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APPENDIX 4.1

Improved Urban Road Capacity Check

This appendix shows the assessment of a widened Shore Road within the defined bottleneck to determine whether various types and cross-sections of urban road would adequately cope with the predicted flows along Shore Road.

For the purposes of this assessment, it has been assumed that a single cross-section would be employed along the length of the scheme.

It is marginal whether Shore Road should be classed as a category UAP2 good standard road or a category UAP3 variable standard road, the main difference is that if Shore Road suffered from indiscriminate parking outside of properties, it would certainly be in the UAAP3 category. By comparison of predicted flows with the statistical flows for both categories, the findings are as follows.

<u>As a single carriageway</u>

Advice was only available for a good standard road UAP2 and that was used for the comparison, results below. A variable standard road UAP3 with, say, disruption from parked vehicles would be unsuitable for a wider single carriageway road, though the examples do exist.

It (UAP2) would **not be adequate** for the anticipated flows with a **14m carriageway.**

It (UAP2) would **be adequate** for the anticipated flows with a **17m carriageway, though perhaps only marginally**.

The difference here is 3m of carriageway that could be used for central hatching to assist safe turning movements to and from driveways and junctions.

<u>As a dual carriageway road</u>

By comparison with the statistical flows for category UAP2, the links on Shore Road between the junctions would **be adequate** for the anticipated flows with **dual 7m carriageways**.

By comparison with the statistical flows for category UAP3, the links on Shore Road between the junctions would also **be adequate** for the anticipated flows with **dual 7m carriageways, though very marginally**. In other words it could cope with some indiscriminate parking but might suffer if that occurred in peak periods.

The test was also done for **dual 7.3m carriageways** and clearly they would also **be adequate, by a bigger margin**.

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Improved Urban Road Capacity Check

A - Single 14m carriageway widened A2 Shore Road Greenisland

Basis of check

TA 79/99 Amendment No. 1 - TRAFFIC CAPACITY OF URBAN ROADS

Road characteristics–

The road would be a single carriageway 14m wide between junctions, divided into 4 equal lanes, with 3m shared cycleway/footways.

The length of road in question is 2.25km.

There are 8 junctions and major accesses and 120 driveways in that length.

The road would have a 40mph speed limit.

There would be access to residential properties, and there is also a Spar shop and a school fronting the road.

At present there are no waiting restrictions but parking is rarely evident due to nature of the road and high traffic flows along it.

At present, there is one formal crossing at a signalised junction, more would be proposed.

Buses could stop at the kerbside, but possibly in laybys.

Assessment against Table 1 Types of Urban Road

The road could perhaps be classed as **UAP2** a good standard road, but would be **UAP3** if parking occurred.

Assessment against Table 2 Capacity of Urban Roads

This gives the maximum sustainable flow in one hour in one direction under favourable road and traffic conditions, with a 60/40 split on directional flows.

The flows given are for a UAP2 at 14m	**2000**vph
The flows given are for a UAP3 at 14m	No flow given as regarded unsuitable.

2010 anticipated am peak hour flows 2100vph s/b and 900vph n/b
2025 anticipated am peak hour flows 2400vph s/b and 1000vph n/b

By comparison with the statistical flows for category UAP2, the links on Shore Road between the junctions would **not be adequate** for the anticipated flows with a **14m carriageway**.

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Improved Urban Road Capacity Check

B - Single 17m carriageway widened A2 Shore Road Greenisland

Basis of check

TA 79/99 Amendment No. 1 - TRAFFIC CAPACITY OF URBAN ROADS

Road characteristics–

The road would be a single carriageway 17m wide between junctions, divided into 4no. 3.5m lanes plus a central 3m lane, with 3m shared cycleway/footways.

The length of road in question is 2.25km.

There are 8 junctions and major accesses and 120 driveways in that length.

The road would have a 40mph speed limit.

There would be access to residential properties, and there is also a Spar shop and a school fronting the road.

At present there are no waiting restrictions but parking is rarely evident due to nature of the road and high traffic flows along it.

At present, there is one formal crossing at a signalised junction, more would be proposed.

Buses could stop at the kerbside, but possibly in laybys.

Assessment against Table 1 Types of Urban Road

The road could perhaps be classed as **UAP2** a good standard road, but would be **UAP3** if parking occurred.

Assessment against Table 2 Capacity of Urban Roads

This gives the maximum sustainable flow in one hour in one direction under favourable road and traffic conditions, with a 60/40 split on directional flows.

The flows given are for a UAP2 at 17m	**2550**vph
The flows given are for a UAP3 at 17m	No flow given as regarded unsuitable.

2010 anticipated am peak hour flows 2100vph s/b and 900vph n/b
2025 anticipated am peak hour flows 2400vph s/b and 1000vph n/b

By comparison with the statistical flows for category UAP2, the links on Shore Road between the junctions would **be adequate** for the anticipated flows with a **17m carriageway**.

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Improved Urban Road Capacity Check

C - Dual 7m carriageways widened A2 Shore Road Greenisland

Basis of check

TA 79/99 Amendment No. 1 - TRAFFIC CAPACITY OF URBAN ROADS

Road characteristics–

The road would be a 2-lane dual carriageway 2 x 7m wide with 3.5m lanes, with 3m central reserve and 3m shared cycleway/footways.

The length of road in question is 2.25km.

There are 8 junctions and major accesses and 120 driveways in that length.

The road would have a 40mph speed limit.

There would be access to residential properties, and there is also a Spar shop and a school fronting the road. Access would be left-in / left-out

At present there are no waiting restrictions but parking is rarely evident due to nature of the road and high traffic flows along it.

At present, there is one formal crossing at a signalised junction, more would be proposed.

Buses could stop at the kerbside, but possibly in laybys.

Assessment against Table 1 Types of Urban Road

The road could perhaps be classed as **UAP2** a good standard road, but would be **UAP3** if parking occurred.

Assessment against Table 2 Capacity of Urban Roads

This gives the maximum sustainable flow in one hour in one direction under favourable road and traffic conditions.

The flows given are for a UAP2 at 7m **3050**vph
The flows given are for a UAP3 at 7m **2450**vph.

2010 anticipated am peak hour flows 2100vph s/b and 900vph n/b
2025 anticipated am peak hour flows 2400vph s/b and 1000vph n/b

By comparison with the statistical flows for category UAP2, the links on Shore Road between the junctions would **be adequate** for the anticipated flows with **dual 7m carriageways**.

By comparison with the statistical flows for UAP3, the links on Shore Road between the junctions would **be adequate** for the anticipated flows with **dual 7m carriageways**, in other words it could cope with some indiscriminate parking, **though it would be marginal**.

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Improved Urban Road Capacity Check

D - Dual 7.3m carriageways widened A2 Shore Road Greenisland

Basis of check

TA 79/99 Amendment No. 1 - TRAFFIC CAPACITY OF URBAN ROADS

Road characteristics–

The road would be a 2-lane dual carriageway 2 x 7.3m wide with 3.65m lanes, with 3m central reserve and 3m shared cycleway/footways.

The length of road in question is 2.25km.

There are 8 junctions and major accesses and 120 driveways in that length.

The road would have a 40mph speed limit.

There would be access to residential properties, and there is also a Spar shop and a school fronting the road.

At present there are no waiting restrictions but parking is rarely evident due to nature of the road and high traffic flows along it.

At present, there is one formal crossing at a signalised junction, more would be proposed.

Buses could stop at the kerbside, but possibly in laybys.

Assessment against Table 1 Types of Urban Road

The road could perhaps be classed as **UAP2** a good standard road, but would be **UAP3** if parking occurred.

Assessment against Table 2 Capacity of Urban Roads

This gives the maximum sustainable flow in one hour in one direction under favourable road and traffic conditions.

The flows given are for a UAP2 at 7.3m **3200**vph
The flows given are for a UAP3 at 7.3m **2600**vph.

2010 anticipated am peak hour flows 2100vph s/b and 900vph n/b
2025 anticipated am peak hour flows 2400vph s/b and 1000vph n/b

By comparison with the statistical flows for category UAP2, the links in Shore Road between the junctions would **be adequate** for the anticipated flows with **dual 7.3m carriageways**.

By comparison with the statistical flows for category UAP3, the links on Shore Road between the junctions would **be adequate** for the anticipated flows with **dual 7.3m carriageways**, in other words it could cope with some indiscriminate parking.

Feature	ROAD TYPE				
	Urban Motorway	Urban All-purpose			
	UM	UAP1	UAP2	UAP3	UAP4
General Description	Through route with grade separated junctions, hardshoulders or hardstrips, and motorway restrictions.	High standard single/dual carriageway road carrying predominantly through traffic with limited access.	Good standard single/dual carriageway road with frontage access and more than two side roads per km.	Variable standard road carrying mixed traffic with frontage access, side roads, bus stops and at-grade pedestrian crossings.	Busy high street carrying predominantly local traffic with frontage activity including loading and unloading.
Speed Limit	60mph or less	40 to 60 mph for dual, & generally 40mph for single carriageway	Generally 40 mph	30 mph to 40 mph	30mph
Side Roads	None	0 to 2 per km	more than 2 per km	more than 2 per km	more than 2 per km
Access to roadside development	None. Grade separated for major only.	limited access	access to residential properties	frontage access	unlimited access to houses, shops & businesses
Parking and loading	none	restricted	restricted	unrestricted	unrestricted
Pedestrian crossings	grade separated	mostly grade separated	some at-grade	some at-grade	frequent at-grade
Bus stops	none	in lay-bys	at kerbside	at kerbside	at kerbside

Table 1 Types of Urban roads and the features that distinguish them

		Two-way Single Carriageway- Busiest direction flow (Assumes a 60/40 directional split)									Dual Carriageway			
		Total number of Lanes									Number of Lanes in each direction			
		2				2-3	3	3-4	4	4+	2		3	4
Carriageway width		6.1m	6.75m	7.3m	9.0m	10.0m	12.3m	13.5m	14.6m	18.0m	6.75m	7.3m	11.0m	14.6m
Road type	UM	Not applicable										4000	5600	7200
	UAP1	1020	1320	1590	1860	2010	2550	2800	3050	3300	3350	3600	5200	*
	UAP2	1020	1260	1470	1550	1650	1700	1900	2100	2700	2950	3200	4800	*
	UAP3	900	1110	1300	1530	1620	*	*	*	*	2300	2600	3300	*
	UAP4	750	900	1140	1320	1410	*	*	*	*	*	*	*	*

Table 2 Capacities of Urban Roads
One-way hourly flows in each direction

Notes
1. Capacities are in vehicles per hour.
2. HGV ≤ 15%
3. (*) Capacities are excluded where the road width is not appropriate for the road type and where there are too few examples to give reliable figures.