

APPENDIX 3

N81

Tallaght to Hollywood

Safety Review

May 2007

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1 INTRODUCTION

- 1.1** This report describes a safety review of the N81 between Tallaght in Dublin and Hollywood, County Wicklow.
- 1.2** This section of the N81 is on the outskirts of Dublin City and has been subject to massive traffic growth over the last few years. Some of this growth is reflective of the growing car ownership generally but more so due to the growth of residential development from Dublin into the neighbouring counties of Kildare, Wicklow and even into County Carlow.
- 1.3** The safety review team members were as follows:
- | | |
|---|--------------|
| Stephen Lambert, Donegal National Roads Design Office | team leader, |
| Hugh Morrow, Donegal National Roads Design Office | team member, |
- 1.4** The audit comprised drive through of the road during daytime on Wednesday 10th May 2007. The day was clear and bright with scattered showers. Other problems may have been evident had a night-time check also been done.
- 1.5** This section of the N81 is approximately 27Km long and is on the outskirts of Dublin City and has been subject to massive traffic growth over the last few years. Some of this growth is reflective of the growing car ownership generally but more so due to the growth of residential development from Dublin into the neighbouring counties of Kildare, Wicklow and even into County Carlow.
- 1.6** This Safety Review has been carried out in accordance as a safety audit broadly in line with the relevant sections of NRA HD 19/04 and HA 42/04. The team has examined only the road with consideration to those issues which the team members believe that may affect road safety and has therefore not examined or verified the compliance of the road design to any other criteria.
- 1.7** This report sub-divides the N81 into 6 Sections as requested by the Kildare NRDO and summarises the problems in each of those sections.
- 1.8** Bearing in mind that junctions tend to be accident cluster locations, all the junctions along the section were examined and checked for safety with particular attention paid to sight lines, traffic turning movements, forward visibility and relative gradients of the minor and major roads.
- 1.9** All of the problems described and recommendations in this report are considered by the audit team to affect the safety of the road. The recommendations made in this report are considered the minimum required to improve road safety along this section of the N81 bearing in mind the traffic volumes and the turning movements.
- 1.10** The NRA's accident database was also used after the safety check to compare issues raised and to identify other issues that may be pertinent to the safety of the N81.

2 SUMMARY OF THE SAFETY CHECK

The following tables summarise the findings of the Safety Check carried out on the existing N81 undertaken in May 2007.

The first table summarises the road sections as presented to the safety audit team. This section also includes a review of the crashes as indicated in the NRA's Accident Database of Injury Crashes for the period from January 1996 to December 2004.

The second table summarises the assessment of the junctions along the route between the Hollywood junction and the dual-carriageway. 27 junctions were reviewed for sight lines and approaches from a driver's perspective. Not all the junctions indicated as being "OK" necessarily have the sight lines required according to design guidelines but in the opinion of the audit team the sight lines are adequate for the relevant approach speeds and assuming drivers are of average ability and fitness.

| Section | General Description | Problem | Recommendation |
|---|--|--|--|
| <p>Section 0 Jobstown to N82 Junction</p> | <p>Jobstown to N82 Junction This section of the N81 is an unimproved section and links the dual-carriageway at Jobstown to the N81 / N82 junction at City West. There is considerable traffic along this section of road to the City West area and there is ongoing development along the N82.</p> | <p>The development accessed along this section of the N81 has not been catered for resulting in considerable traffic delays and risk to pedestrians, cyclists and other vulnerable road users. Crash History There were 74 recorded crashes along the N81 between the end of the N81 Dual section at Tallaght and the N82 Junction between Jan 1996 and Dec 2004. 34% ped, 6% SV and 9% head-on and the remainder were turning crashes. There were 14 crashes in 1998 and 2000 and 4 in 2004. 2 of the crashes were fatal and 14 resulted in minory injury.</p> | <p>There is no reason why this section of road has not been improved. It should have been done in conjunction with and possibly in advance of the development of City West. Upgrade this section ASAP to dual carriageway to the same standard as the Tallaght to Jobstown section.</p> |
| <p>Section 1 N82 to Brittas Photos Section 1_1 to 8</p> | <p>This section of the N81 is unimproved and is typical of a rural section of National Secondary Road. The road cross section varies between 6 and 8m with some grass verge along some section of it.</p> | <p>The roadsides have considerable vegetation including trees along both sides. There are also a lot of bends through the section. There are also 7 junctions and one hospital entrance. One junction was too dangerous to attempt a right turn into the minor road due to two bends. The signing was very poor throughout the section. Crash History This section of the N81 had 20 crashes during the study period, 1 Fatal, 5 Serious and 14 minor. The predominant crash types were SV and Head-on. The relatively high severity and nature of the crashes is indicative of the poor cross section along this 100Km/h road.</p> | <p>Provide additional signing along the section including single chevrons at all bends, clear vegetation from all existing signs and check that all junctions have advance warning signs. Review this complete section of the N81 with a view to providing a minimum of 8m surfaced width and clearing the road edges for an additional 1m minimum to provide improved forward visibility. A minimum of 1m along each side of the road should be marked as hard shoulder to provide some measure of safety for pedestrians and cyclists. There should be local widening at all the junctions to at least provide room for through traffic to pass right turning traffic on the inside.</p> |

| Section | General Description | Problem | Recommendation |
|--|--|--|---|
| <p>Section 2 Brittas to Lambe Junction Photos Section 2_1 to 14</p> | <p>This section of the N81 has a clearer cross section than Section 1. It has grass verges along both sides. It has few bends and only one junction apart from those at either end.</p> | <p>There are some parts of the road that have very little hard shoulder and there is no room for passing on the inside at the one junction along the section.</p> <p>Crash History</p> <p>This section on the N81 had 15 crashes, 2 Fatal, 4 Serious and 9 Minor. These included 2 Ped, 3 SV and 4 head-on. The conclusion is similar to Section 1 above with the exception that 2 pedestrian accidents in 15 accidents on a rural section of road is unusually high.</p> | <p>Improve signage along the section to provide single chevrons at all bends. Review the layout at the junction (junction 19 on the attached list) to provide a right turning lane. Tighten the minor road access at this junction to slow traffic entering the junction and flatten the junction mouth to provide a level platform of about 6m to assist traffic joining the N81.</p> <p>Check the crash barrier provision along the LHS on the approach to the R759 junction from the Dublin direction.</p> |
| <p>Section 3 Lambe Junction to Blessington Photos Section 3_1 to 30</p> | <p>Section 3 has a relatively consistent cross-section although there are some short sections where the hard shoulder should be widened or cleaned out. There are some bends along the section but they have medium radii.</p> | <p>The sections of the road where the hard shoulder is very narrow or non-existent are unsafe for pedestrians and cyclists.</p> <p>Crash History</p> <p>This section of the N81 had 21 crashes during the study period, 2 Fatal, 3 Serious and 16 minor. The predominant crash types were SV and Head-on. The relatively high severity and nature of the crashes is indicative of the poor cross section along this 100Km/h road.</p> | <p>Review the sections of the road with a view to providing a minimum of 1 to 1.5m hard shoulder with a good surface.</p> |



| Section | General Description | Problem | Recommendation |
|--|---|---|--|
| <p>Section 4 Blessington Village Photos Section 4_1 to 6</p> | <p>This section of the N81 is between the speed limits of Blessington village.</p> | <p>A general observation was that there is not much provision for pedestrians through the village. The RaB at the western end of the village forms a gateway of sorts but it is inside the speed limits. Blessington is a destination town or village on the outskirts of Dublin. While there is some grounds for considering a by-pass because of the growth in through traffic to / from Carlow much of the traffic will continue to go as far as Blessington.</p> <p>Crash History</p> <p>This section of the N81 had 26 crashes during the study period, 2 Fatal, 1 Serious and 23 minor. The predominant crash types were turning accidents and 4 ped accidents. The relatively low severity and nature of the crashes is typical of an urban section of road where conflicting pedestrian and vehicle / vehicle movements tend to cause minor crashes.</p> | <p>Review the western approach with a view to installing a traffic calming gateway.</p> <p>Review the layout of the area inside the gateways, especially the middle of the village to design a more pedestrian friendly layout to be provided from traffic calming budgets.</p> |
| <p>Section 5 Blessington to Pollaphuca Photos Section 5_1 to 38</p> | <p>This section of the N81 has an inconsistent cross section with limited hard shoulder provision. There are also 7 junctions along the section one of which (R758) has a right turn lane area. There are some bends in this section but there are also some good straights.</p> <p>There is also evidence of some completed accident remedial schemes.</p> | <p>The section of the N81 west of Blessington has lower traffic volumes than that between Blessington and Dublin. However, is increasingly used as a commuter route between Carlow and Dublin.</p> <p>Crash History</p> <p>This section of the N81 had 28 crashes during the study period, 2 Fatal, 6 Serious and 20 minor. The predominant crash types were SV (13) and Head-on (6). The relatively high severity rate and nature of the crashes is typical of a unimproved 100 Km/h section of road where loss of control accidents are predominant. SV crashes are the most difficult to treat and have prompted the route treatment and forgiving-roadside programmes.</p> | <p>Most of this section appears to have adequate land provision to enable the construction of hard shoulders or the improvement of the existing ones.</p> <p>Improve the hard shoulders. Consider providing a consistent cross section of 6 to 6.5m carriageway with two hardshoulders of 1.5m each.</p> <p>Provide widening in the vicinity of the junctions to enable traffic to pass on the inside of right turning traffic especially where there are bends.</p> |






| Section | General Description | Problem | Recommendation |
|--|---|--|--|
| <p>Section 6 Pollaphuca to Hollywood Photos Section 6_1 to 23</p> | <p>Section 6 is similar to Section 5. There are some sections of hard shoulder but there is enough room in the road space to provide at least 1 to 1.5m of hard shoulder along most of the section for minimal cost. However, through the bends shown in photos Section 6_1 to 4 in the initial part of this section it will be difficult and costly to provide hard shoulders through these bends.</p> | <p>The estimated AADT along this section is roughly 6000, probably the same as section 5. The general problem in this section is similar to section 5 in that this is part of the growing commuter run between Dublin and Carlow.</p> <p>Crash History</p> <p>This section of the N81 had 36 crashes during the study period, 2 Fatal, 7 Serious and 27 minor. The predominant crash types were SV (3), turning accidents (14) and Head-on (8). The majority of the turning crashes are concentrated at the Hollywood X Roads and at the R411 Jnt. The head-on collisions occur all along the route but there is a particularly dense occurrence of SV crashes just south of Hollywood jnt.</p> | <p>Clear out the verges and widen the cross section to provide hard shoulders through the section.</p> <p>Improve signage throughout the section in particular provide chevrons through the bends.</p> <p>This database is to the end of 2004, it is difficult to check if recent improvements at the Hollywood Jnt have had any effect on accident rates.</p> |




Junctions.




All the junctions along the route between Hollywood and the N82 junction were examined and the sightlines checked to access possible difficulties for exiting traffic and in some cases to review the vulnerability of drivers waiting to turn right into junctions.




The junctions are numbered from Hollywood to the N82 junction and are summarised below.

| Jnt No. | Location | Junction Type | Approach from Main Road | Approach from Minor Road | Sight Line to right | Sight Line to Left | Suggested Improvements | Description |
|---------|--------------------------------|---------------|-------------------------|---|-------------------------------------|-------------------------------------|--|--|
| 1 | R412 to Dunlavin | T Junction | OK | OK | OK | OK | None | Note 10 recorded injury accidents in the vicinity Hollywood X roads between 1996 to 2004. Big reduction since 1999. |
| 2 | R756 to Laragh and Glendalough | T Junction | OK | OK | OK | OK | None | |
| 3 | R411 | X Roads | OK | Ramps on N81 after bend approaching the N81 | Fair but limited by vegetation ion. | Fair but limited by vegetation ion. | Provide advance signs for ramps. Clear vegetation from the sightlines. |  <p>Note 16 recorded injury accidents in the vicinity of this X roads between 1996 to 2004. Big reduction since 2000.</p> |
| 4 | Minor road Facing R114 | X Roads | OK | Sharp bend before junction | Poor | Poor | Clear both sightlines. |  |
| 5 | Silverhill Jnt | T Junction | OK | OK | Good Good | Good | None | |

| Jnt No. | Location | Jnt Type | Approach from Main Road | Approach from Minor Road | Sight Line to right | Sight Line to Left | Suggested Improvements | Description |
|---------|------------------|----------|-------------------------|--------------------------|-----------------------------------|--------------------|---|---|
| 6 | Tulferris Jnt | T Jnt | On a bend | OK | Good | Fair, 100m | Consider widening to provide a RTL |  <p>Right turning traffic is has to wait on a blind bend, however, most traffic making this manoeuvre would probably approach from the Ballysize junction.</p> |
| 7 | Bishops Land Jnt | T Jnt | OK | OK | Good | Bad | Clear sight line to the left. |  |
| 8 | Russborough Jnt | T Jnt | OK | OK | Bad | Fair | Clear sight line to the left and move TE pole in the sight line on the right. |  |
| 9 | Glashina Jnt | T Jnt | OK | OK | Fair but obstructed by vegetation | Good | Clear vegetation from the sight line |  |
| 10 | Vallymount Jnt | T Jnt | OK | OK | Good | Blocked by JDP | Move JDP |  |

| Jnt No. | Location | Junction Type | Approach from Main Road | Approach from Minor Road | Sight Line to right | Sight Line to Left | Suggested Improvements | Description |
|-----------|--------------------------------|----------------|-------------------------|------------------------------|---------------------|-------------------------------|--|--|
| 11a | Glebe Jnt | X Roads | OK | OK | Good | Vegetation blocking sightline | Clear vegetation from the sight line |  |
| 11b | Glebe minor road | | OK | OK | Good | Vegetation blocking sightline | Clear vegetation from the sight line | |
| 12 | Minor road at Newpaddock | Y Jnt | OK | Uphill and Angled | Good | Good | Square up and flatten junction mouth |  |
| 13 | Dillonstown Quarry | T Jnt | OK | Ramps have few warning signs | OK | OK | Improve warning signs to ramps on minor road. | |
| 14 | Red Lane Jnt | T Jnt | OK | OK | OK | OK | None | |
| 15 | Rathmore Jnt | T Jnt | OK | OK | Good | Poor | Clean back the sight line to the boundary wall. |  |
| 16 | Kilteel Jnt | T Jnt | OK | OK | OK | OK | Review the STOP line position. | |
| 17 and 18 | R759 and Minor road to Kilteel | Offset X Roads | OK | OK | OK | OK | None, these junctions have been re-aligned | |
| 19 | Minor Road at Little Brittas | Y Jnt | OK | OK | OK | OK | None. Considered providing a RTL but geography would indicate it might be seldom used. | |

| Jnt No. | Location | Junction Type | Approach from Main Road | Approach from Minor Road | Sight Line to right | Sight Line to Left | Suggested Improvements | Description |
|---------|---|--------------------------|-------------------------|--------------------------|---------------------|------------------------------------|---|---|
| 20 | R114 to Bohernabreena | Complex Jnt | OK | OK | OK | OK | This jnt has a double junction to the N81. Consider capping the western link and use the space to provide a RTL to the R114, leaving a T Jnt with a RTL facility. | |
| 21 | Minor Road to Glenarane, beside the public house. | T Jnt | Bad | Bad | Bad | Bad | It is difficult to improve this junction. There are no sightlines in any direction and it is difficult to identify the junction on the approach along the main road. If possible, close it. |  |
| 22 | Minor road to Glenarane | T Jnt at 303,142 222,277 | OK | OK | Good | Bad | Clear the sight line to the left of the junction. |  |
| 22a | Minor road to Glenarane | T Jnt at 303,090 222,792 | | | | | This junction was missed in the survey | |
| 23 | Minor Road to Saggart | Y Jnt | OK | Sharp Y Jnt | Good | Obstructed by vegetation and signs | Clear the left hand sight line. |  |

| Jnt No. | Location | Junction Type | Approach from Main Road | Approach from Minor Road | Sight Line to right | Sight Line to Left | Suggested Improvements | Description |
|---------|--------------------------------|--------------------------|-----------------------------------|---|---------------------|--------------------|--|---|
| 24 | Minor road to Raheen | T Jnt at 303,434 223,673 | Poor | Downhill around a bend | OK | OK | Either provide "NO RIGHT TURN" signs or alternatively provide nearside flaring to enable Dublin bound drivers to pass the on the inside of vehicles waiting to turn right. |  <p>It was too dangerous to attempt a right turn into this junction, the junction is in a bend. Also, the sightlines from the junction are OK but the driver has to edge out carefully to attain them.</p> |
| 25 | Minor track towards Saggart. | Y Jnt at 304,009 224,954 | OK | Steep gradient | Good | Poor | Flatten the top of the junction to ease access to the main road. Improve the sightline to the left. | |
| 26 | Verchoyles Hill | T Jnt | The junction is between two bends | Gradient down to the junction from the hill | OK | Bad | Improve the sightline to the left |  <p>There are some new houses up this junction, are there any planning conditions on them regarding sightlines at the N81?</p> |
| 27 | Minor link road to the old N82 | Y Jnt | OK | Uphill gradient to the N81 | OK | Bad | Flatten the top of the junction to ease access to the main road. Improve the sightline to the left. |  |

3 AUDIT TEAM STATEMENT

We certify that we have examined the N81 from Tallaght to Hollywood on the 10th of May 2007. This examination has been carried out with the sole purpose of identifying any features of the road that could be removed or modified to improve the safety of the road. The problems that we have identified have been noted in the report, together with suggestions for improvement that in our opinion should be studied for implementation.

signed Stephen Lambert

date

signed Hugh Morrow

date

SAFETY CHECK FORM – FEEDBACK ON AUDIT REPORTS

Scheme: N81 Tallaght to Hollywood

Stage: Safety Check - Preliminary Design.

Date Audit Completed: Wednesday 10th May 2007.

| Paragraph No. In Safety Audit Report | Problem accepted (yes/no) | Recommended measure accepted (yes/no) | Alternative measures (describe) | Alternative measure accepted by Safety Auditor (yes/no) |
|--------------------------------------|---|---------------------------------------|---------------------------------|---|
| 2.1 | Attach the tables indicating if the proposed changes are acceptable or not. It is not expected that all the recommendations in this record can be completed as proposed but the recommendations should be used as a guide to identify safety improvements to be undertaken along this section of the N81. | | | |

Signed.....Project Team Leader

Date.....

Please complete and return to safety auditor.

Road Safety Audit

Signed off:Audit Team Leader

Date