

22154-01-001

Playground & Carpark Amenity at Leixlip, Co. Kildare

RISK ASSESSMENT



March 2023

ROADPLAN
CONSULTING

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1. INTRODUCTION

- 1.1 Roadplan Consulting were requested to carry out a risk assessment on the proposed playground at Leixlip, Co. Kildare on behalf of Kildare County Council.
- 1.2 The Risk Assessment was carried out in accordance with TII Publication DN-REQ-03079. Chapter 5 of this publication outlines the procedure for carrying out a risk assessment.
- 1.3 Roadplan Consulting undertook the following procedure for all hazards identified and record it in the risk assessment sheet contained in Appendix A of this report.
 - i) Established if the hazard is within the Clear Zone and if it could be removed or mitigated;
 - ii) Ranked the hazard as per Appendix C of DN-REQ-03079;
 - iii) Calculated the sinuosity of the R148 in the vicinity of the hazards;
 - iv) Assessed the collision rate threshold of the R148 in the vicinity of the hazards;
 - v) Assessed the risk of a vehicle leaving the road based on sinuosity ranking and collision rate ranking;
 - vi) Assessed the overall risk rating;
 - vii) Assessed the requirement for the need for a VRS.

2. RISK ASSESSMENT PROCEDURE

2.1 Hazard Identification

A topographical survey of the area and the proposed playground layout were provided for review. Two hazards were identified; the level difference between the R148 Maynooth Road and the proposed playground.

In accordance with Table 3.1 of DN-GEO-03036 the Clearzone for the R148 Maynooth Road in the vicinity of the proposed development is 3.0m.

The level difference between the R148 Maynooth Road is located within the Clearzone while the proposed playground is located outside of the clearzone.

In accordance with Appendix C of DN-REQ-03079 the level difference between the R148 Maynooth Road is ranked as a low ranking hazard.

In accordance with Appendix C of DN-REQ-03079 proposed playground is ranked as a high ranking hazard.

2.2 Sinuosity

The sinuosity index of the R148 Maynooth Road was calculated to be 1.000. As the sinuosity index is less than 1.004, the R148 Maynooth Road is considered to have a low sinuosity ranking in accordance with DN-REQ-03079.

2.3 Collision Rate Ranking

The collision rate for this section of the R148 Maynooth Road was calculated as follows:

The Collision Rate (collisions per 10^8 veh-km) is:

$$\frac{1 \text{ (collisions)}}{365 \text{ (days /yr)} \times 10,394 \text{ (veh/day)} \times 5 \text{ (yr)} \times 1\text{km}} \times 10^8 = 5.27 \text{ collisions per } 10^8 \text{ veh-km}$$

Typical collision rates for the network are provided by TII.

Collision Rates (All Injury Severities) by Reference Population		
Reference Population	Average Collision Rate 2015-2017	Average Collision Rate 2014-2016
Motorway	1.959 per 100 Million km of Travel	2.060 per 100 Million km of Travel
Rural Dual Carriageway	2.843 per 100 Million km of Travel	3.531 per 100 Million km of Travel
Urban Dual Carriageway	8.067 per 100 Million km of Travel	8.437 per 100 Million km of Travel
Rural Two Lane	7.984 per 100 Million km of Travel	8.439 per 100 Million km of Travel
Urban Two Lane	18.367 per 100 Million km of Travel	20.221 per 100 Million km of Travel

The typical rate for an Urban Two-Lane Road is 18.367 collisions per 108 veh-km. The collision rate for the section of road assessed between 2016 and 2020 is twice below that figure.

As the collision rate is twice below the expected collision rate, the R148 Maynooth Road is considered to have a low collision rate ranking in accordance with DN-REQ-03079.

2.4 Risk of a Vehicle Leaving the Road

Taking account of both the collision rate ranking and the sinuosity ranking for this section of the R148 Maynooth Road the risk of a vehicle leaving the road was determined using the matrix in Table 5.1 of DN-REQ-03079.

This resulted in a low risk of a vehicle leaving the road for this section of the R148 Maynooth Road.

2.5 Overall Risk Rating

The Overall Risk Rating for each hazard was determined by comparing the risk of a vehicle leaving the road against the Hazard Ranking using the matrix in Table 5.2 of DN-REQ-03079.

This resulted in an overall low risk rating for the level difference between the R148 Maynooth Road and an overall medium risk rating for the proposed playground.

2.6 VRS Requirement

Where the overall risk rating is Low, a VRS is not required.

Where the overall risk rating is Medium, and if the hazard is located $\geq 2\text{m}$ from the carriageway edge, the Designer shall assess the hazard level and the risk of the vehicle leaving the road on site and determine if a VRS is required.

As the level difference between the R148 Maynooth Road results in an overall low risk rating the risk assessment indicates that a VRS is not required.

As the proposed playground results in an overall medium risk rating, is greater than 5.0m from the carriageway edge and is located outside of the clearzone, it is considered that a VRS is not required.

A summary of the above risk assessments are recorded in the risk assessment sheet contained in Appendix A of this report.

APPENDIX A

Risk Assessment Sheet

Risk Assessment Sheet for Vehicle Restraint Systems

Date: 10-03-2023

Completed by: George Frisby

Location ID/Description:

R148 - Leixlip Amenity Centre

Site Survey Conducted (Y/N): Yes

Hazard Type	Is Hazard within the Clear Zone? (Y/N)	Can the Hazard be Mitigated? (Y/N)	(1) Hazard Ranking	Sinuosity Index (SI)	(2) Sinuosity Ranking	(3a) Collision Rate Threshold	(3b) Collision Rate Ranking	(4) Risk of a Vehicle Leaving the Road	(5) Overall Risk Rating	Distance of Hazard (m)	VRS to be Installed (Y/N)	Reasons for Installing / Not Installing the VRS
Level difference between the proposed playground and the R148 Maynooth Road	Y	N	Low	1.000	Low	Twice Below	Low	Low	Low	< 3m	N	Overall risk rating is low
Proposed playground	N	N	High	1.000	Low	Twice Below	Low	Low	Medium	> 6.5m	N	The overall risk rating is medium and the playground will be located greater than 5m from the carriageway and located outside of the clearzone.

L = Low, M = Medium, H = High

(1) Hazard Ranking as per Appendix D

High (H) as per Appendix D

Medium (M) as per Appendix D

Low (L) as per Appendix D

(2) Sinuosity Ranking

High (H) > 1.02

Medium (M) = 1.004 ≤ SI ≤ 1.02

Low (L) < 1.004

(3a) Collision Rate Threshold

(1) Twice above Expected Rate

(2) Above Expected Rate

(3) Below Expected Rate

(4) Twice Below Expected Rate

(3b) Collision Rate Ranking

High (H) = Twice above Expected Rate

Medium (M) = Above Expected Rate

Low (L) = Below Expected Rate and Twice Below Expected Rate

Risk of a Vehicle Leaving the Road Sinuosity Ranking	Collision Rate Ranking		
	H	M	L
H	H	H	M
M	H	M	L
L	M	L	L

(4) Risk of a Vehicle Leaving the Road

Overall Risk Rating Risk of a Vehicle Leaving the Road	Hazard Ranking		
	H	M	L
H	H	H	M
M	H	M	L
L	M	L	L

(5) Overall Risk Rating