

A78 Seamill
Pedestrian Crossing Assessment
20/SW/0323/004
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1 Introduction

1.1 Background

Various local residents and organisations have raised concerns with Transport Scotland about the safety of pedestrians crossing Ardrossan Road at the south end of Seamill.

These concerns have been passed on from Transport Scotland to Scotland TranServ, the Operating Company responsible for the management and maintenance of the trunk road network in south west Scotland.

This report details the assessment method carried out and makes recommendations based on the conclusions drawn.

1.2 Location

The A78 trunk road connects the A8 at Greenock's Bullring Roundabout in Inverclyde to the A77 to Ayr then Stranraer at the Dutch House Roundabout in South Ayrshire. The A78 has an overall length of around 40 miles and runs in a southerly direction through the Spango Valley, Inverkip, Wemyss Bay, Largs, and Seamill and then bypasses the major towns of Ardrossan, Irvine and Troon amongst others before terminating near Prestwick Airport at Dutch House, where it forms a junction with the A77.

Seamill is a village in North Ayrshire on A78, about 5 miles north of Ardrossan and 8 miles south of Largs, on the Firth of Clyde.

Seamill is sometimes considered part of West Kilbride (although West Kilbride is now bypassed) and also considered as a village in its own right. However, its location on the A78 trunk road means that Seamill is still locally identified as an entity in its own right.



Figure 1.2 – Location Plan

Behind the existing frontages there has been a new development of around 90 houses that has a pedestrian footway link to the A78 at the north of the assessment location.

1.3 Project Brief

The assessment is to be carried out as per the advice contained in CD 143 (Design Manual for Roads and Bridges) which specifies the guidance provided in Local Transport Note (LTN) 1/95 – “The Assessment of Pedestrian Crossings”.

LTN 1/95 sets out a framework to encourage informed decision making when considering the need for pedestrian crossings facilities.

The two-part assessment framework contains:

- The site assessment
- The option assessment

The purpose of the framework is to clearly show all relevant information used to reach the final decision, taking into account the consideration of road user needs and road safety aspects. The recommendations should be in accordance with the Action Plan set out in Transport Scotland’s “Roads for All” guidance document. A primary objective for the Action Plan is “*To make Scotland’s trunk road network safer and more accessible for all users by the removal of barriers to movement along and across trunk roads*”.

The assessment was carried out along Ardrossan Road on the A78 in Seamill to identify any potential locations for crossing facilities.

2 Site Assessment

2.1 Data Collection

2.1.1 Site Investigation

Information was gathered relating to the existing road to identify potential pedestrian crossing concerns. Data such as carriageway type and width, visibility, traffic volume, etc. was obtained by way of on-site investigation, or by other means such as online data surveys. Pedestrian surveys were also carried out on the stretch of the A78 under investigation [link & section 14035/48, 430-630m], in order to identify the concentration and nature of pedestrian traffic. Both vehicle and pedestrian surveys were carried out by Tracsis, an organisation specialising in data capture and reporting.

As it runs through Seamill the A78 trunk road is an illuminated single carriageway subject to a 30mph speed limit. From the southern end of the assessment location both sides of the carriageway are marked with continuous single white lines to mark the edge of the carriageway, the northbound carriageway then approaches the 30mph gateway which includes dragon's teeth line markings and a red banded 30 roundel. Moving past the gateway there are no stopping/waiting/loading restrictions in place, with the exception of two bus stops which are delineated by Dia. 1025.1 road markings and Dia. 974 sign. The northbound and southbound lanes are separated by 2m wide red hatching throughout the entire assessment area. See *figure 2.1.1a* for a detailed drawing of the road markings and *figure 2.1.1b* is a photo of the site.

The assessment location is situated besides mostly residential properties as well as a restaurant/takeaway and two bus stops. There was a Post Office in the area however this has recently closed down. More of the information gathered on the site can be found in the 'Site Assessment Record', Section 2.3.

The west side is separated from the A78 by a 2.5m grass verge. There are dropped kerbs to allow pedestrians to cross the road and the footway is only adjacent to the carriageway at the bus which has raised kerbs (160mm upstand) to assist boarding the buses.

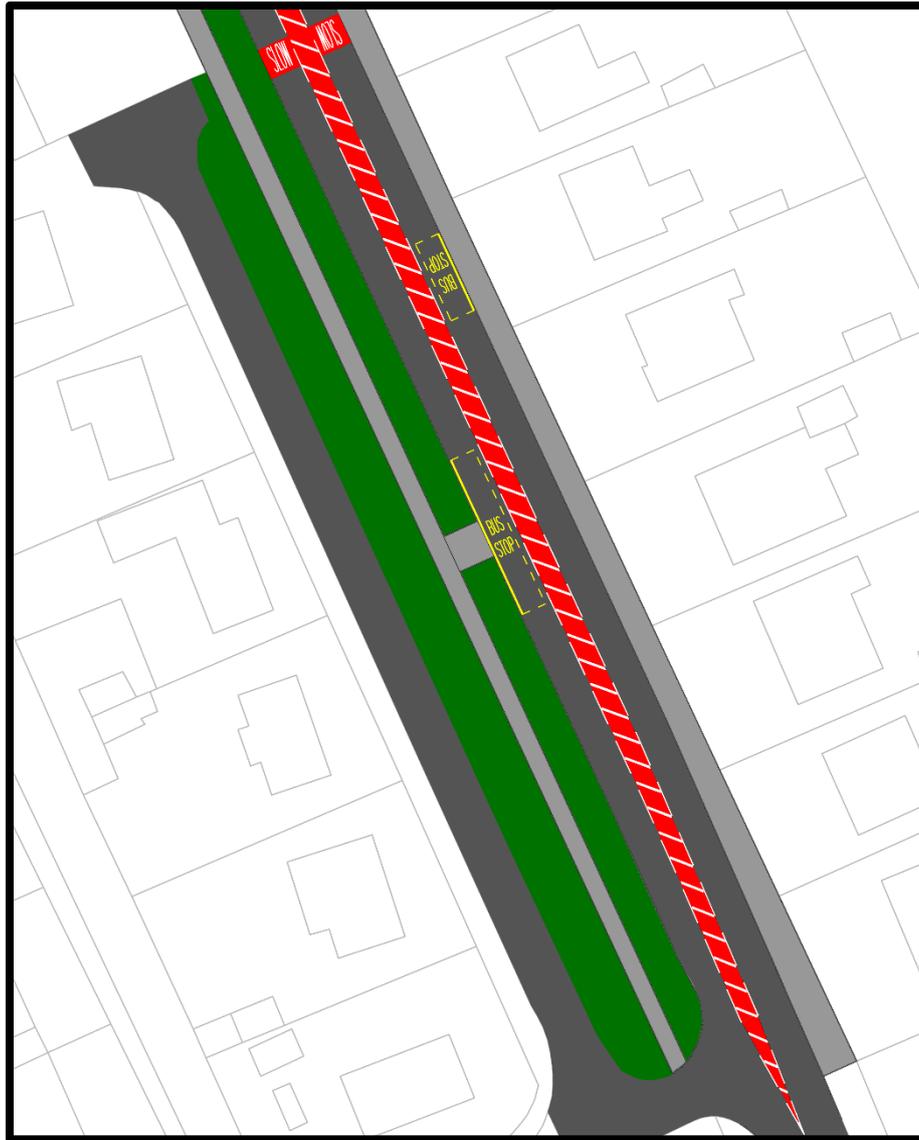


Figure 2.1.1a – A78 Seamill, Existing Road Markings.

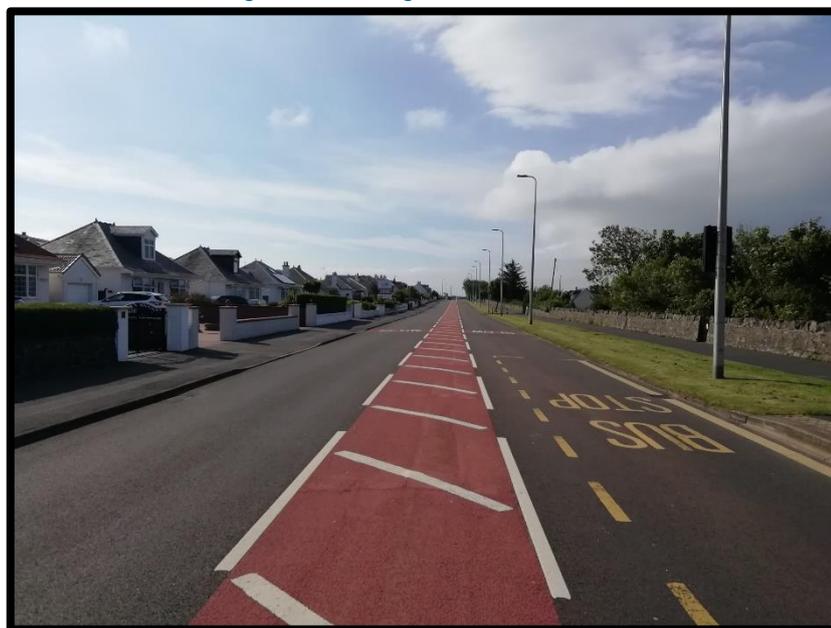


Figure 2.1.1b – A78 Seamill, northbound view of survey site.

2.1.2 Pedestrian Survey

A 24 hour, 7 day video camera survey was carried out by Tracsis, Wednesday 9 – Tuesday 15 January 2019. The survey recorded the direction, location and time of all pedestrians/pedals-cycles crossing the trunk road. The survey showed a light amount of crossing movements over the 7 days. The greatest of which were witnessed on Wednesday 9th January, with a total of 27 movements. From this data, desire line and heat maps were produced which showed the area with the highest concentration of crossing activity.

Figure 2.1.2a, below, provides a visual layout of the desire lines across the assessment location. This plan shows the correlation of pedestrian crossing desire lines with the existing road layout. It is shown that the majority of the foot traffic in the area made crossing movements near the bus stops and T-junction to the south which leads to a number of residential premises.

Figure 2.1.2b below correlates with the desire line map showing two predominant locations at the bus stops and further evidence of crossing movements at the T-junction to the south.



Figure 2.1.2a – Pedestrian Crossing Desire Lines Map

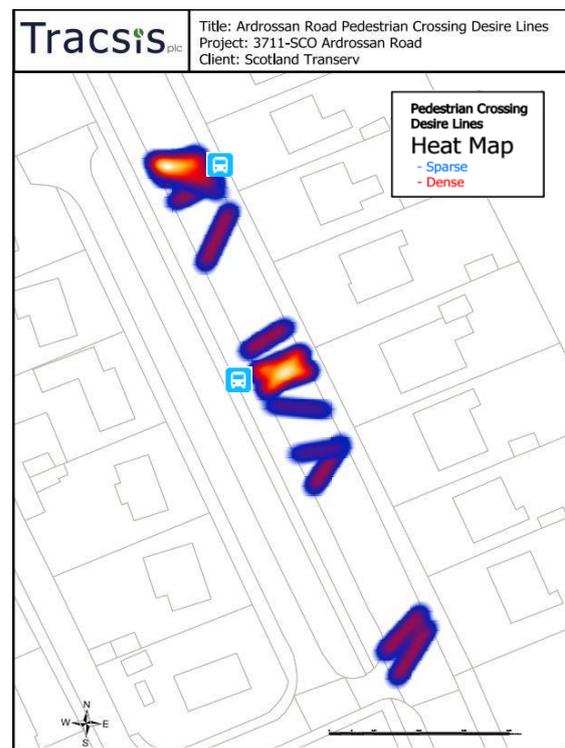


Figure 2.1.2b – Pedestrian Crossing Heat map.

2.1.3 Vehicle Survey

The vehicle survey data was taken for the 9th to the 15th of January 2019, using Tracsis. Tracsis provided a combination of spreadsheets containing information that gave average vehicle speeds, 85th percentiles and vehicle counts organised by class. The Annual Average Daily Traffic (AADT) was also taken from the spreadsheets supplied by Tracsis. This data has been summarised in the 'Site Assessment Record' Section 2.3.

The information from the site investigation was recorded in line with (LTN 1/95) in the 'Site Assessment Record' table in section.2.3

All the necessary data was then used to quantify factors, such as:

- Difficulty in crossing
- Vehicle delays during peak periods
- Carriageway capacity
- Local representations
- Cost (including maintenance)
- Vehicle speeds

Using this information, the site layout was assessed to determine which particular arrangements/crossing types would be applicable.

The initial part of the assessment process is the Crossing Difficulty Assessment.

2.2 Crossing Difficulty Assessment – Manual Method

In the site assessment, the crossing difficulty has been assessed using the manual method described in LTN 1/95.

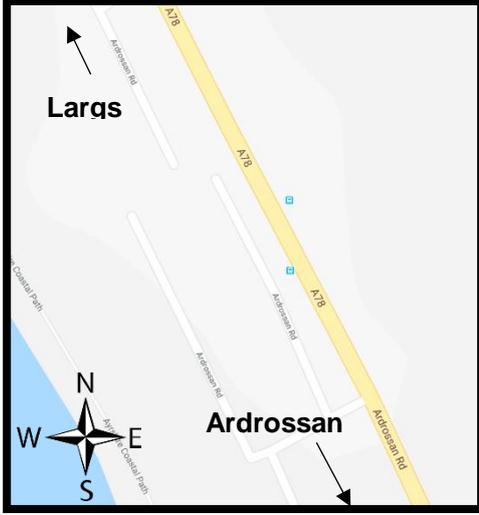
The difficulty was assessed over a pre-determined period of peak pedestrian demand and scored, using the descriptive scale in Table 2.2 below, for each pedestrian type requiring access to the existing crossing facility.

Scale	Description
5	<i>Impossible to cross safely at all times</i>
4	<i>Crossing presents users with severe difficulty</i>
3	<i>Crossing presents users with moderate difficulty</i>
2	<i>Crossing presents users with minor difficulty</i>
1	<i>No difficulty crossing at any time</i>

Table 2.2 – Crossing Difficulty Assessment

Due to the lack of demand for equestrians and cyclists, the difficulty of crossing for these users was not assessed.

2.3 Site Assessment Record

2.3.1 - SITE CHARACTERISTICS		
Location	A78 Ardrossan Road, Seamill approximately 105m north of the Ardrossan Road/Arranview Gardens junction, just beyond the southbound bus stop.	
		
C/Way Type	Single carriageway, separated by colour contrasted central hatched area.	
C/Way Width	9.2m – Two 3.6m wide lanes separated by a 2m hatched strip	
F/Way Width	East: 3-3.1m footway	West: 2.4m f/way & 3.65m verge
Refuge Island	No currently installed refuge islands.	
Street Lighting	Yes – lighting columns at 30m spacing, west verge only.	
Minimum Visibility	From LTN 2/95, Table 1 the minimum visibility requirements for all types of crossings.	
	85%ile Speed (mph)	Desirable Min. (m) Absolute Min.(m)
	35*	80 65
	*speed taken from an average of 85%ile speed calculated per hour of the week [09/01/19 – 15/01/19] [Tracsis]	
	Pedestrian to Vehicle	Visibility from both footways is in excess of 80m
	Vehicle to Crossing	Visibility from both directions is in excess of 80m
Waiting/ Loading/ Stopping Restrictions	Within Assessment Area	With the exception of the bus stops, which are delineated by Dia. 1025.1 road markings and Dia. 974 sign. There are no other waiting/loading or stopping restrictions throughout the full length of the A78 through the assessment location.
Public Transport Stopping Points	Within Assessment Area	As shown in Figure 2.1.1a
Nearby Junctions	Two T junctions; one 100m north of the assessment location and one at the south end of the site. Both lead to residential areas.	
Other Pedestrian Crossing	None	
School Crossing Patrol	None	
Skid Risk	Surface meets skid resistance requirements. (Surveyed May 2019, recorded via IRIS)	

Surroundings	Hospital	None		
	Schools	None		
	Post Office	None		
	Railway/Bus Station	None		
	Leisure/Shopping	None		
	Cycle Route/ Equestrian Centre/ Bridle Path	Cycle route approaches and ends to the south of the site in line with the 30mph gateway on the west hand side of the carriageway.		
	Other	None		
2.3.2 - VEHICLE TRAFFIC INFORMATION				
Flow and Speeds				
Daily average traffic flow [per 24hrs]	Average Speed (Insight 16/09/19 – 23/09/19)	85%ile Speed (Insight 16/09/19 – 23/09/19)		
9,061	31	35		
Vehicle Composition – Percentages (Tracsis 09/01/19 – 15/ 09/19)				
PC/MC	CAR/LGV	OGV1 & PSV 2Axle	OGV1 & PSV 3 Axle	OGV2
0.3%	92.3%	6.4%	0.2%	0.8%
Road Collision Information				
Mean personal injury and collision frequency		0 accidents – 01/01/2014 to 31/12/2018		
2.3.3 - CROSSING TRAFFIC INFORMATION				
Flow & Composition – Measured				
Pedestrian Count	130 (week) 17 (weekday average)			
Prams/Pushchairs	Unable to determine from survey data			
Elderly				
Children				
Mobility/Visually Impaired				
Crossing Cyclists				
Equestrians				
Others				

2.3.4 – CROSSING DIFFICULTY	
Difficulty to Cross Road	Score [See Table 2.1.1] & Comment
Able Pedestrians	2 Crossing presents minor difficulties. Crossing area visibility could be obstructed by buses. Wide road layout and wide grass verge to access the carriageway.
Accompanied Elderly and Children	3 Crossing presents moderate difficulties. Crossing could be obstructed by a bus in the bus stop. Difficulties in assessing acceptable gaps on heavily trafficked road. Wide grass verge to the west can be soft underfoot, weather depending, which presents a tripping hazard for more vulnerable demographics.
People with Prams/Pushchairs	5 Crossing presents moderate difficulties. Crossing could be obstructed by a bus in the bus stop. Difficulties in assessing acceptable gaps on heavily trafficked road. Wide grass verge to the west can be soft underfoot, weather depending, which presents a tripping hazard for more vulnerable demographics. Lack of formalised crossing points.
Visually Impaired Mobility Impaired	5 Crossing presents severe difficulties. Difficulties in assessing acceptable gaps on heavily trafficked road. Lack of formalised crossing point. Wide grass verge to the west can be soft underfoot, weather depending, which presents a tripping hazard for more vulnerable demographics. Lack of formalised crossing points
Additional	
DDA Barriers	[Listed in Appendix B]

2.4 Site Assessment – Key Observations

2.4.1 Traffic Flows and Speeds

The average daily traffic at the assessment location taken from 09/01/2019 – 15/01/2019 was 9,061. These volumes can create difficulties for pedestrians identifying a suitable gap in traffic to cross safely. The 85th percentile traffic speeds are above the 30mph speed limit at 35mph in both directions, alongside the vehicle composition this data was provided by Tracsis for 09/01/2019 – 15/01/2019. These speeds combined with the traffic flows add to the difficulty for all pedestrian users. In particular they are of concern to more vulnerable pedestrian groups who require a longer time to cross and therefore need to identify larger gaps in traffic.

2.4.2 Pedestrian Flows

The pedestrian flows in the area are slight with 130 crossing movements made in a week long period and a weekday average of around 17. There are particularly light pedestrian crossing flows present in the assessment location

2.4.3 Junction Proximity

Within the assessment area there are multiple entrances to public and private parking as well as one T-junction. This greatly increases the difficulty when assessing traffic movement and identifying suitable gaps to cross the carriageway. This can make it nearly impossible for more vulnerable groups to move safely across the trunk road.

2.4.4 Footway and Carriageway Widths

Both footways have ample space to install a signalised crossing whilst maintaining proper widths in accordance with the Action Plan set out in Transport Scotland’s “Roads for All” guidance document. Figure 2.4.4a and Figure 2.4.4b show images/dimension of the site.

2.4.5 Difficulty of Crossing

The observations in 2.4.1 to 2.4.4 above combine to create the crossing difficulty for pedestrians at the assessment location. Using the manual method described in section 2.2, the crossing difficulty using the existing facilities was assessed for each pedestrian type, at Site 1-2 and is shown in Table 2.4.5.

Pedestrian Type	Existing Crossing Difficulty
Able Bodied	2 - Minor
Under 16's Elderly	3 - Moderate
Pedestrians with Prams	5 - Impossible at times
Mobility and Visually Impaired	5 - Impossible at times
Total Score	15

Table 2.4.5 – Crossing difficulty at Assessment Locations

2.4.6 Surroundings

Within the assessment area the only pedestrian destinations are the bus stops.

2.4.7 Latent Demand

No latent demand has been highlighted in the area. However, a new housing development has recently been constructed, therefore the pedestrian levels are likely to have increased since the survey.

2.4.8 Road accidents

In the five year period 1 Jan 2014 to 31 Dec 2018 there were no recorded personal injury accidents.

2.5 Site Assessment Conclusion

Traffic flows/speeds combined with the proximity of bus stops and local properties can create difficulty for all pedestrian types attempting to cross the A78 trunk road, this is made even more difficult for certain demographics due to a lack of appropriate crossing points. This was highlighted by the crossing difficulty assessment Table 2.4.5. It was found that all users encountered some level of difficulty crossing, pedestrians pushing pushchairs/prams found it severely difficult whilst the visually/mobility impaired found it almost impossible to cross safely at all.

The survey has highlighted that there are two desire lines to and from both bus stops.

In accordance with the Action Plan set out in Transport Scotland's 'Roads for All – Good Practice Guide for Roads', improvements are required to the crossing layout at this location. The objectives of the improvement should be to remove the barriers currently presented to more vulnerable pedestrians and reduce, to a minimum practical level, the difficulty for all the pedestrian users to cross safely.

However, the number of local accesses to properties and their layout reduces the available locations for any potential improvements.

2.6 Consultation

A meeting was held on the 2nd March 2020 with the local community group from the new development to the east of the A78 to discuss the improvements to the crossing facilities in the area. They were content with the potential improvements and asked for confirmation of the locations once they have been confirmed

3 Pedestrian Crossing Option Assessment

3.1 Introduction

Due to the A78 trunk road providing a barrier to accessibility for vulnerable road users the assessment has identified the need to provide a form of crossing facility within the assessment location.

The objectives of the improvement should be to remove the barriers currently presented to more vulnerable pedestrians and reduce, to a minimum practical level, the difficulty for all pedestrian users to cross safely at this location. In order to achieve this, options should aim at tackling factors which cause pedestrian difficulty in using the existing environment. These are shown in *Figure 3.1* below;

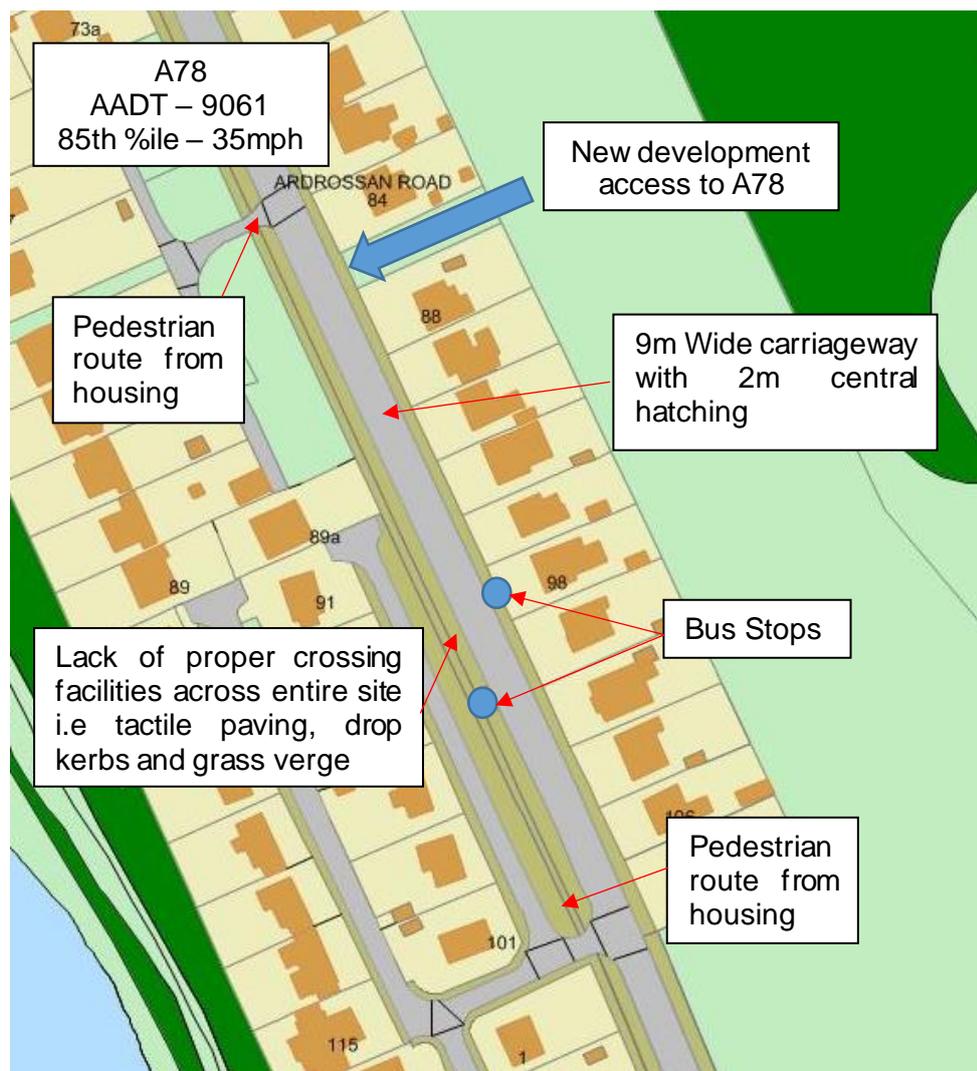


Figure 3.1 – Factors contributing to crossing difficulty for pedestrians using existing crossing facility

3.2 Buildability and options considered not feasible

Due to the number of properties on the east footway that have entrances in to their driveways reduces the available locations for any potential improvements. It is therefore not possible to install a controlled pedestrian crossing due to the lack of space.

This assessment looks to provide a facility within the assessment area. The largest demand, as taken from the crossing desire line trends shown in the Heat-Map (Figure 2.1.2b), highlights 2 locations based at the northbound and southbound bus stops and another 'hot spot' to the south near the junction with Arranview Gardens.

The issues presented merit the potential installation of 2 pedestrian refuges one to the north of the southbound bus stop and the other to the south of the northbound bus stop. However, the following affect the location choice of both refuges;

1. The refuges location including the drop crossings may affect the adjacent house owner's difficulty accessing their properties.

As per the 'Roads for All – Good Practice Guide for Roads' document Zebra crossings are no longer used as they are unsuitable for the visually impaired.

3.3 Options for Assessment

This study identified only one option to reduce crossing difficulty at the assessment location:

- Option 1 – Install 2 pedestrian refuges islands either side of the bus stops

The above option should be assessed against the objectives of the Action Plan set out in Roads for All – Good Practice Guide for Roads in order to identify if it is a suitable recommendation for improvement.

3.3.1 *Installation of 2 pedestrian refuges islands either side of the bus stops*

The first pedestrian refuge location to the north shall be located at the boundary of 88 and 90 Ardrossan Road. While the second pedestrian refuge location to the south shall be located midway between the driveway of 104 and 106 Ardrossan Road. The locations have been identified to accommodate the desire line to/from both bus stops. The sites positions are to be as far away from properties entrances and to comply with current standards.

Installing drop kerbs, tactile paving slabs and a refuge in the middle of the road as well as footway links across the existing grass verge will provide greater accessibility to those with prams/wheelchairs and visually impaired. Improvement to the crossing point at the junction with Arranview Gardens should also be approved to help the vulnerable users.

The reduction in crossing difficulty is assessed in Table 3.3.1 below;

<u>Pedestrian Type</u>	Existing Crossing Difficulty	Refuge Island Difficulty
Able Bodied	2 - Slight	1 – No Difficulty
Under 16's Elderly	3 - Moderate	1 – No Difficulty
Pedestrians with Prams	5 – Impossible at times	2 - Slight
Mobility and Visually Impaired	5 – Impossible at times	3 - Moderate
Totals	14	7

Table 3.3.1 – Crossing difficulty reduction of Option 1

The total construction cost of Option 1 is approximately - £15,000.

3.4 Options Assessment Matrix

Options Assessment Matrix	
Factor\Options	Refuge Island
Representation	Local councils/residents have made representations regarding the increased difficulty crossing the A78.
Crossing difficulty	Will incorporate new drop kerbs and tactile paving reducing difficulty for pram/buggy & visually/mobility impaired users. ----- Total Score = 7
Average wait in seconds	No change to wait times.
Vehicle delay in peak periods	None.
Road capacity	No change.
Buildability	The close proximity of driveways, vegetation, lighting columns and bus stops, limits the potential crossing locations available. From the suitable locations identified, there is potential need for two crossings to ensure all users have equal access to the facilities.
Comments	By separating the crossing into two elements and providing a refuge point, combined with the improved access to the trunk road it will reduce the level of barrier faced by vulnerable road users. However it will not fully remove the difficulty in crossing
Installation Costs	£7500 per crossing

Table 3.4 – Options Assessment Matrix

4 Conclusion and Recommendations

This report comprises a pedestrian crossing assessment compliant with LTN 1/95 – “The Assessment of Pedestrian Crossings” as the appropriate assessment method.

Following a review of the previous five year accident data the assessment concluded that there is no immediate road safety concern relating to the existing use of the current crossing facility.

However, the assessment found that crossing at the assessment location can provide severe difficulties for pedestrians pushing prams/pushchairs and be impossible for mobility/visually impaired pedestrians. A primary objective of Transport Scotland’s Trunk Road Disability Equality Scheme and Action Plan “Roads for All” is “*To make Scotland’s trunk road network safer and more accessible for all users by the removal of barriers to movement along and across trunk roads*”. Therefore, longer term, doing nothing at this location is not considered an option.

The assessment identified only one feasible option for improving the crossing facility, this was to install 2 pedestrian refuges. This option would provide 2 crossing points in the assessment location significantly reducing the barriers currently restraining certain demographics from crossing at this point. Also recommended would be the installation of dropped kerbs and tactile paving at the junction with Arranview Gardens.

Transport Scotland’s Trunk Road Disability Equality Scheme and Action Plan “Roads for All” ensures that Transport Scotland complies with the Equality Act (2010) and has the following objectives relevant to this assessment:

- To make Scotland’s trunk road network safer and more accessible for all users by the removal of barriers to movement along and across trunk roads.
- To make facilities and services more accessible from the trunk road network.
- To make journeys secure and comfortable for all by working with other service providers and utilising appropriate technology.

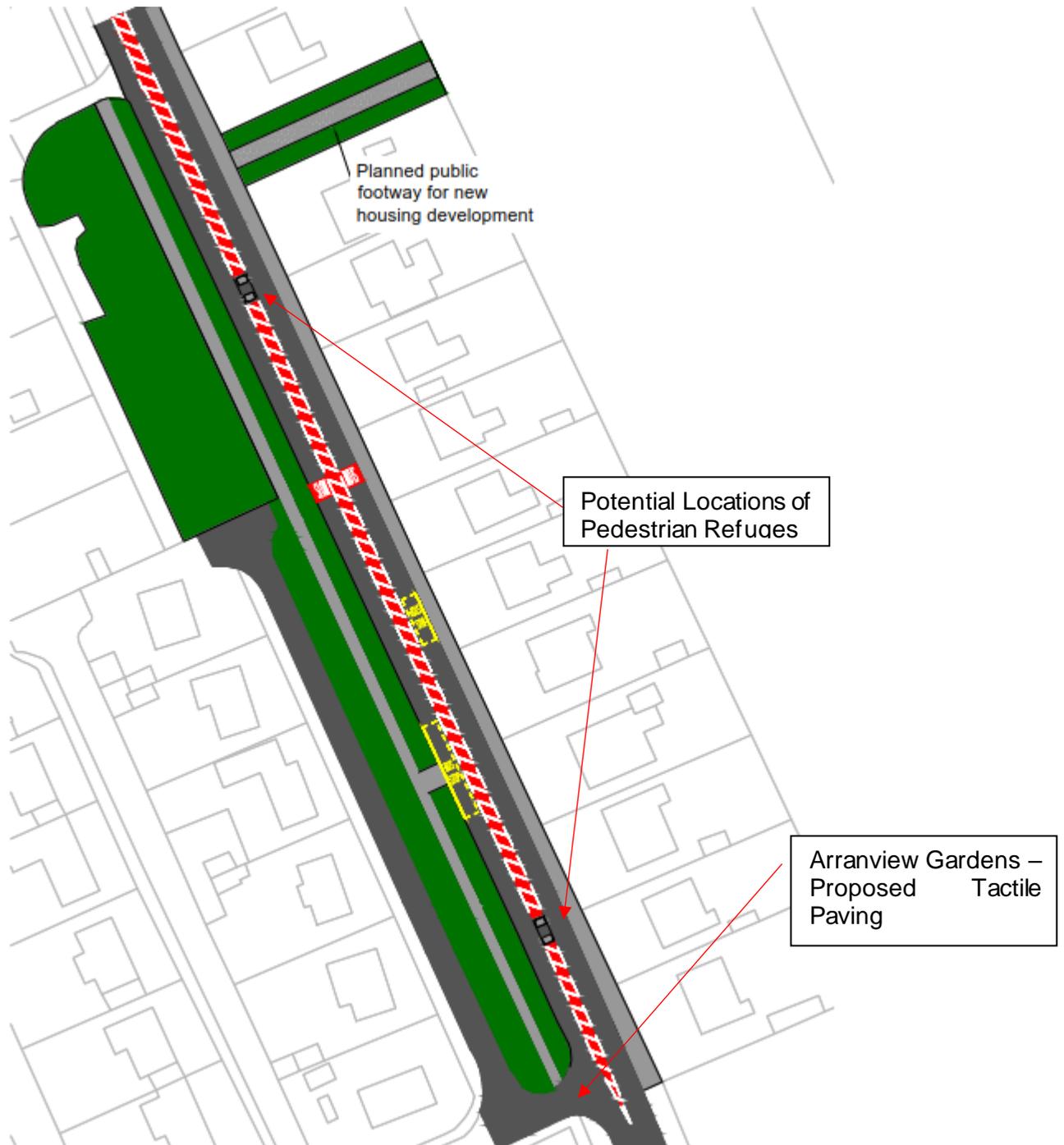
Given the above, it is recommended that a 2 pedestrian refuges as shown in Appendix A in this report be installed and improvements to the crossing point at the junction with Arranview.

It is estimated that the construction of this installation will cost £20,000.

5 Recommendations

Two pedestrian refuges are installed either side of the bus stops with associated footways, kerbs and tactile paving. Also to be installed are dropped kerbs and tactile paving at Arranview Gardens.

6 Appendix A – Proposed Layout



7 Appendix B – DDA Barriers

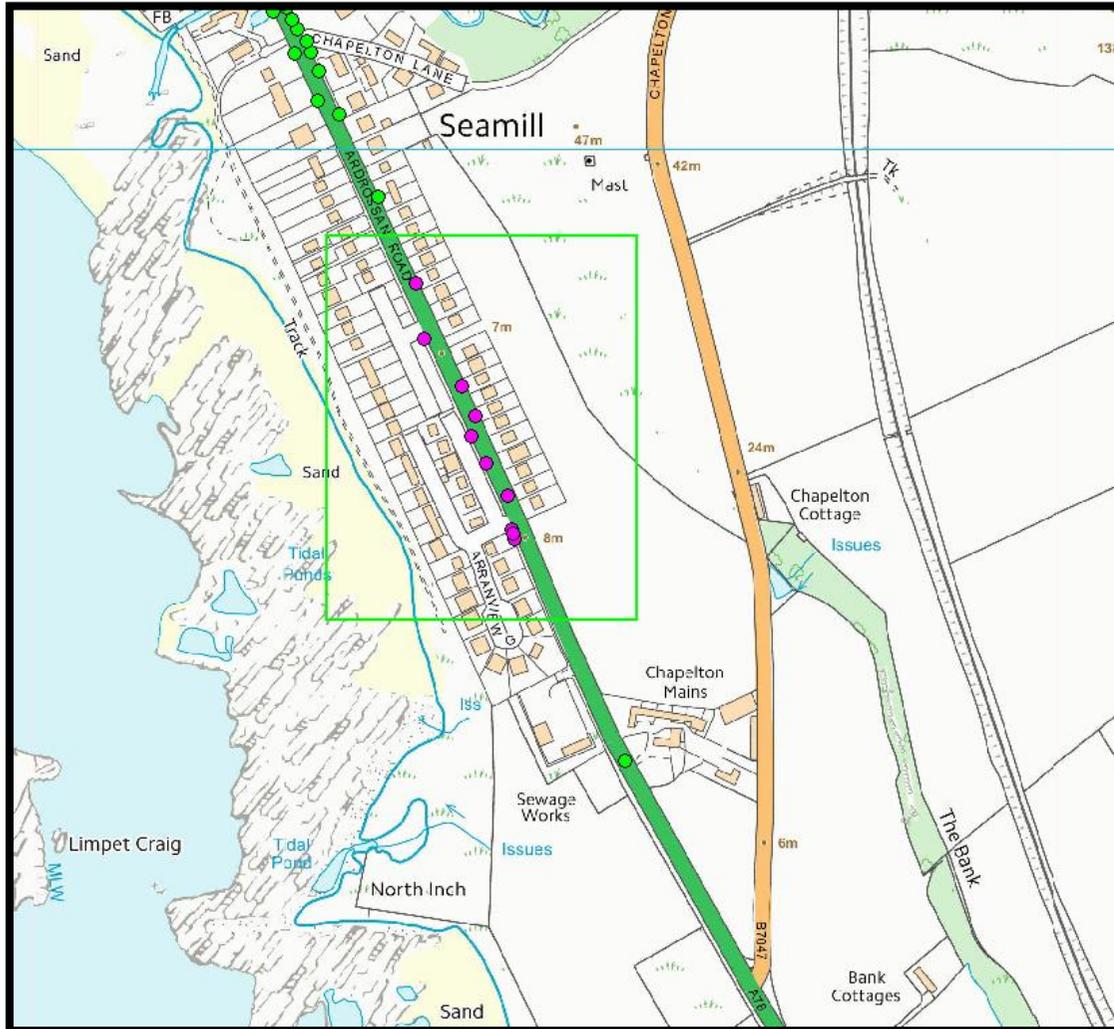


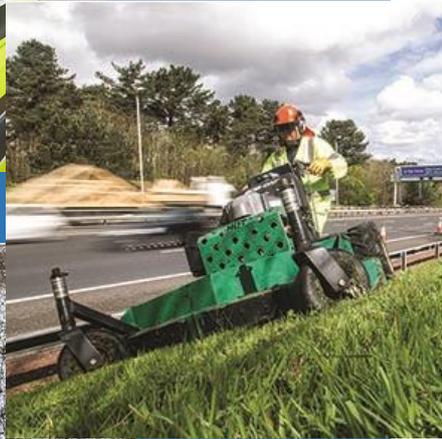
Figure B – DDA Barriers

Dda Barrier	Inventory Type	Defect Type	Road/Section	Easting	Northing
903283	FOOTWAY	Abrupt change in gradient (should be rounded)	A78/14035/48	220382	646815
903859	FOOTWAY	Bus shelter lacks colour contrasting bands	A78/14035/74	220443	646693
905831	FOOTWAY	Kerb upstand adjacent to c/way < 80mm high (excl crossing points)	A78/14035/48	220374	646870
906070	FOOTWAY	Kerb upstand adjacent to c/way < 80mm high (excl crossing points)	A78/14035/48	220382	646815
914577	FOOTWAY	Bus stop cannot be reached by adjoining footways	A78/14035/74	220443	646693
915117	FOOTWAY	Footway at bus stop is < 3000mm wide	A78/14035/74	220443	646693
915740	FOOTWAY	Bus boarding kerb outwith 125 - 160mm range	A78/14035/74	220443	646693
915741	FOOTWAY	Bus boarding kerb outwith 125 - 160mm range	A78/14035/74	220429	646720
915743	FOOTWAY	Bus boarding kerb outwith 125 - 160mm range	A78/14035/48	220433	646740
916602	FOOTWAY	Lack of bus shelter	A78/14035/74	220429	646720
916604	FOOTWAY	Lack of bus shelter	A78/14035/48	220433	646740
916936	FOOTWAY	Bus shelter lacks seating	A78/14035/74	220443	646693
919380	TRAFFIC_SIGNS	Lack of colour contrast banding	A78/14035/74	220471	646619
919388	TRAFFIC_SIGNS	Lack of colour contrast banding	A78/14035/48	220420	646769
921129	FOOTWAY	Lack of dropped kerb	A78/14035/48	220465	646662
923467	FOOTWAY	Kerb upstand at crossing > 6mm high	A78/14035/74	220468	646629
928423	FOOTWAY	Lack of tactile paving	A78/14035/74	220468	646629
930596	Misc._Street_Furniture	Free standing object does not meet min. height criteria of 1000mm	A78/14035/74	220470	646625

Table B – DDA Barriers

7.1 DDA Barriers – Table B analysis

As shown above, there are 18 DDA barriers in total locally. These will each be assessed and attempts will be made to rectify these along with any future works should they go ahead.



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