

# TII Standards Road Show

## Dutch Style Roundabout Trial

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Professional Services (Road Safety Section)

May 2022

# Overview

- About Dutch Style Roundabouts
- TII Trial N22 Killarney
- Technical Guidance

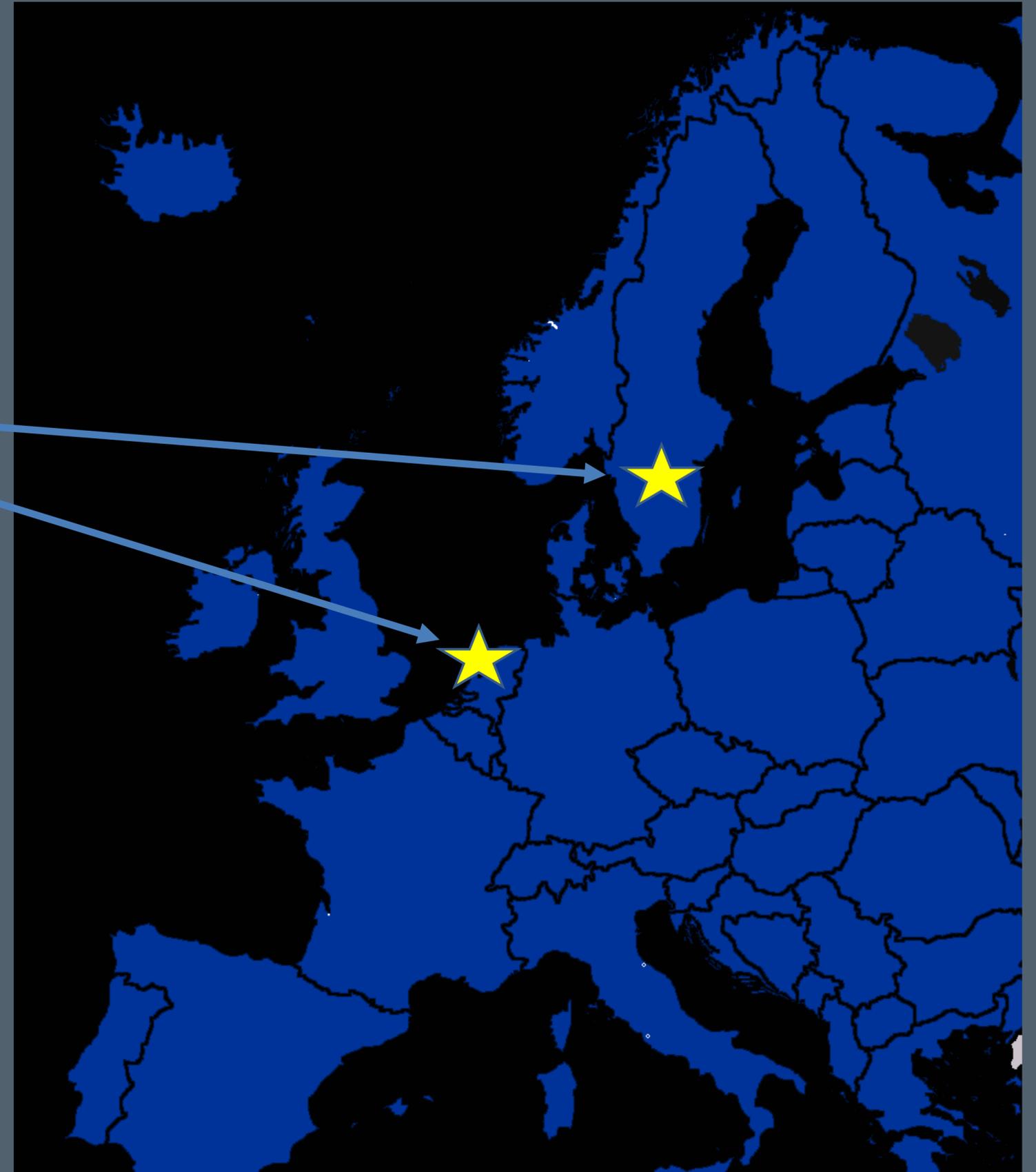
# SAFE SYSTEM APPROACH

Road safety principles developed 1990s  
Netherlands and Sweden.

NETHERLANDS *SUSTAINABLE SAFETY*

Junctions operate within Safe Limits –

- People Make Mistakes
- *Human limits to force*
- *Shared responsibility*



Full Segregation of NMU

Walking/Cycling don't mix i.e. "no shared space"

% NMU v Vehicular space

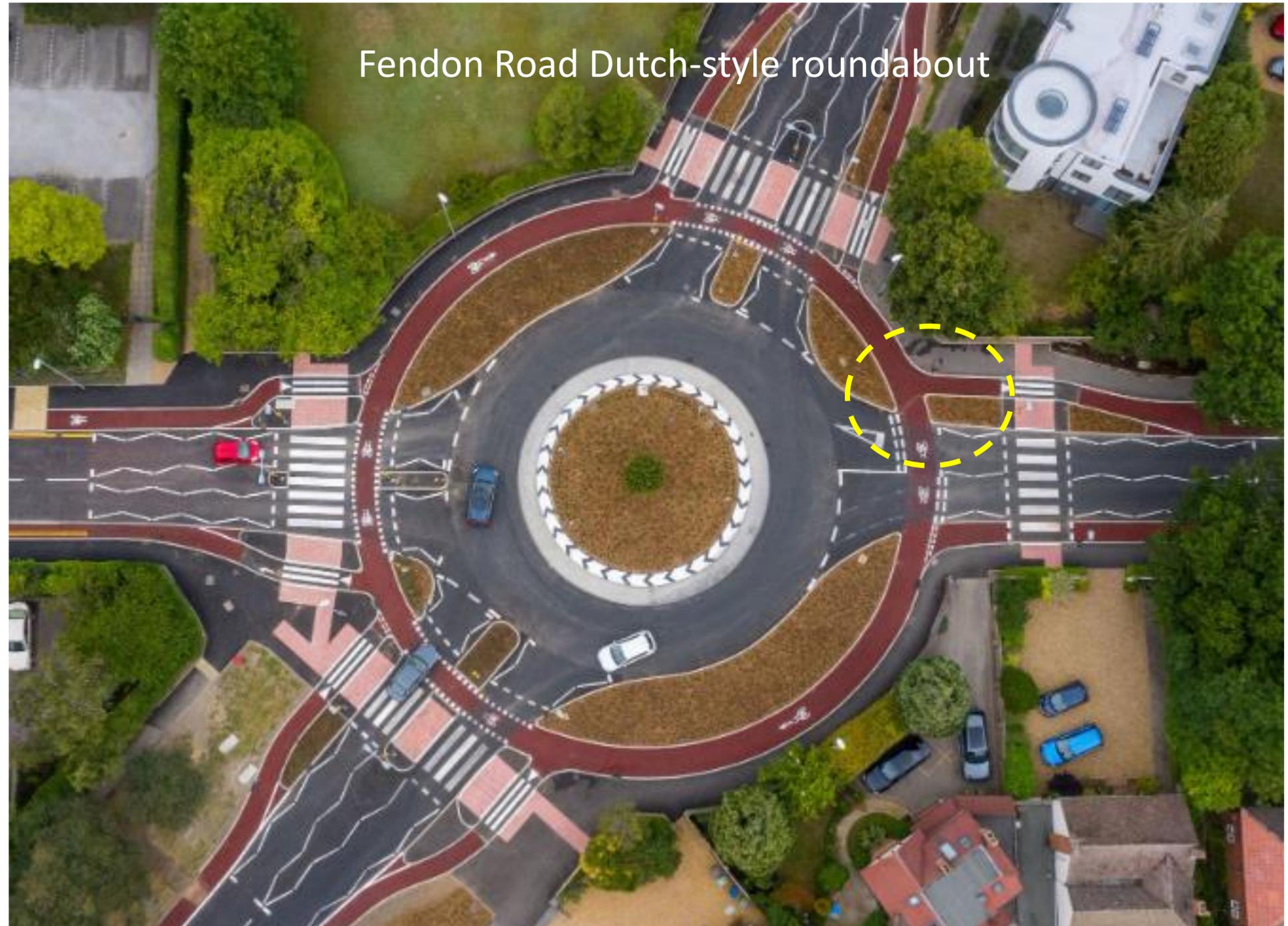
Single Lane Entry/Exit

Forces low speed – angles/radii

Distinctly different from Rural Layout-  
High Visual Contrast / Priority for NMU

5-6m buffer – visibility for NMU and  
refuge for exiting cars.

25,000 AADT max.



Fendon Road Dutch-style roundabout

Image : RUSSELL, S AND GILG, H., 2020 Cambridge News 07/08/20 [Source:[Aerial photos show Cambridge's brand new Dutch roundabout in action - Cambridgeshire Live \(cambridge-news.co.uk\)](#)] Accessed 03/05/22

← → ↻ 🏠 <https://bikedata.cyclestreets.net/collisions:since=2014-01-01&until=2019-12-31/#18.06/52.179235/0.14922> 🔊 📄 ⭐ ⚙️ 👤

CycleStreets network: Cycle journey planner Widen My Path StreetFocus **Bikedata** Cyclescape About us

+ Search locations and move map  
-  
▲  
📍



10 m

**Draw area to limit results**  
DRAW AREA CLEAR

14  
Collisions

Traffic counts

Photos

Cycleability ratings

Planning application

infrastructure. Data is from DfT/police STATS19, from 1999-2020. See [definitions](#).

Zoom in to see all - while zoomed out only a selection is shown due to the volume.

**Filter to:**

Severity:  
All collisions

Casualty:  
 Cyclist  
 Pedestrian  
 Car occupant

Date range:  
2014 - 2019

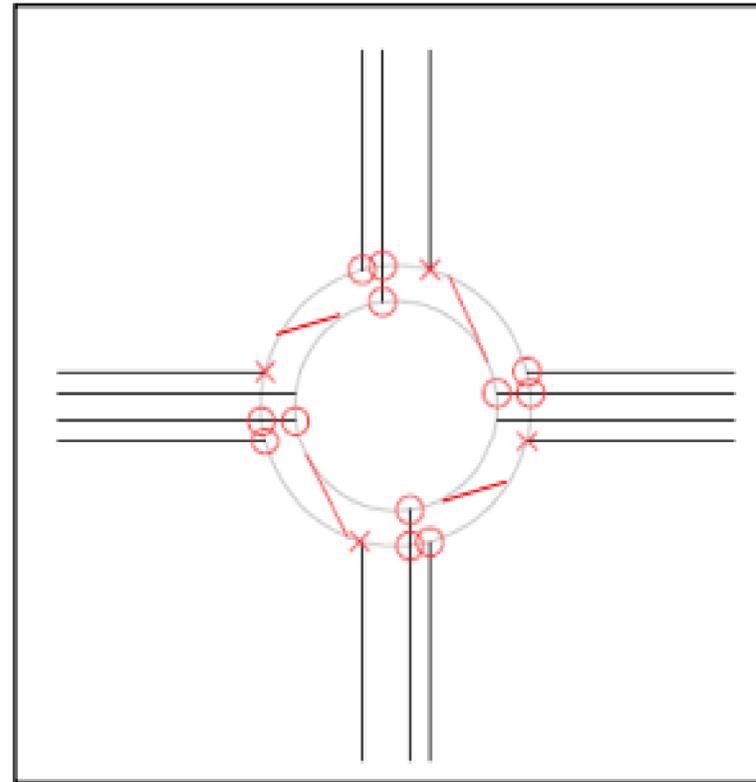
Limit to:  
 Junctions  
 One-way streets  
 A-roads  
All speed limit

**Source:** <https://bikedata.cyclestreets.net/collisions:since=2014-01-01&until=2019-12-31/#18.06/52.179235/0.14922>

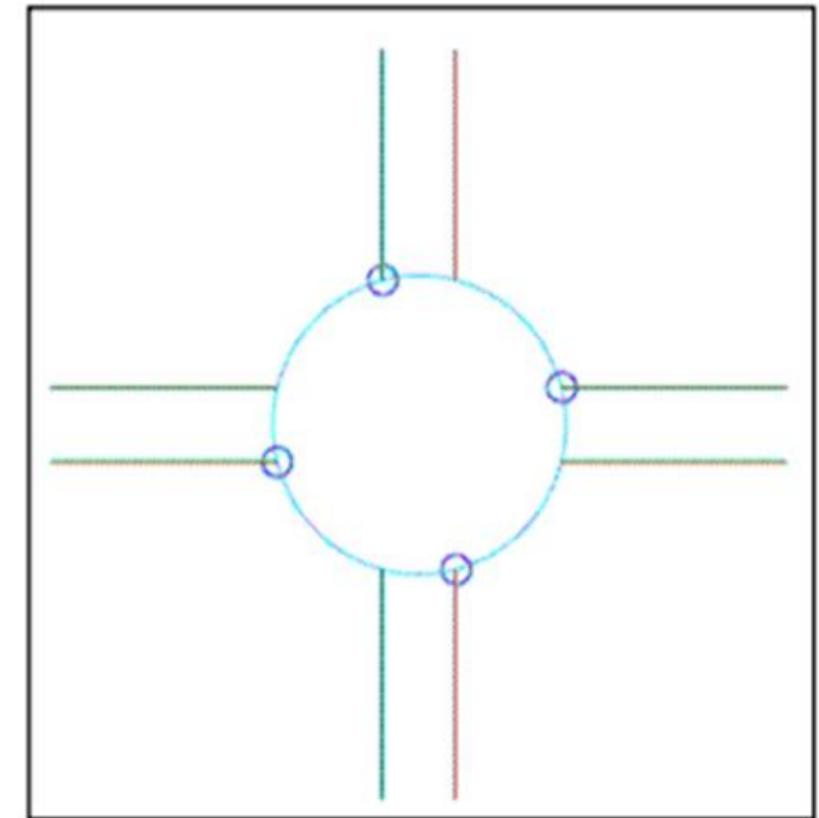
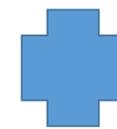
# Reducing Conflict Points

## Reducing Speeds

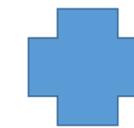
## Increasing visibility of NMU & priority



Double lane roundabout, two lane exits:  
20 conflict points



Single lane roundabout: 4 conflict points



Images: Ministry of Transport, Public Works and Water management Partners for Roads, 2009. Roundabouts - Application and design A practical manual. Page 67.



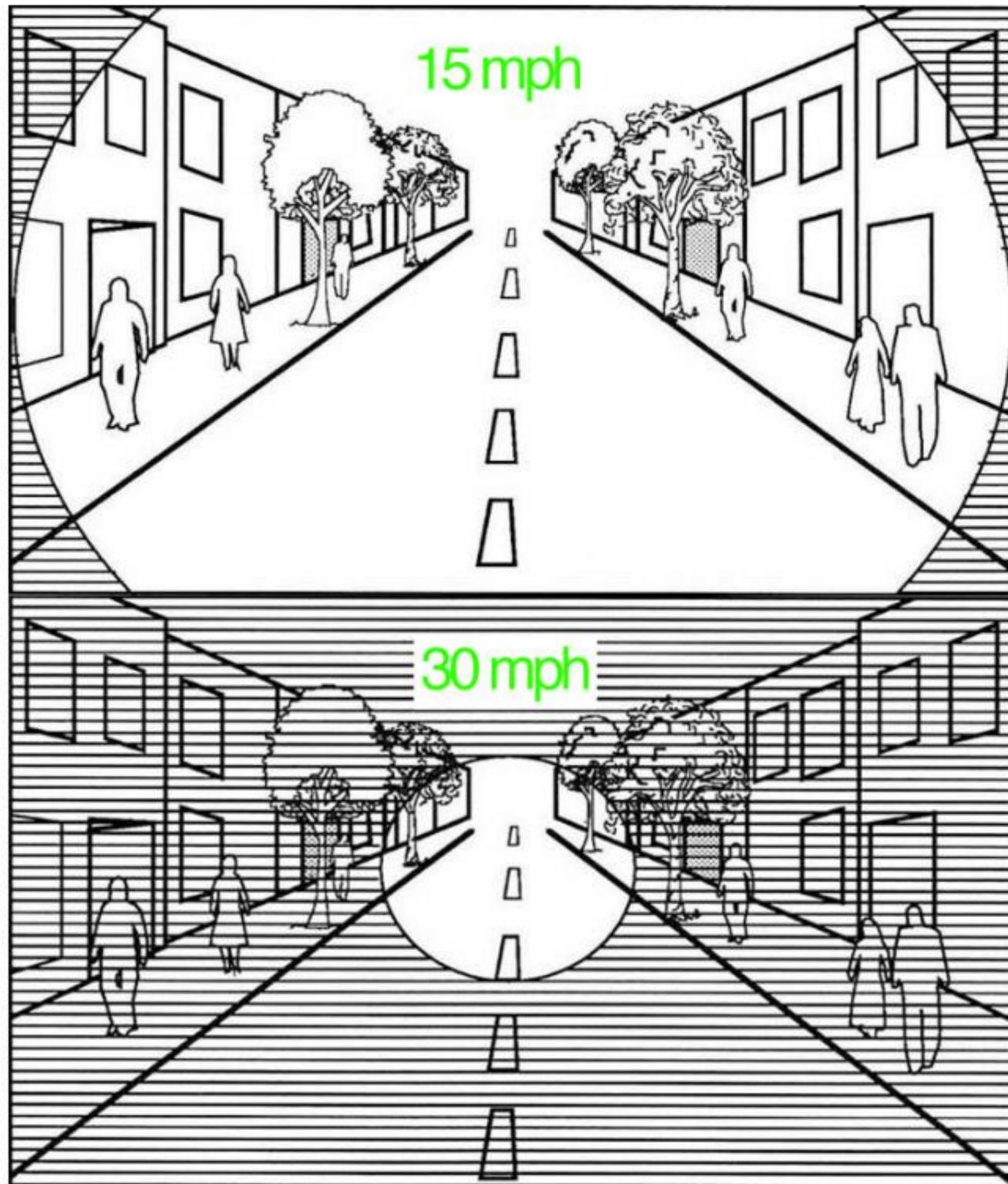
# Better Mutual Recognition...

*"Many have noted the improved geometry that allows people cycling and driving to better see each other and react accordingly."*

Shepka, P., 2020. Cambridge's Dutch-style roundabout: Why all the fuss?. BBC News 27<sup>th</sup> Sept 2020 Source: [Cambridge's Dutch-style roundabout: Why all the fuss? - BBC News](#)



Image - (Image: Joe Giddens/PA Wire) [Aerial photos show Cambridge's brand new Dutch roundabout in action - Cambridgeshire Live \(cambridge-news.co.uk\)](#) Accessed 03/05/22



Visual perception at different speeds.

Reducing speeds –

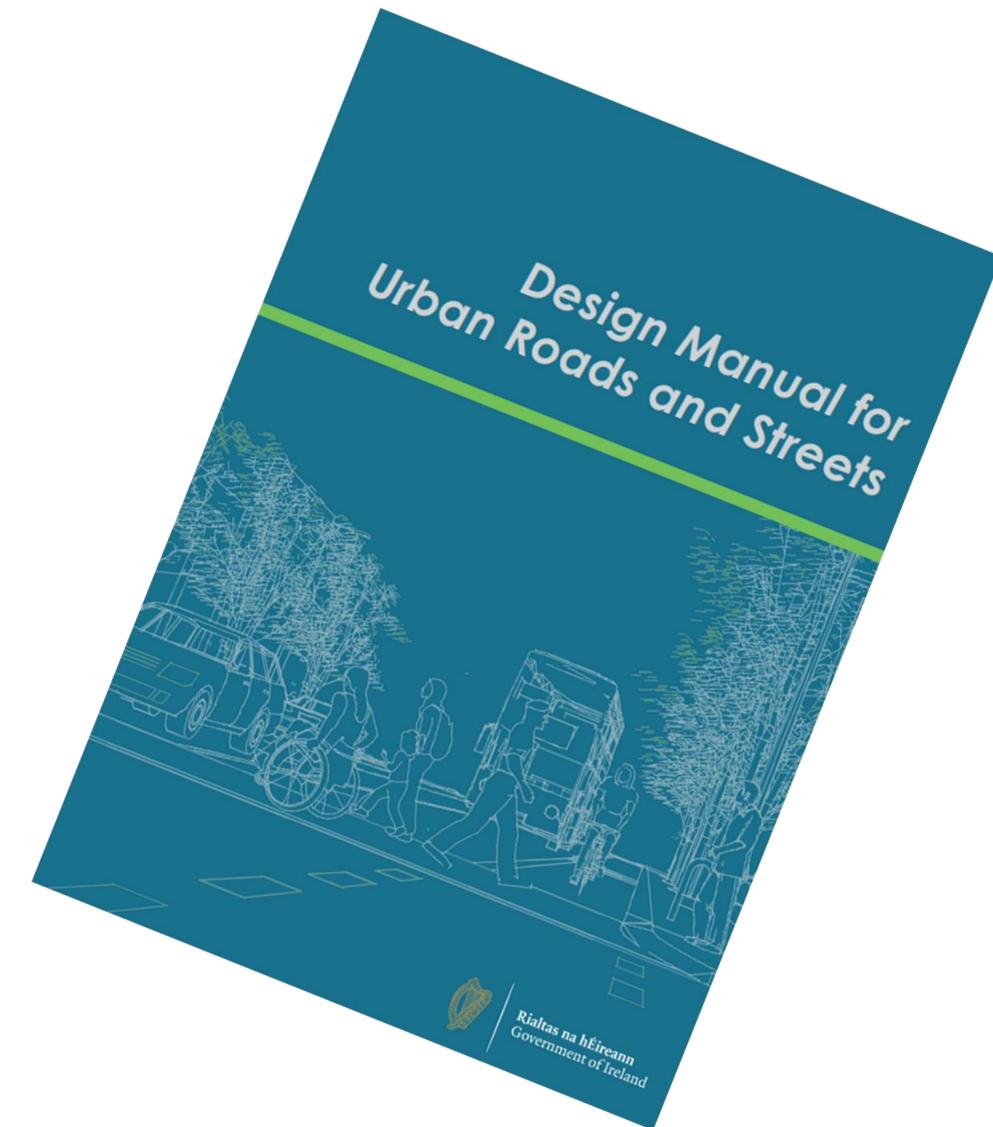
Drivers - **Cone of Vision increases**

Slow traffic – see  
hazards/information/enough  
reaction time

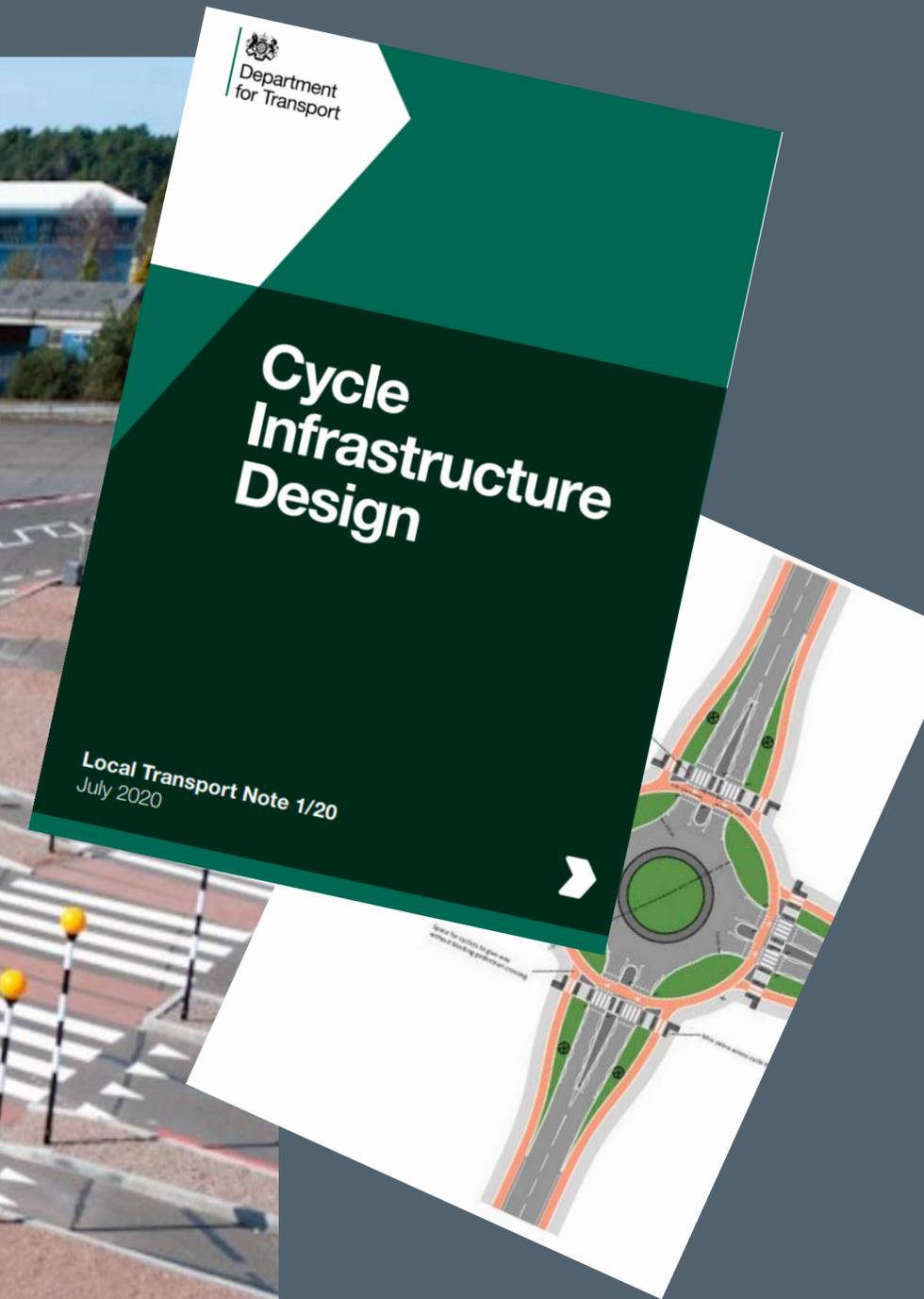
**DMURS 4.0m crossing or wider (Arterial)**

**Direct Crossing (not staggered)**

**Traffic Calming Compact Geometry**



# TRL Trial – Dutch Roundabout for TfL 2013



# Fingal County Council - Ireland's first Dutch-style roundabout.



[Image: IrishCycle.com](https://irishcycle.com/2022/02/16/irelands-first-dutch-style-walking-and-cycling-friendly-roundabout-to-be-installed-in-dublin-15/) <https://irishcycle.com/2022/02/16/irelands-first-dutch-style-walking-and-cycling-friendly-roundabout-to-be-installed-in-dublin-15/> -- Ireland's first Dutch-style, walking and cycling-friendly roundabout to be installed in Dublin 15

# Overview

- About Dutch Style Roundabouts
- **TII Trial N22 Killarney – TII Pilot & Trial Scheme**
- Technical Guidance

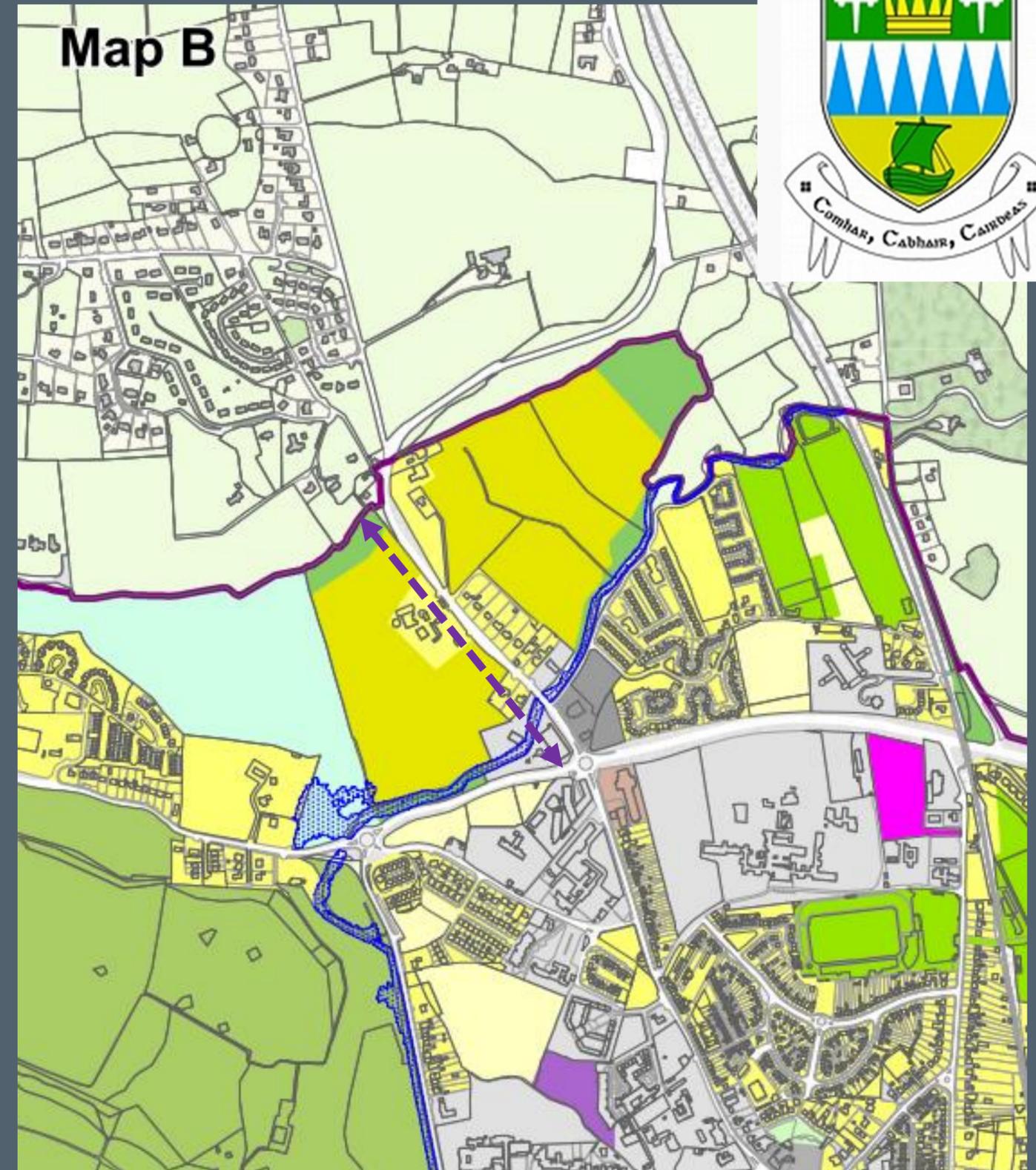
## Need

### Killarney Development Plan Objective:

- *Facilitate the enhancement of Killarney as a 10-minute town*
- Several new active travel schemes being developed as part of a **Cycle Network**

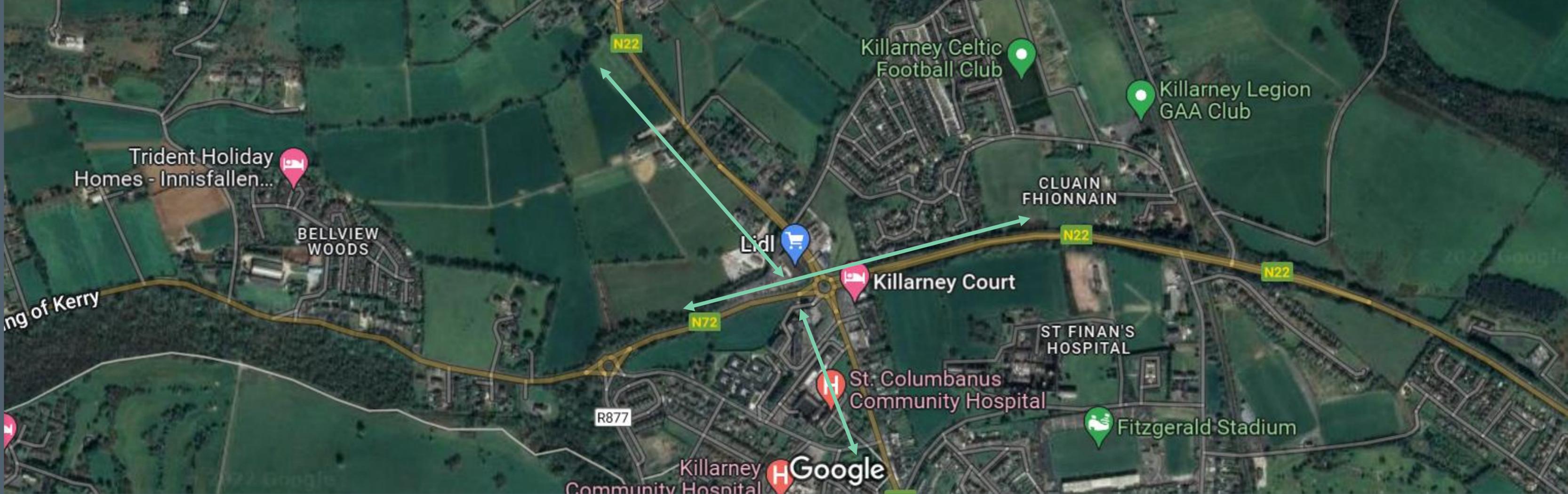
**Challenge** – one of the New Active Travel Corridors needs will cross an existing roundabout on the N22 in a Speed Transition Zone.

....and it is a 5-Arm roundabout!





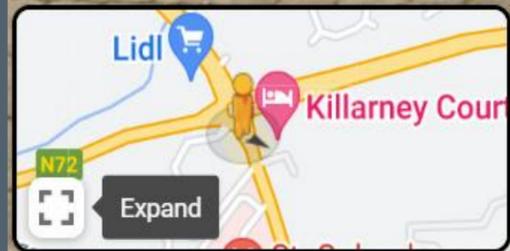
N22 Cleeney Roundabout





Rural Roundabout Design v Current and future context, function and user needs  
Note – Flared Entries and two circulating lanes – no distinction between Urban/Rural design.

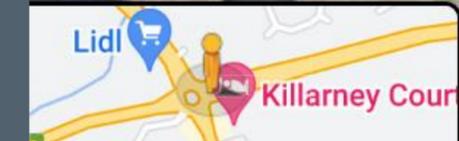
R876  
Killarney, County Kerry  
Google  
Street View - Oct 2019



Navigation controls including a compass, zoom in (+) and zoom out (-) buttons, and a view selector (blue, yellow, green) with an expand/collapse arrow.



Pedestrian Crossings ?



© 2022 Google



Google

© 2022 Google

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## DMURS – Roundabouts

*“as part of any major upgrade works, to replace them with signalised junctions or retrofit them so that are more compact and/or pedestrian and cycle Friendly”* page 105.

- Signalised considered however - proximity / consistency of adjacent roundabouts /
- Option considered appropriate – upgrade to more compact layout and provide facilities for pedestrians and cyclists.

**Objective** - safe /attractive /direct route for pedestrian and cyclist movements whilst also balancing the needs of vehicle users and N22 National Road Network

(i.e. Function of the Road balanced with Active Travel)



## Before Trial Layout Treatment (Baseline Data Collection)

- Pedestrian, cyclists and vehicular traffic count and movement data collected. Traditional + Drone
- Existing junction operation under current conditions modelled using microsimulation model
- Existing junction geometric layout
- Operational speeds – circulatory and approach/exit



Scope

Geometric  
Design

Construction



Stakeholder  
Consultation

Planning

# Why “Dutch”

Safest roundabout for cyclists

Single lane & tighter geometry results in lower speeds

Lower speeds afford more time for drivers to see NMU and give way etc.

Crossings are formalized\* and cyclists / pedestrians clearly visible & predictable!

Safe Systems - Safe Speeds / Safe Roads

Image : RUSSELL, S AND GILG, H., 2020 Cambridge News 07/08/20 [Source: [Aerial photos show Cambridge's brand new Dutch roundabout in action - Cambridgeshire Live \(cambridge-news.co.uk\)](https://www.cambridge-news.co.uk)] Accessed 03/05/22



\*Informal – courtesy crossings in Ireland – only appropriate with infrequent pedestrian activity.

## Temporary Retro-Fit Design for “Dutch Roundabout” Trial

- Design Dutch Style Roundabout and optimise for location – options development.
- Model retro-fit layout to evaluate performance
- Design Temporary works –
  - Pedestrian Crossings
  - Segregated Cycle facilities
  - Compact
  - Reduce flares
  - Single lane entry\*
  - Single circulatory lane\*
- Monitor / Observe in service



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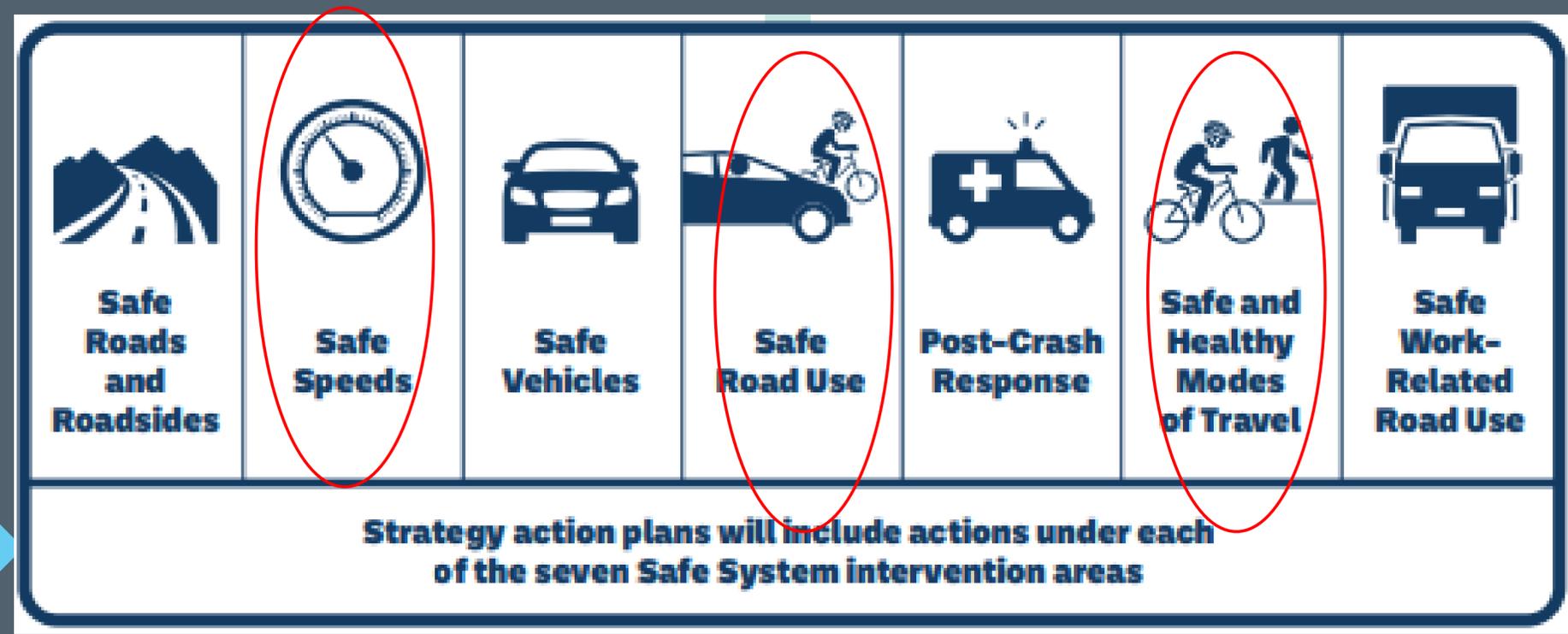
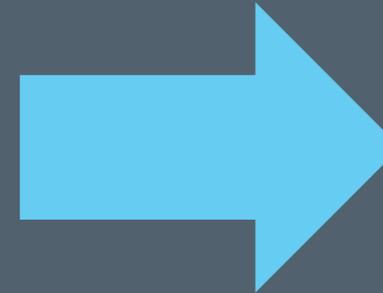
**By 2030**



**we will reduce deaths on Ireland's roads by 50% from 144 to 72 or lower**



**we will reduce serious injuries on Ireland's roads by 50% from 1,259 to 630 or lower**



Safety performance indicators (SPIs)

**3. % of high-risk KSI rural and urban junctions treated to operate within Safe System limits.**

**40% Seriously Injured (20/20)**  
**27% Killed (21/6)**



# Pilot & Trial – “Dutch Style Roundabout”



**NTA**  
 Údarás Náisiúnta Iompair  
 National Transport Authority

## National Cycle Manual

Welcome to t

**TBC**

- 1.0 The Basics
- 2.0 Legislation & Policy
- 3.0 Planning for the Bicycle
- 4.0 Designing for the Bicycle
- 5.0 Getting the Details Right
- 6.0 Maintenance
- 7.0 Tools and Checklists

Department for Transport

# Cycle Infrastructure Design

Local Transport Note 1/20  
 July 2020

ROYAL HASKONING

## Roundabouts - Application and design

A practical manual

Ministry of Transport, Public Works and Water  
 Partners for Roads  
 June 2009

## Design Manual for Bicycle Traffic

fietsbreed  
**EROW**

## Within roundabouts -

- Marked bike lanes increased bicycle crashes by 33%
- Separate cycle path (with no priority for cyclists) **reduced crashes by 84%**  
*(Jensen, S. U. (2015). Safety effects of height of central islands, sight distances, markings and signage at single-lane roundabouts. 5th International Symposium on Highway Geometric Design, Vancouver, BC, Canada.*
- Typically - European countries give cyclists priority at roundabout crossings in urban areas but not at rural roundabouts

## Using shared crossings/footways -

- Reliance on shared-use footways as a design practice reduces willingness to cycle.

*Deegan, B., 2016. Cycling infrastructure in London. Proceedings of the Institution of Civil Engineers (ICE) Engineering Sustainability 169 June 2016 Issue ES3 Pages 92–100 <http://dx.doi.org/10.1680/jensu.15.00001>*



Baseline  
Data

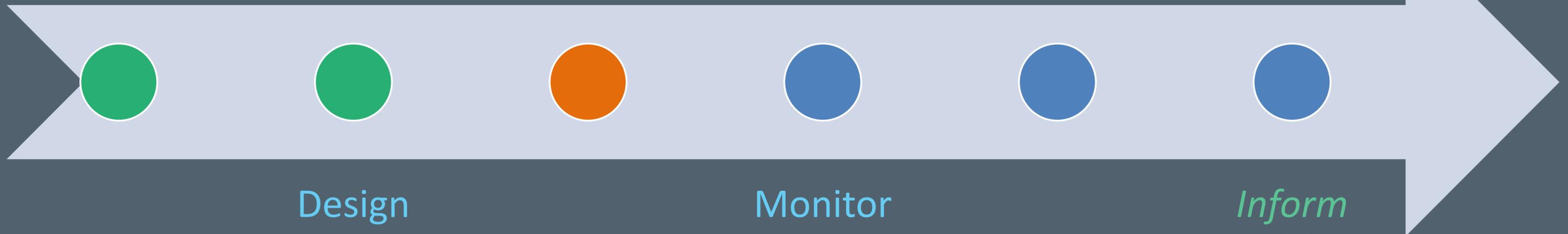
Planning  
Processes

Feedback  
&  
Evaluation

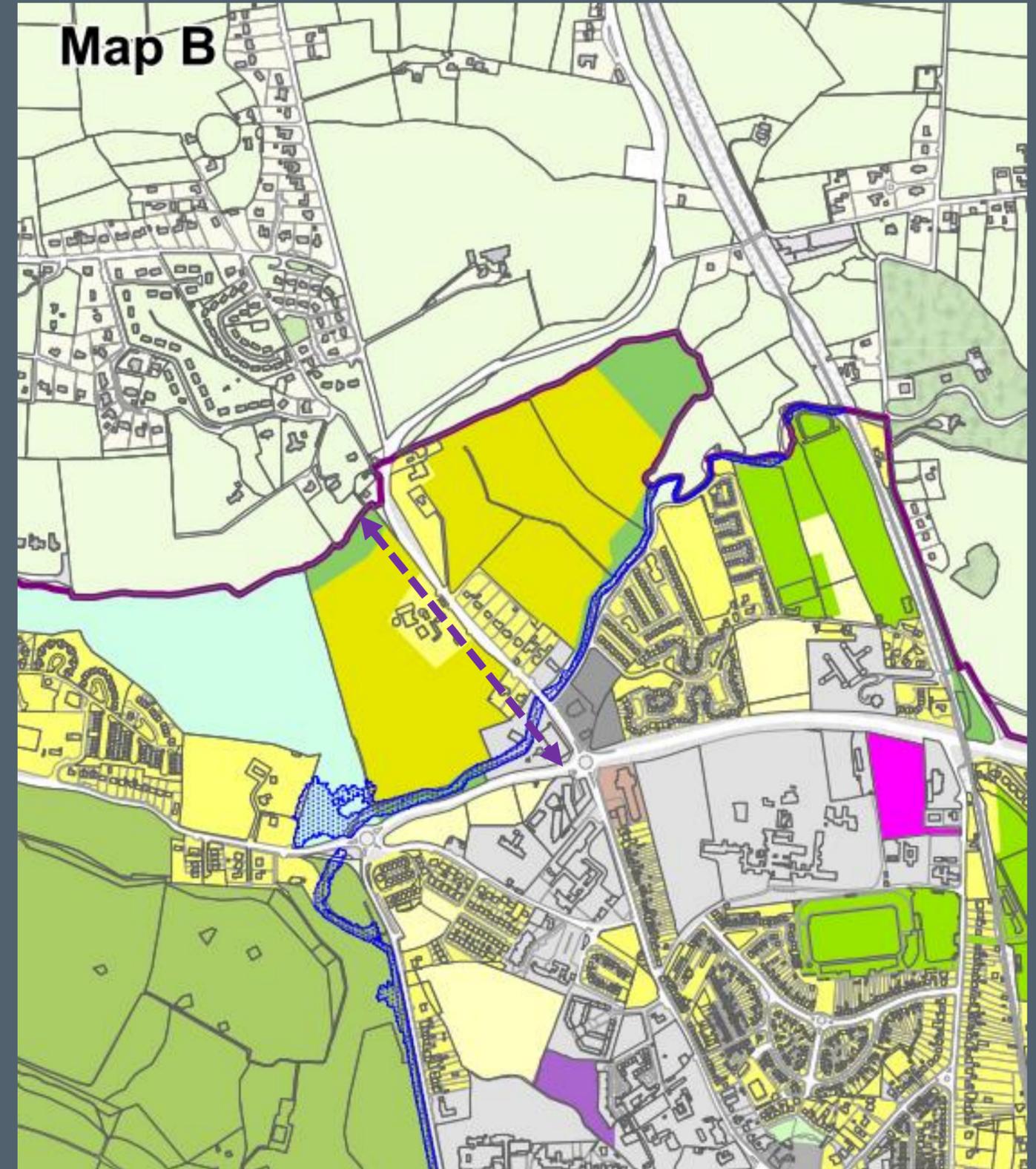
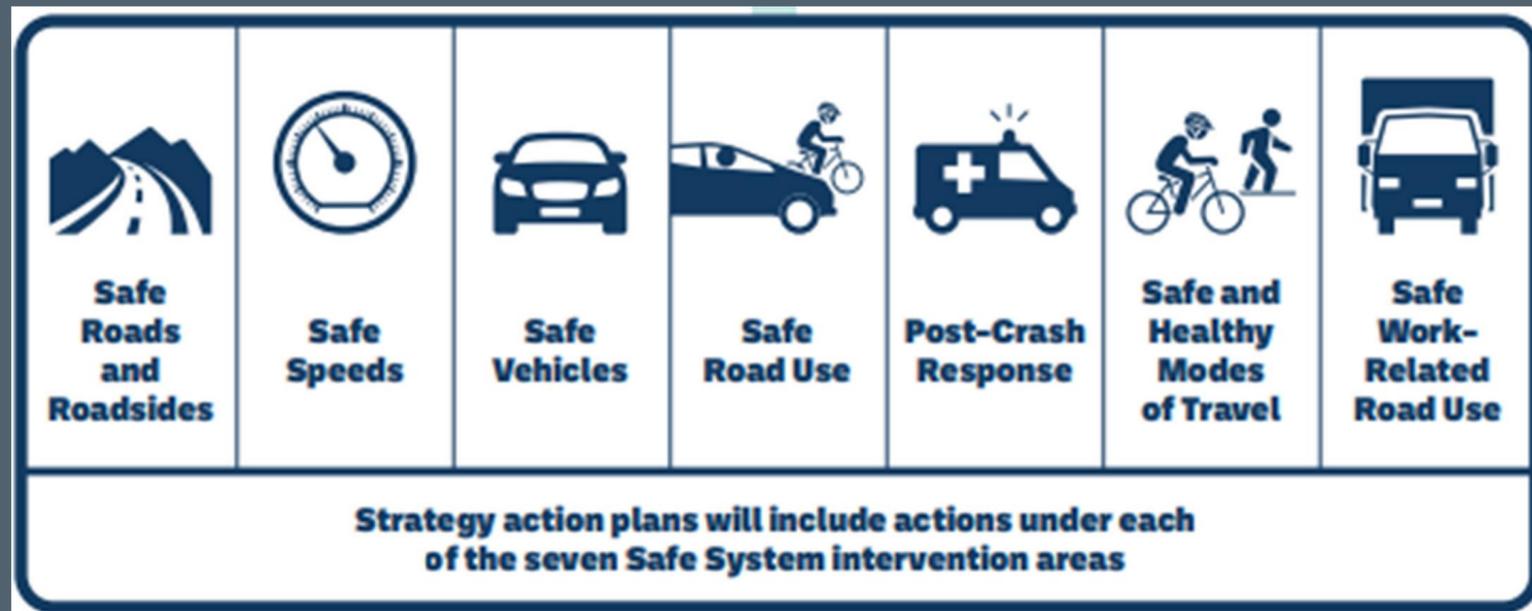
Design  
Treatment

Monitor

*Inform  
Guidelines  
and  
Standards*



**Challenge** – one of the New Active Travel Corridors needs will cross an existing roundabout on the N22 in a Speed Transition Zone.





Bonneagar Iompair Éireann  
Transport Infrastructure Ireland

# Questions and Answers