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BACKGROUND

Link 14040 and 14049 were identified in the Moving Cursor Programme 2016. A five year 10 month accident investigation study was undertaken from 1 January 2012 to 31 October 2017 (utilising latest data available on Iris at the time of writing).

Stage One and the subject of this report (B7047 to Montfode Roundabout) includes Link/Sections 14040/07 (2.9kms) and 14040/90 (160m) at the roundabout.

There were 14 personal injury accidents within this length of A78 (1 Fatal, 5 Serious and 8 Slight).

Looking at the accidents these can be separated into two categories

1. Around the access/egress to Crawford's Lodge and The Rowan Tree Restaurant /Garden Centre and
2. The remainder of the section between B7047 and Montfode roundabout.

1. CRAWFORD'S LODGE / ROWAN TREE RESTAURANT ACCESS AREA

The Annual Road Safety Report (ARSR) 2016 report (accidents from 2012-14) flagged up three accidents within a 100m radius of the above location, giving a reason for further investigation.

This was updated at the time of investigation to cover the most recent 5 year period. From 1st January 2012- 31st December 17 there were six accidents at the Crawford's Lodge / Rowan Tree Restaurant accesses that were within a 100m radius. The six accidents are outlined below.

- **UA02904** Vehicle 2 travelling north and waiting to go ahead at Crawford's Lodge access was struck from behind by vehicle 1 also travelling north. Vehicle 1 driver was reported to have "failed to look properly". Conditions: dry/daylight. **Responsible driver male 70. SLIGHT**
- **UA71210** Vehicle 1 driver "failed to look properly" when travelling north and caused a 3 vehicle shunt. The location was at the access to Crawford's Lodge. Conditions: dry/darkness. **Responsible driver female 29. SERIOUS**
- **UA70109** Vehicle 1 travelling north skidded to avoid a pedestrian crossing the road from the restaurant. The pedestrian was reported to be "**impaired by alcohol**" and "failed to look properly". Conditions: wet/daylight. **Responsible driver female 45. SERIOUS. DISCOUNTED**

- **UA03401** Vehicle 1 travelling north struck vehicle 2 from behind as it was waiting to turn right into the Rowan Tree Restaurant carpark. The contributory factor was reported as a “distraction in vehicle”. Conditions: dry/unknown. **Responsible driver male 79. SLIGHT**
- **UA70503** Vehicle 1 travelling north made a “poor turn or manoeuvre” and struck head-on vehicle 2 travelling south. The location was adjacent to the Rowan Tree Restaurant. Conditions: dry/daylight. **Responsible driver male 48. FATAL**
- **UA01707** Vehicle 1 travelling north “failed to look properly” and struck vehicle 2 waiting to turn right in to the Rowan Tree Restaurant. Conditions: dry/daylight. **Responsible driver male 83. SERIOUS**

As one accident had been discounted due to alcohol there are 5 remaining accidents at this location.

Of these

- 2 were at Crawfords Lodge junction
- 3 were at the Rowan Tree Restaurant access

Of these five accidents, three were caused by rear end shunts involving northbound vehicles and two accident reports specifically mentioned right-turning vehicles.

The three shunt accidents all involved northbound vehicles stationary on the carriageway, suggesting a right turning movement into the junction is involved.

It is concluded that there is a predominant accident problem with vehicles turning right at this location.

The approach to the junction for Northbound traffic (Those needing to turn right into the restaurant has SSD in accordance with TD 9/93 >215m). This is the same for southbound traffic.

[Pedestrian Issues](#)

Concerns have also been raised by the owners of the Crawford Lodge with regards the safety of their junction and they have requested remedial measures to assist.

There was one accident involving a pedestrian, this however was discounted from further investigation as the pedestrian was under the influence of alcohol.

However, the Rowan Tree restaurant has highlighted the level of crossing movements here from the west footpath (forms part of the Clyde Coastal Path) to their premises.

It was also noted that the west verge shows signs of overrun caused by vehicles undertaking stationary vehicles or taking evasive action due to other vehicles waiting turning right into the Rowan Tree establishment.

[Recommendations](#)

It is recommended that measures to improve facilities for both right turning vehicles and pedestrians wishing to access the Rowan Tree Restaurant are implemented.

2. ALL OTHER ACCIDENTS (NOT AT ROWAN TREE RESTAURANT)

In this section there are eight accidents. The location of these can be split into two distinct sections

1. B7047 Junction to Rowan Tree restaurant
2. Rowan Tree restaurant to Montfode Roundabout.

Section 1 – B7047 to Rowan Tree restaurant

Of the eight accidents, six occurred between the B7047 and the Rowan Tree Restaurant. A brief description of these are outlined below:

- **UA03412** Vehicle 1 travelling southward struck a pedestrian impaired by alcohol walking in the road. Conditions: dry/darkness. Responsible driver male 44. **SLIGHT ***DISCOUNTED – ALCOHOL*****
- **UA71211** Vehicle 1 travelling south was reported to have “failed to look properly” at vehicle 2 turning right into Glenlea Lodge. Conditions: wet/dark. **Responsible driver female 43. SLIGHT**
- **UA01111** Vehicle 1 was reversing at the entry to Glenfoot House access road when it was struck by vehicle 2 travelling south to north. Driver of vehicle 1 was considered to be careless in making a poor turn. Conditions: wet/darkness. **Responsible driver female 29. SLIGHT**
- **UA03010** Vehicle 1 travelling south to north at the access to Glenfoot House on a slippery surface did not leave carriageway but had 2 elderly female casualties i.e. driver and front seat passenger. Conditions: wet/daylight. **Responsible driver female 74. SLIGHT**
- **UA70508** Vehicle 1 travelling south at Glenview Cottage “lost control” and struck vehicle 2 travelling north. Conditions: dry/daylight. **Responsible driver male 78. SERIOUS**
- **UA01504** Vehicle 1 travelling north on the approach to Glenview Cottage access left the carriageway offside and rebounded. Reported as “fatigued” and “careless driving”. Conditions: dry/darkness. **Responsible driver male 19. SLIGHT**

Looking at these accidents whilst there is no distinct manoeuvre or location, 60% of them (3 of 5) happen in wet or dark conditions with 40% (2 of 5) occurring in both wet and dark.

Section 2 – Rowan Tree restaurant to Montfode Roundabout

Further south from the Rowan Tree Restaurant there was a further 2 accidents from 2012-2017. These are outlined below.

- **UA00411** Vehicle 1 was travelling south towards Montfode Roundabout and skidded due to “Slippery road” and hit a pole. Conditions: wet/darkness. **Responsible driver female 33. SLIGHT**
- **UA02508** Vehicle 1 and a pedal cycle were on Montfode Roundabout from the A78 “Three Towns Bypass”. Vehicle 1 attempted to turn left into the A738 Ardrossan but struck the cyclist who was heading right and north to continue on the A78. It was reported that vehicle 1 “failed to look properly and judge the others speed”. Conditions: dry/daylight. **Responsible driver**

female 64. SERIOUS

Again it can be seen there is no distinct pattern to accident type or location. However, one of the accidents is again in the wet/dark.

Further investigation is undertaken in the Wet and Dark accidents in section 3.

Given the level of wet/dark accidents, section 3 below further investigates this accident type.

3. WET/DARK ACCIDENTS

Given the high percentages of wet and dark accidents that are shown in the accidents not at Rowan Tree Restaurant

Looking at these 8 accidents it can be seen that

- One is discounted, leaving seven accidents in the investigation period.
- Four of the remaining seven were in wet conditions (57%)
- Four of the seven were in dark conditions (57%)

Looking at the 2016 ARSR (Annual Road Safety Report) the average for wet and dark accidents are as follows. This table has been adjusted to include the 2018 ARSR as this is the relevant report at time of writing.

	2016 ARSR		2018 ARSR	
	A78	RRCS 2013	A78	RRCS 2016
Wet	39%	41%	35%	37%
Dark	26%	23%	26%	26%

It can be seen that for the remaining seven accidents this section of the network is above both the route and national averages for these conditions.

However if looking at the weather and light conditions this should be for the whole section so the percentages have been updated to include all accidents from B7047 junction to Montfode Roundabout

- 14 Accidents in total with 2 discounted
- 12 accidents in study
- 4 in wet (33%)
- 6 in dark/unknown (50%)
- 2 of these were in wet and dark (16.5%)
- 10 total wet and/or dark accidents.

	2016 ARSR		2018 ARSR		Investigation
	A78	RRCS 2013	A78	RRCS 2016	
Wet	39%	41%	35%	37%	33%
Dark	26%	23%	26%	26%	50%

It can be seen that the percentages for this section are still above both the A78 route and RRCS 2016 percentages for accidents occurring in these weather conditions.

A review of the section showed that

- Centre line road studs were in place throughout the section
- The section does not have a 1m hard strip adjacent included within its cross section. The Edge line is hard to the kerb)
- Edge line studs in place from B7047 junction to Seaview lodges. However these are predominantly placed behind the edge line and not in the running lane as advised in Traffic Signs Manual chapter 5.
- From Seaview Lodges to Montfode Roundabout there are no edge studs.
- The spacing of the studs is not consistent with that advised in Traffic Signs Manual chapter 5 (TSM5). In particular in sections with warning lines to Diag Non 1004.1. TSM5 recommends 9m spacing. On site it is 18m for the majority of the section.
- There is street lighting associated with the B7047 junction and the Montfode Roundabout.

The locations of the wet accidents are shown overleaf.



The location of after dark accidents are below

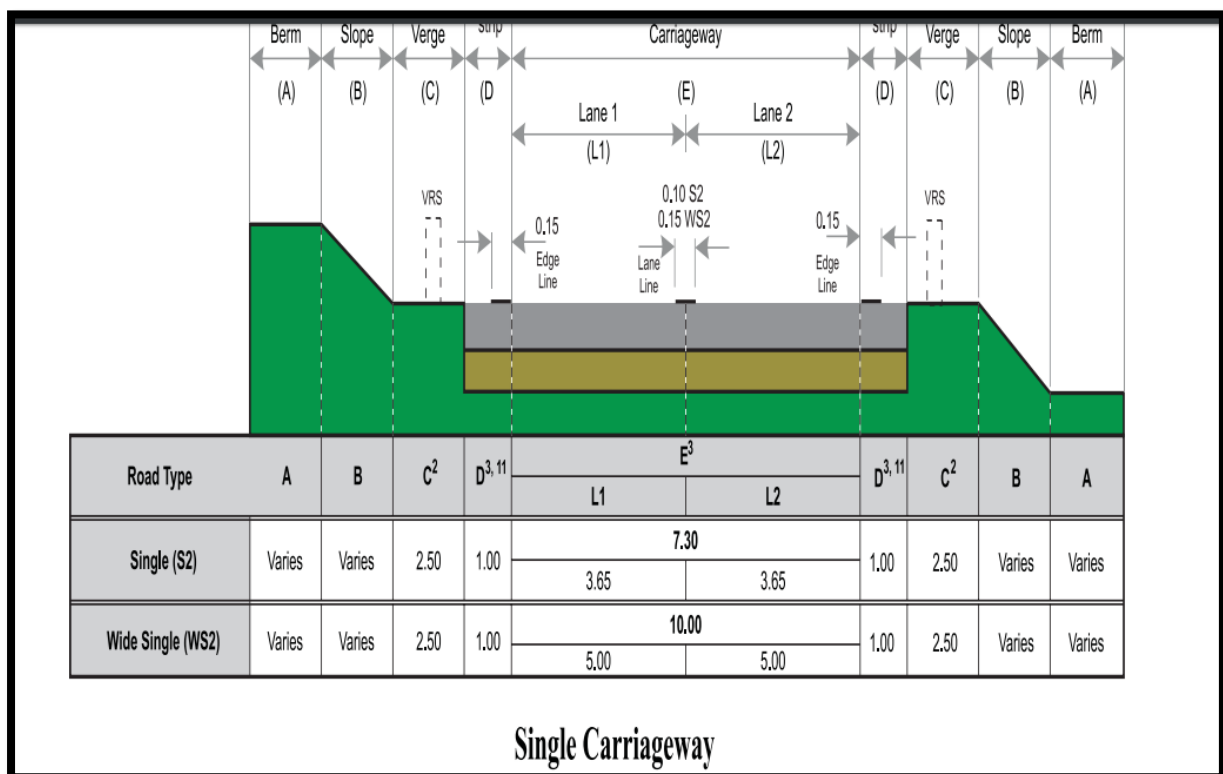


It can be seen that they are spread between the sections with full stud provision and incomplete provision.

Recommendations

Given the level of wet and dark accidents and their spread across the section where there is inappropriate layouts of markings and road studs it is recommended that remedial measures are introduced to mitigate this.

1. Introduce a 1m hard strip along the length of the section as per the Cross Section for this road type in TD 27/05 (on the sections where there is no central hatching)



2. Upgrade the road markings and road studs to meet the current standards.
 - a. New edge line road studs where none exist
 - b. Remove edge line studs from the channel and set in the running lane of the carriageway
 - c. Provide centre line studs where required at appropriate centres.

4. AGE PROFILE

The most recent ARSR compiled in for 2018 indicated that 13.95% of accidents on the A78 and 8.14% of accidents on the SW unit involved drivers over the age of 70.

Looking at the drivers involved in all the accidents within this investigation it was noted that:

- Six were aged 64 or above (5 over 70)
- One was aged 19
- A review of their postcodes revealed their locations to be two from Ardrossan, two from Largs,

and one from West Kilbride, Troon and Stevenston. All fairly local and certain familiar with this stretch of A78 road environment.

It can be seen from this that of the 12 accidents (14 with 2 discounted) more than third (41.67%) involved a driver over aged 70 .This is significantly above both the route and unit average for this user group. Also it should be noted that of the five accidents involving drivers over 70 years, four occurred during daylight hours.

The causation factors for this drivers over aged 70 were investigated and the results are below.

Factor	Number
Slippery Road	1
Loss of Control	1
Failed to look properly	2
Distraction in Vehicle	1
Careless/Reckless/Hurry	1
Failed to judge other persons speed	1

These results have a trend of accidents involving inappropriate speed. However of these accidents only 1 was in wet, and 1 in dark accidents.

However it is recognised that older drivers drive less in dark conditions to avoid issues related to their age.

Recommendation

It is recommended that the markings and road stud improvements are implemented providing greater alignment of the section, and likely assisting older drivers. Consideration could be given to a Road Stud type that gives greater visibility to assist older drivers.

5. VULNERABLE ROAD USERS ISSUES

As mentioned previously the Rowan Tree Restaurant has raised concerns over access to the restaurant for Vulnerable Road Users from the coastal path adjacent to the Northbound Carriageway.

Whilst there are no accidents associated with this movement, consideration to inclusion of such a facility should be considered as part of the scheme. This is in line with Strategic Road Safety Action Plan 2016, Action 7 Safer Active Travel and aligns with the Safe System approach to road safety.

Consideration should also be given to formalising the existing shared cycling/walking facility over the full extent of the coastal path between the Montfode Roundabout and the B7047. This would also align with Action 7 of the above action plan.

There is currently a cycle/pedestrian path that runs the length of the section. At present this has a maximum width of 2.5m which is below the 3m required for such a facility in 'Roads for All – a good practice guide.' Whilst there are no reported injury accidents related to this, consideration should be given to upgrading the facility to the minimum standard, working in partnership with stakeholders such as Sustrans.

6. Other Issues.

As part of the review several anomalies associated with the road markings have been identified. It is recommended that the markings be amended in line with TSRGD 2016 and Traffic Signs and Markings Chapter 5.

However, elements may require to be done as part of larger surfacing contracts within the area in the future. For example - central hatching.

The tables below indicates what can be done as part of this Strategic Road Safety scheme and what requires to be done as part of a larger future scheme.

Section Ch 0+00 to Ch 8+00 Drg. No. 17/SW/0801/033/07				
Chainage	Proposed Marking	SRS Scheme	Future Scheme	Note
Ch 0+70.	Green Studs	✓	x	At Chapelton Mains
Ch 1+00	Missing road studs centre line	✓	x	
Ch 0+50 onwards full length of scheme.	Edge line red bi-directional road studs	✓	x	
Ch 2+50 to Ch 5+80	Hatching to Dia. 1040 - Junction of B7047	x	✓	
Ch 3+70	Replace Bifurcation arrows	✓	x	
Ch 4+10	Give Way at Waterside Access	✓	x	
Ch 4+80	Warning line markings in advance of junction	x	✓	Only six should be seven.
Ch 5+00	Deflection Arrows	✓	x	Remove 1 and replace with 2 in accordance with Chapter 5.
Around Ch 6+00	Extend Red Rosin	x	✓	Lay-by extension
Ch 4+50 to Ch 10+90	1m hard strip and 150mm wide edge line	✓	x	In accordance with TD27/05.

Section Ch 8+00 to Ch 16+00 Drg. No. 17/SW/0801/033/07				
Chainage	Proposed Marking	SRS Scheme	Future Scheme	Note
Ch 9+40	Give Way at Car Park and green studs	✓	x	Northernmost car park access.
Ch 10+30 – Ch 10+80	Deflection Arrows	✓	x	Remove 1 and replace with 2 in accordance with Chapter 5.
Ch 11+00 – Ch 19+30	Red Rosin Centre Hatching	x	✓	
Ch 13+00	Give Way at Car Park and green studs	✓	x	Southernmost car park access.
Ch 13+00	Give Way at Glenhead	✓	x	

Section Ch 16+00 to Ch 24+30 Drg. No. 17/SW/0801/03308				
Chainage	Proposed Marking	SRS Scheme	Future Scheme	Note
Ch 19+20 onwards full length of scheme.	150mm edge line and red uni-directional studs	✓	x	100mm edge at present and no studs
Around Ch 20+00	Insert white bi-directional road studs	✓	x	Missing intermittently
Ch 19+50 – Ch 19+80	Extend taper	x	✓	Existing sub-standard
Ch 20+00 – Ch 20+50	Deflection Arrows	✓	x	Remove 1 and replace with 2 in accordance with Chapter 5.
Ch 20+50 onwards	Remove edge line at back of hard strip	✓	x	
Ch 20+80	Change field access marking	✓	x	
Ch 21+00 onwards	Centre line white line survey required	x	✓	Forward visibility check required, either on-site
Ch 22+00	Change field access marking	✓	x	
Ch 24+30	Change field access marking	✓	x	

Section Ch 24+30 - Ch 32+50 Drg. No. 17/SW/0801/033/08				
Chainage	Proposed Marking	SRS Scheme	Future Scheme	Note
Ch 26+30	Change field access marking	✓	x	
Ch 31+50	Install junction markings set back to suit 1m hard strip.	✓	x	
Ch 31+00 to Roundabout	Install missing road studs on approach to roundabout	x	✓	

7. SITE PHOTOGRAPHS



Southbound Approach at 215m



Northbound Approach at 215m