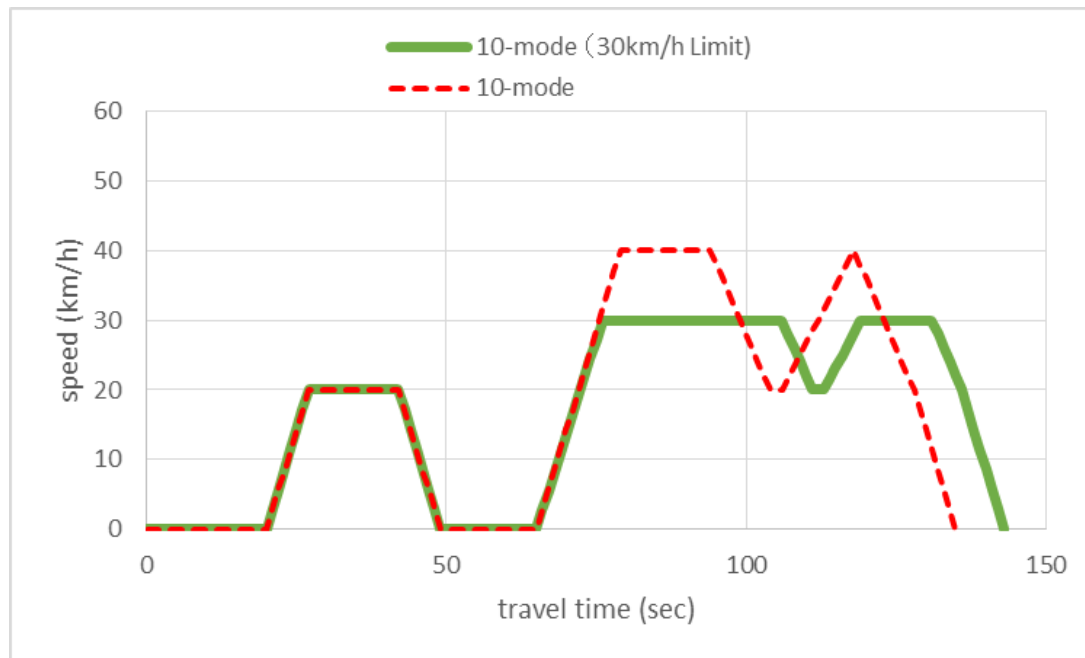
Fig.B Effects of 30 km/h Limit for urban driving cycle (10-mode)

Travel distance : 660 meter (fixed)

Travel time : 135 → 143 sec (+5.9%)

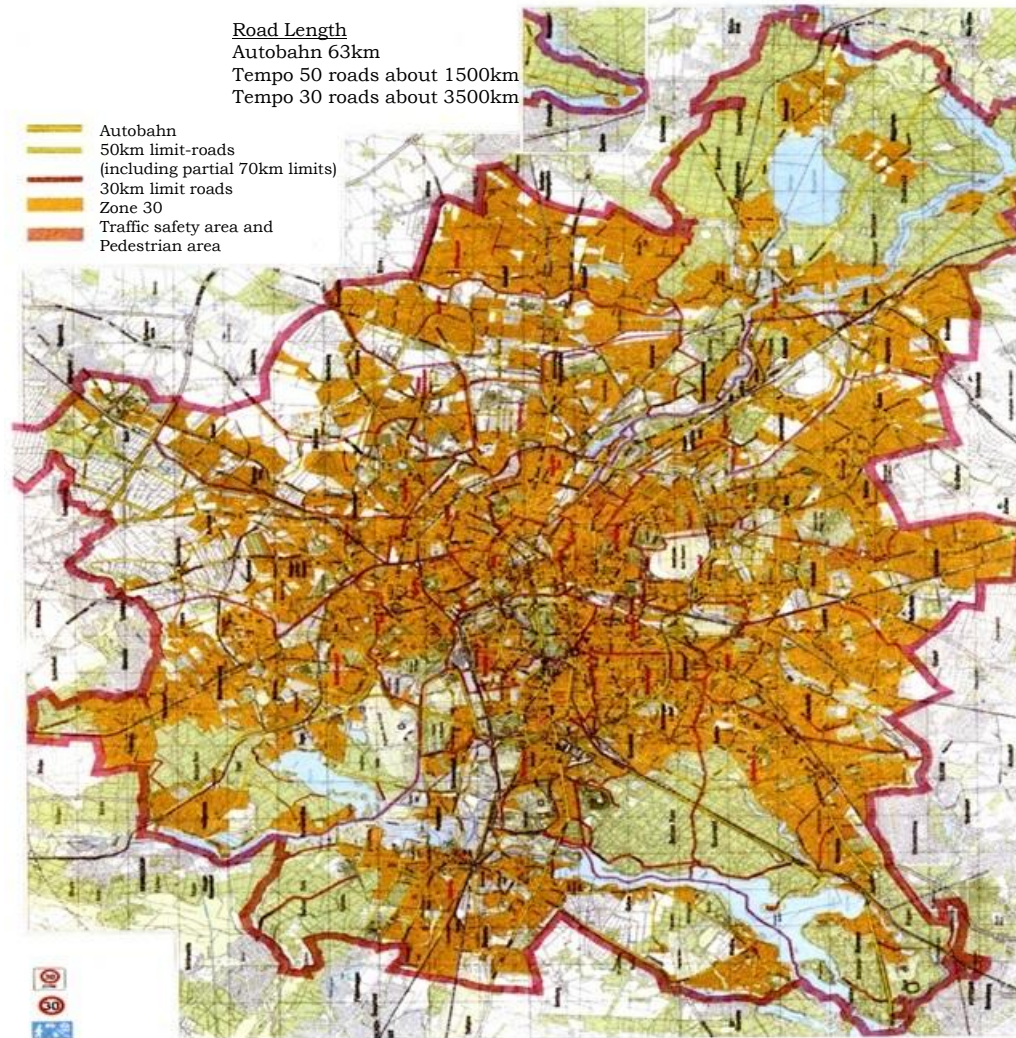
Average speed : 17.6 → 16.6 km/h (-5.7%)

CO₂ emission : 143 → 138 g-co₂/km (-3.5%)



Source : Toyota Transportation Research Institute,2013

3. City-wide Application of Traffic Calming Measures in Germany : Berlin — Plan of Tempo30(1992.12)



3. City-wide Application in France (1)

Traffic Calming Zones in France

RÉSUMÉ

ÉQUILIBRE ENTRE LA VIE LOCALE ET LA CIRCULATION DES VÉHICULES MOTORISÉS

En milieu urbain, les voiries ont le plus souvent deux types de fonctions à remplir de façon concomitante : les fonctions qui concernent la vie locale et celles qui sont liées à la circulation des véhicules motorisés. Le schéma suivant présente les équilibres entre ces deux types de fonctions pour les différents statuts de voiries proposés.

Statut de la zone ou de la voie	 aire piétonne	 zone de rencontre	 zone 30	 D 906 COURPIÈRE agglomération	 section 70
Vitesse maximale	Allure du pas	20 km/h	30 km/h	50 km/h	70 km/h
Équilibre vie locale fonction circulaire	 Via locale	 Via locale	 Circulation	 Circulation	 Circulation

Note:

Pedestrian	Meeting Zone	Zone 30	Arterial road	Major arterial	
Name	Zone	(20km/h)	(30km/h)	(50km/h)	road
(Speed limit)	(walking speed)				(70km/h)

Source : CETUR, Ville 30

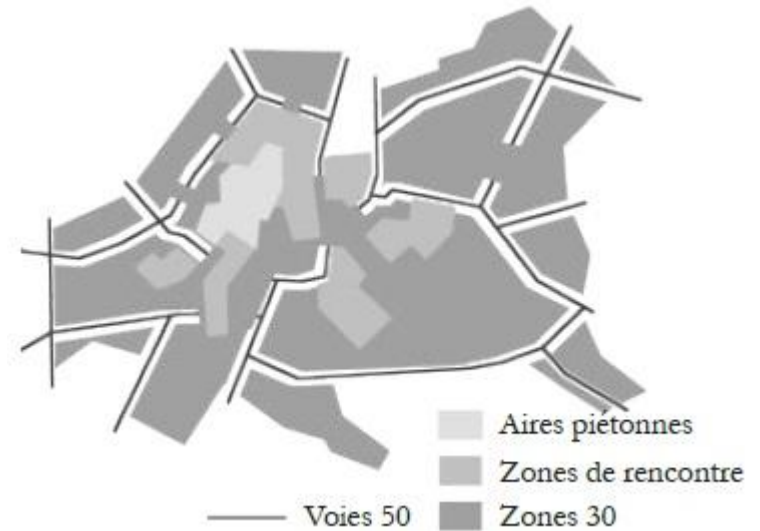
3. City-wide Application in France (2)

Hierarchy of Urban Roads And Generalization of Zone 30

Concept of Traffic Calming in France



Plan théorique d'un réseau de voirie hiérarchisé

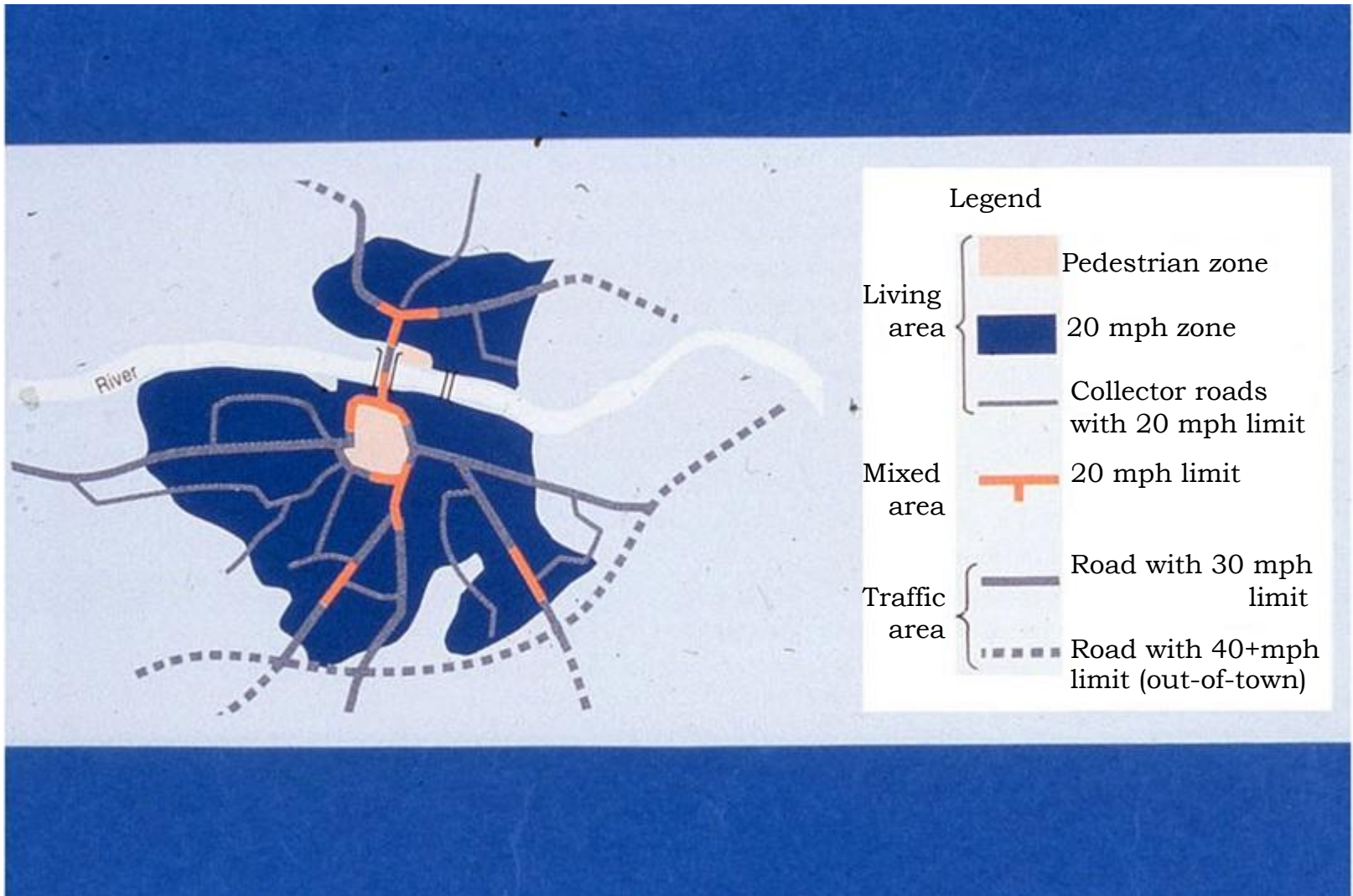


Legend

- Pedestrian Zone
- Zone 30
- Meeting zone (20km/h)
- Road with 50km/h limit
- Road with 70km/h limit
- Road with 90km/h limit

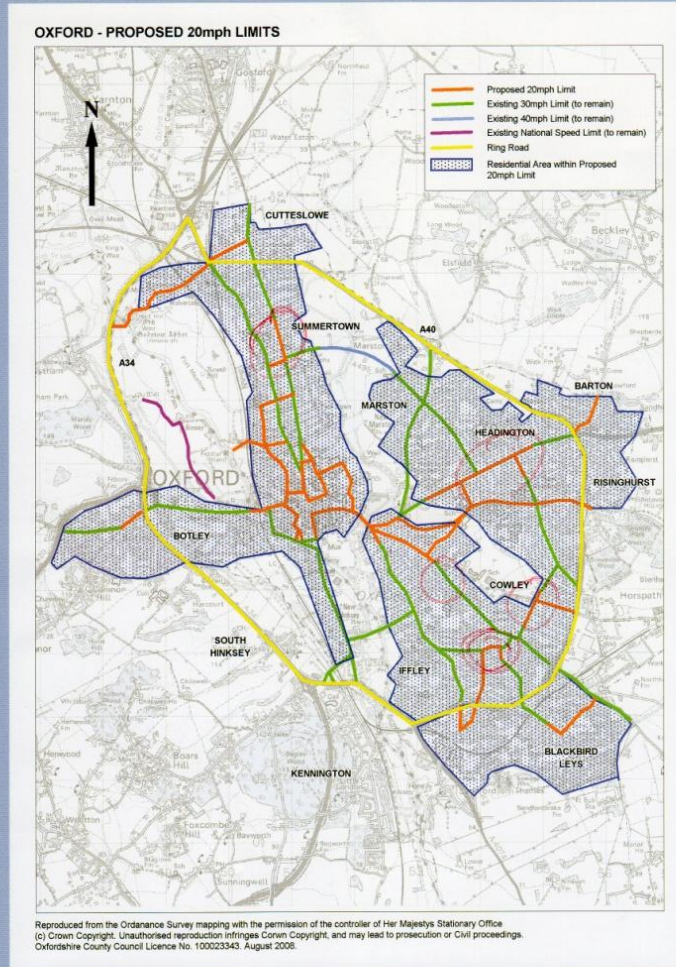
Source : CETUR, Ville 30

3. City-wide Application in England 20 mph Speed Limit—A conceptual diagram—



Plan of Oxford and outlying areas shaded to show where 20mph limits are proposed and with the major route proposals shown in the coloured key.

Plan of 20 mph limits in Oxford



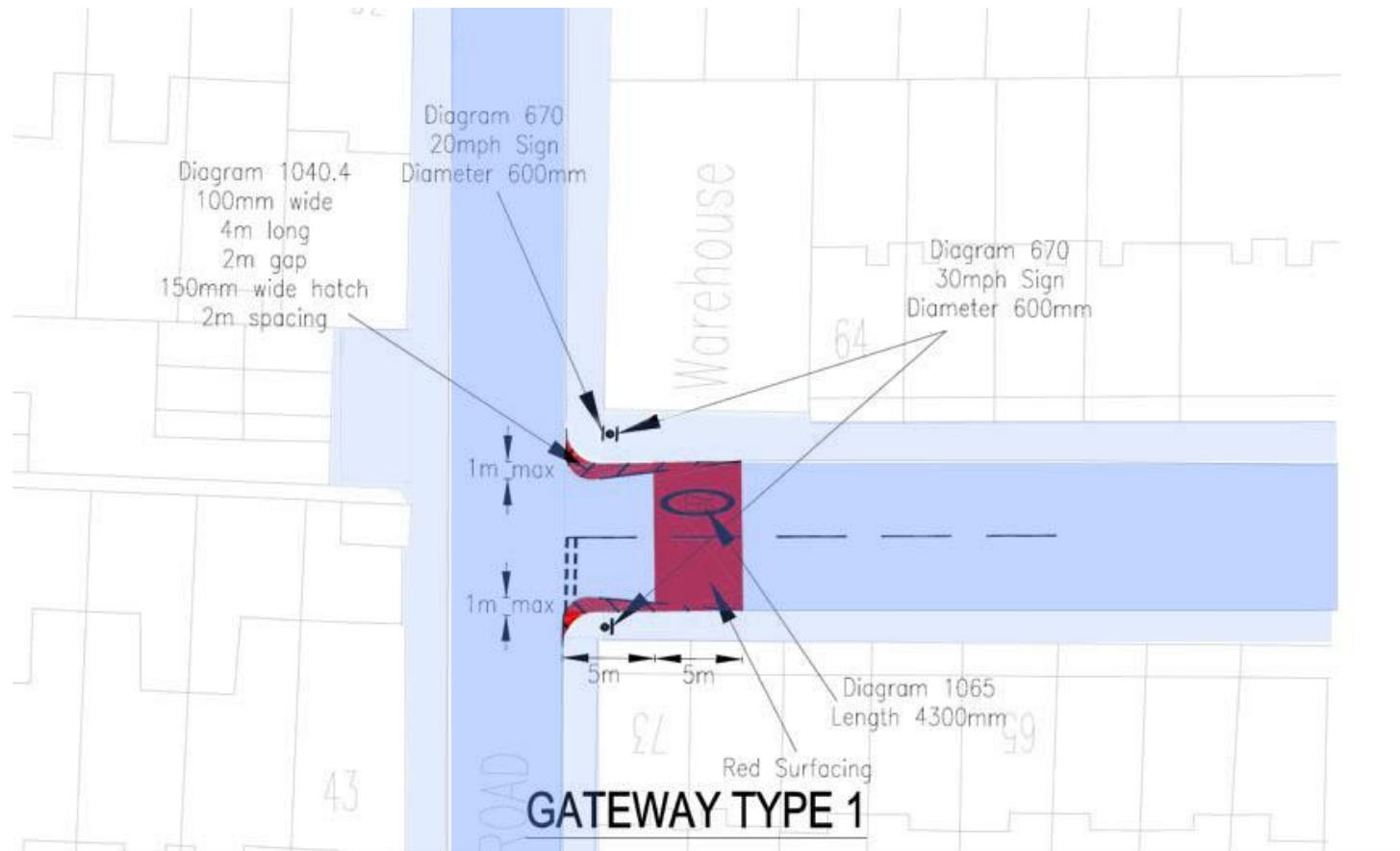
"Now is the time for you to have your say on the county council's proposal for 20mph speed limits in Oxford.

"The idea behind these proposals is to increase safety levels and quality of life for residents, pedestrians and motorists in our Oxford communities. At this stage we are open to your suggestions on how and where 20mph speed limits should be introduced in to your area. Please fill in a feedback form, attend a meeting, send us an email or write us a letter to tell us what you think."

Councillor Ian Hudspeth, Oxfordshire County Council's Cabinet Member for Transport



Treatment of Gateway(Portsmouth) at the Entrance of 20mph Limit Roads



Examples of Entrance Treatments (Oxford City)

One-way residential road



Raised side walk



Two-way residential roads



Exit side



4. Areal traffic Speed Management as a Key Implementation Tool

● Revision of Japanese Traffic Speed Limits

1. Statutory speed limits for all roads unless signed otherwise :60km/hr
2. Standard speed limits in built-up area

Type	No. of lanes	Median strip	Volume of pedestrian	Standard speed limit
1	2 lanes	—	Many	40 km/hr
2	2 lanes	—	Some	40 km/hr
3	4 + lanes	Yes	Many	50 km/hr
4	4 + lanes	Yes	Some	60 km/hr
5	4 + lanes	No	Many	50 km/hr
6	4 + lanes	No	Some	50 km/hr

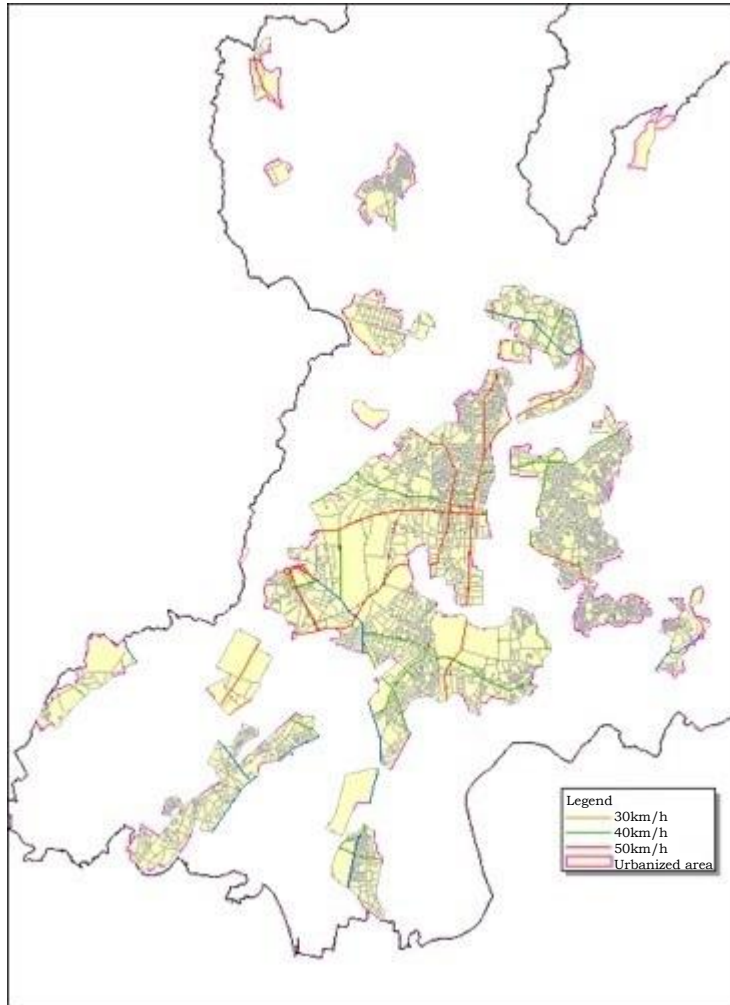
3. Residential roads used mainly for daily activities of local residents :30km/hr with physical traffic calming devices
4. High-quality arterial roads for automobiles :70km/hr or 80km/hr

Source : NPA(2009)



Case Study for Toyota City

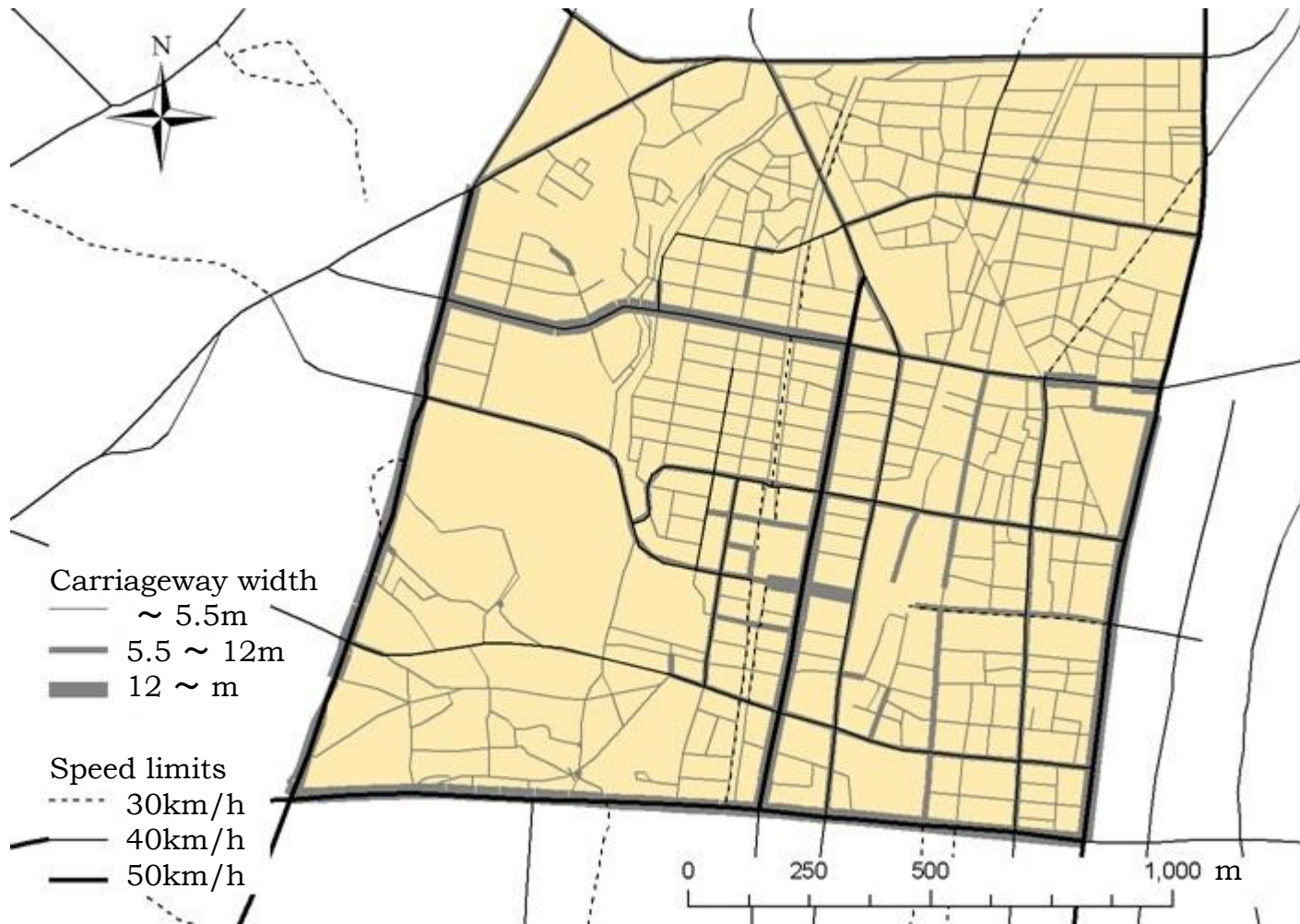
Speed Limitation in the Urbanized Area (Toyota City)



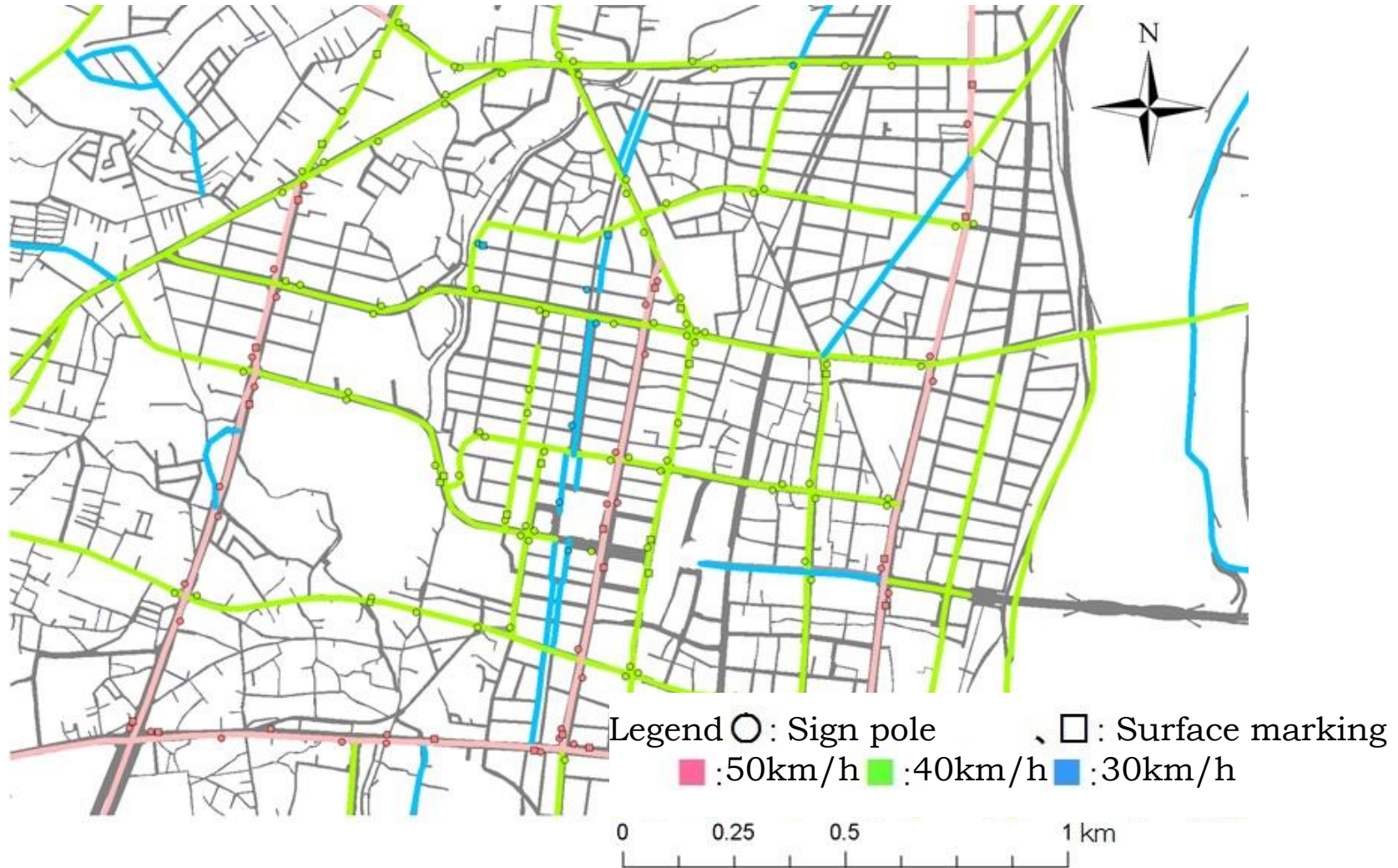
Table

	Road length ratio with speed limits (%)				Road length (km)
	30km/h	40km/h	50km/h	Total	
National roads	0.0	39.4	48.8	88.2	32.0
Major regional roads	0.7	31.8	56.9	89.4	15.9
Prefecture roads	10.8	52.5	28.1	91.4	27.2
City roads	5.5	12.0	1.8	19.3	764.5
Total	5.3	14.7	5.5	25.6	839.5

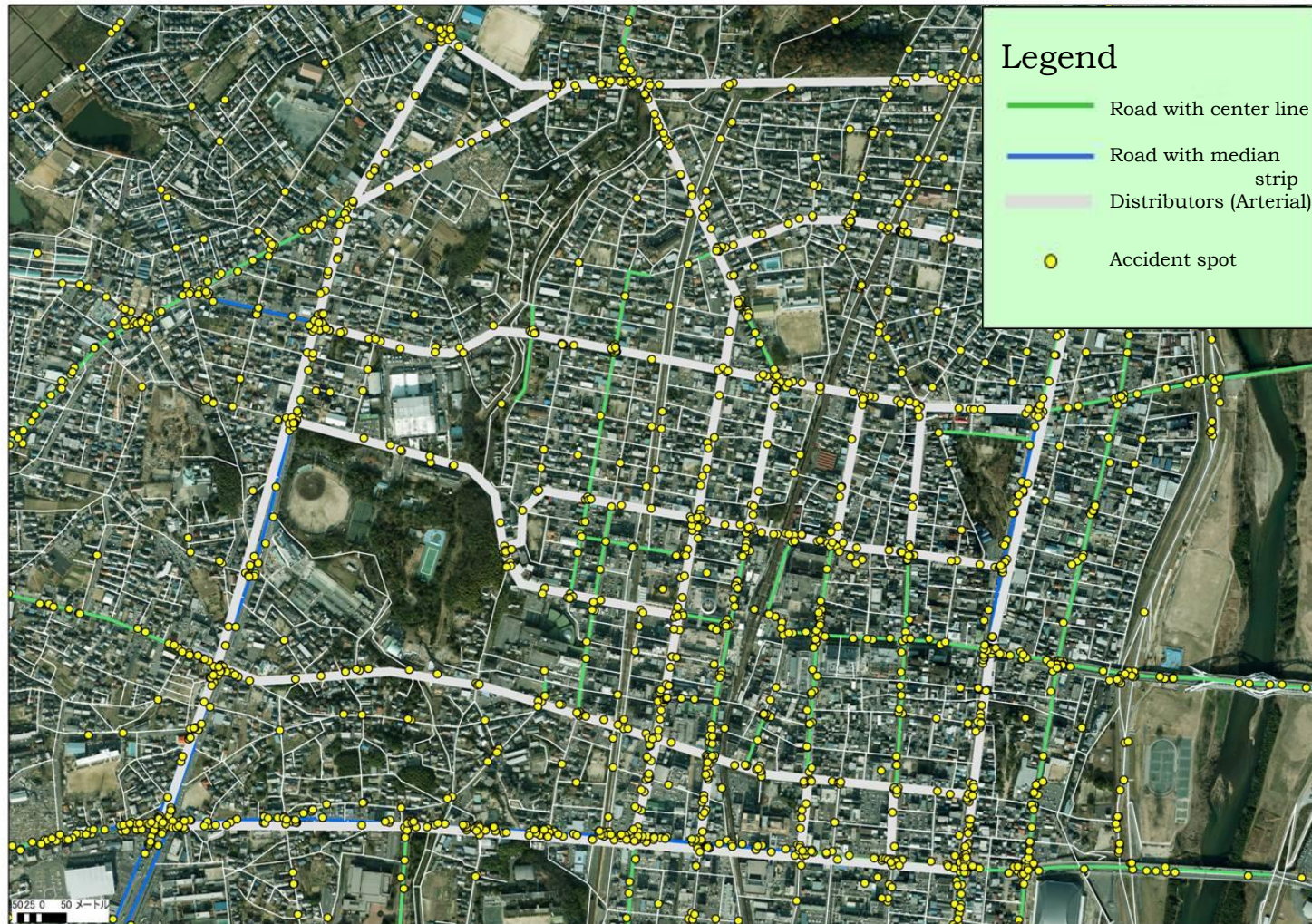
Details of Speed Limits in the Central Area



Existing Signage of Speed Limits



Location of Traffic Accidents in the Central Area of Toyota City(1999-2005)



Hierarchy of Streets with Speed Limits (Image for Toyota City)



Living streets

Sub-arterial streets

Arterial streets

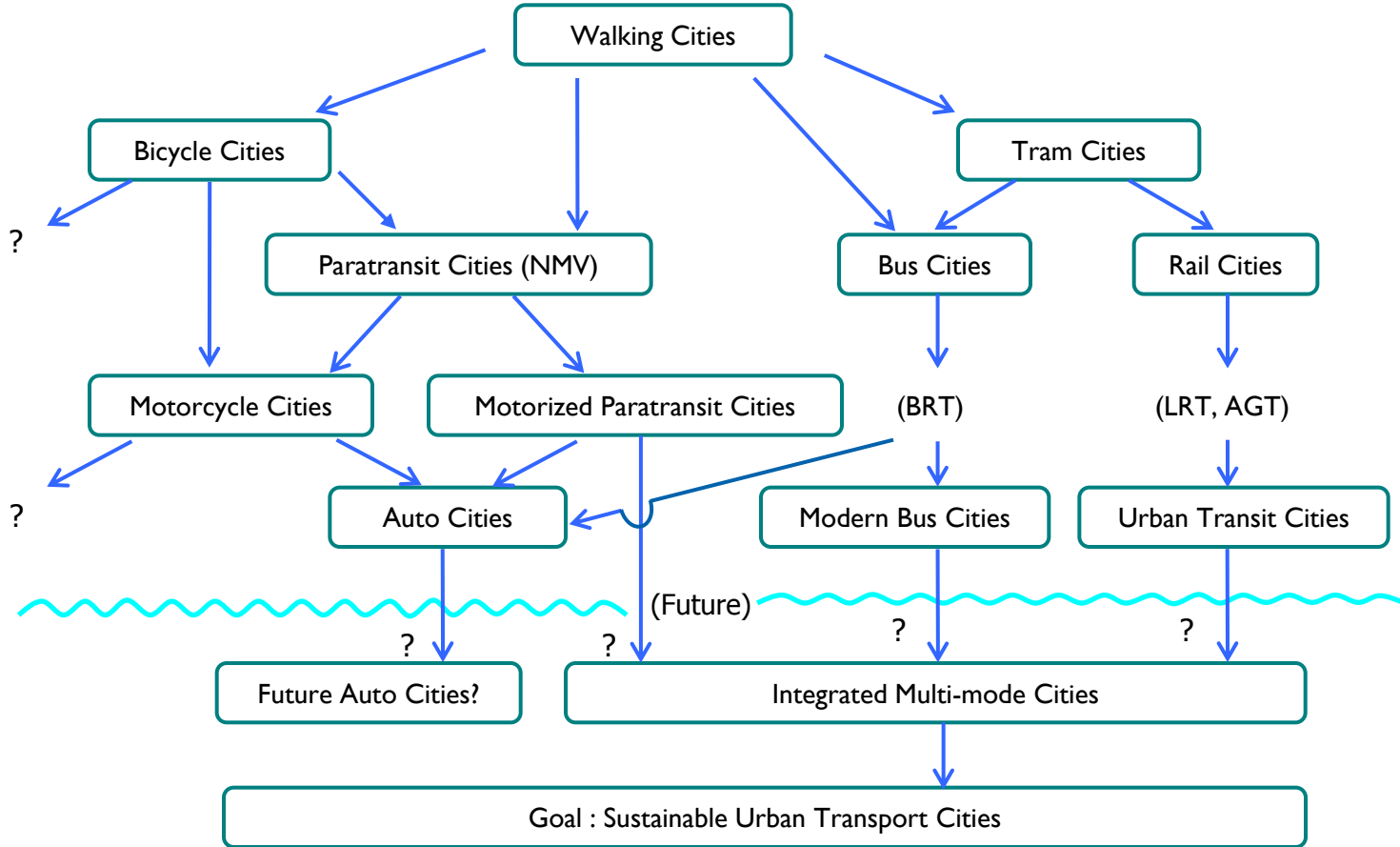
Entrance/Exit of Living street

	Living streets	Sub-arterial streets	Arterial streets	Entrance/Exit Of Living street
Road structure	1 lane ~5.5m width No center line With partial colored surface etc.	2 lanes 3 + m/lane Center line with partial colored surface etc.	4 +lanes 3.25 + m/lane Median strip	Clear threshold (with colored/raised surface sidewalk)
Speed limit	30km (20km)	40km (30km)	50km(40/60km)	—
Road signage /marking	Marking	Pole and Marking	Pole	—

5. Concluding Remarks

- Even after 50 years since the Buchanan report, the basic problems have not solved. The problems of Car-dependent Society are much crucial issues globally even with “peak car” in advanced motorized countries.
- Areal traffic speed management is a potentially powerful cost-effective measures to implement the Buchanan concept
- City-wide application of the areal traffic speed management should be systematically promoted.
(30km/h limits as a default speed limit for all roads)
- “Traffic in Towns” to “Transport in Cities” or “Multi-mode Transport system in Urban Regions”
–ITS/ICT applied to the next generation vehicles
- Development paths to sustainable urban transport for Asian cities should be explored.

Fig. Development Paths for Sustainable Urban Transport System



Note. NMV: Non-Motorized Vehicle e.g. bicycle, human/animal powered vehicle