

Leixlip Strategic Transportation Assessment

Non-Technical Summary

Kildare County Council

May 2019



Kildare County Council
Comhairle Contae Chill Dara

Quality information

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1. Strategic Transport Assessment

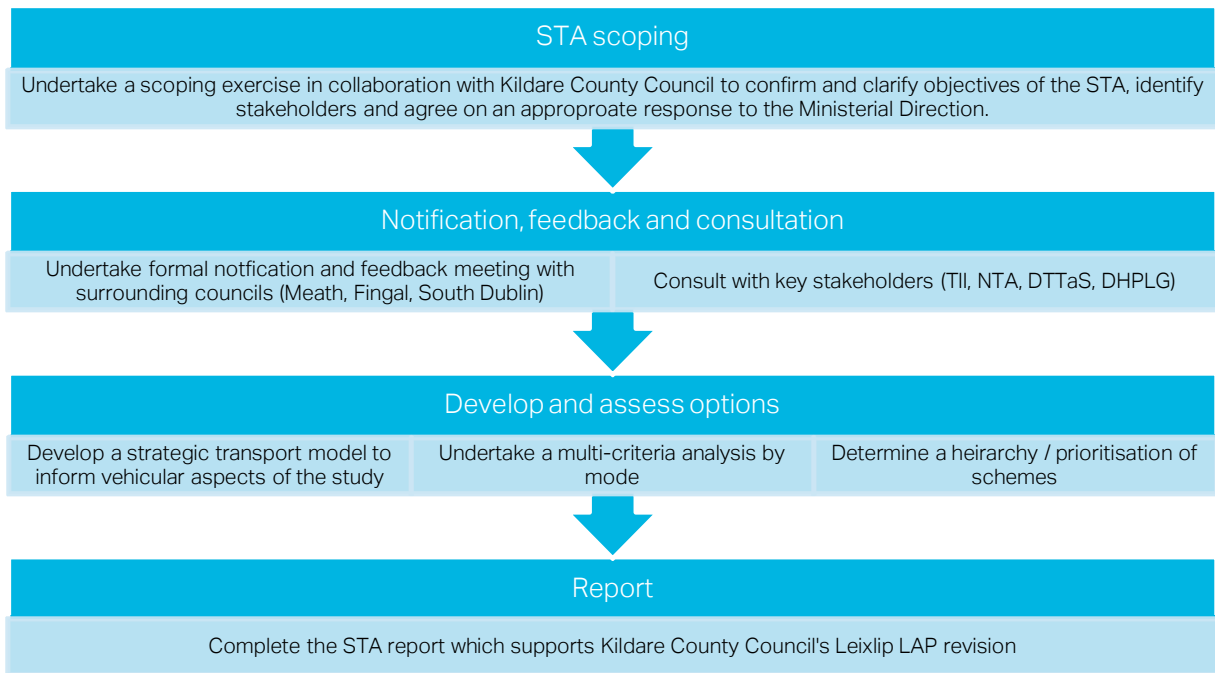
1.1 Project Background

Kildare County Council commissioned AECOM to develop a Strategic Transport Assessment (STA) to inform the drafting of the revised Local Area Plan (LAP) for Leixlip.

The purpose of this STA is to carry out an assessment of the transportation elements of the 'Network' infrastructure class, informed by policy review and stakeholder consultations. The STA shall inform all transportation requirements within the urban footprint of Leixlip over the next plan cycle and potential new development lands north of the railway line at Confey in the coming years.

Figure 1.1 provides an overview of the process adopted in developing the STA¹.

Figure 1.1 – STA process overview



1.2 Objective of the Strategic Transport Assessment

The objective of this STA is to inform the revised LAP 2020-2026 by:

- Recommending moderated and reasoned transport interventions (avoiding an over-provision or under-provision of assets or services) to support the town's growth, particularly for Confey
- Ensuring that existing road infrastructure is used as a productive asset and that proposed interventions are appropriate to the level of phased housing development
- Enable sustainable travel within the town and to surrounding areas for all trip purposes.

1.3 Leixlip's transport challenges

Overall connectivity between communities' residences and destinations in Leixlip (and further afield) is poor because of the natural topography and geographic features – Rye Water and River Liffey exhibit steep gradients which have historically restricted growth areas. Furthermore, the built environment of the Royal Canals and longstanding railway act as permeability barriers. A limited number of crossing points over the Rye Valley, Royal Canal and railway line inhibit travel by almost all modes of transport creating pinch points such as Cope Bridge, Captain's Hill, Kellystown Lane Bridge.

¹ The Strategic Transport Assessment encompasses all modes of transport: active modes, bus, rail and road.

Permeability and connectivity may also be recognised as limited across the town (for the reasons above), and aged planning practices of enclosed housing developments. These challenges in the existing environment represent weaknesses for transport currently, and more specifically sustainable transport, as some road users (pedestrians particularly), are unable, or less likely, to travel sustainably.

Figure 1.2 shows the share of trips by each mode for Leixlip residents when commuting to work. This highlights that Leixlip residents are highly car dependent with 69% of commuters travelling via private motor vehicle, followed by a smaller percentage using public transport; rail (11%) or bus (10%).

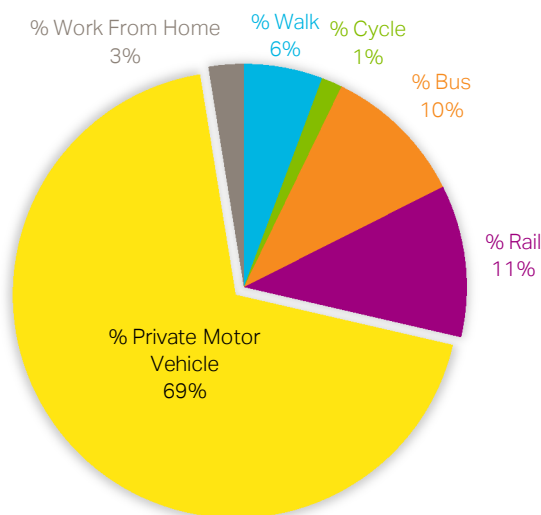


Figure 1.2 – Modal split for work trips by Leixlip residents (census, 2016)

1.4 Leixlip's transport opportunity

The objectives of the STA are to support the delivery of a high quality, permeable and attractive transport network for Leixlip. The Leixlip transport network should allow for multiple direct connections between existing key sites of the town and any anticipated destinations in the future. Particular focus will be placed on the expected travel requirement of Confey in-light of the imminent residential growth. Where possible connections should favour non-motorised travel, although some road-based interventions may cater for residual demand not facilitated by other modes.

The STA seeks to support:

- The upgrading of existing off-road pedestrian routes within the town to cater for pedestrians and cyclists for all trip purposes.
- Opportunities for local 'on-road' permeability improvements that would provide more direct and safer pedestrian and cyclist access to schools, shops, public transport nodes, amenity areas and community facilities, including the removal of barriers such as boundary walls / hedges along existing or future desire lines.
- Increased access to the rail and bus services, particularly for the Confey Urban Design Framework (UDF) lands located in close proximity to Confey Railway Station and opportunity for BusConnects connection and DART expansion in time.
- The productive use of existing assets.
- Residual trips by private motor vehicles in a timely manner, without an over-promotion of road trips, or over-provision of road assets.

2. STA Strategy

A multi-criteria analysis (MCA) of plausible options was conducted to identify the most suitable measures for the strategy in respect to roads, active modes and public transport.

2.1 Road Strategy

The roads strategy considered whether new links were required in the west and east of Leixlip separately.

In the west of the town, route option 4 was identified as a preferred road through the MCA (Figure 2.1). This route would connect the Confey Urban Design Framework (UDF) lands to the R148 east of Intel via a new road approximately parallel to the Royal Canal. The new route would be required to pass through the existing eastern carpark of Intel to join the R149 at a new junction or roundabout (although there may be opportunity for a compact junction design avoiding the Intel site).



Figure 2.1 – Road Route - Option 4

In the east of Leixlip, the preferred route option is an improvement of existing roads and facilities from Leixlip town centre to Lucan as shown in Figure 2.2.

As a Do Minimum option the corridors would seek improvements to their usability and safety. Minor, localised improvements to junctions, footpaths, cycling facilities would be implemented close to the Confey UDF area where active mode shares are increasingly expected. Moving eastward from Confey the existing road would be improved through minimal intervention. This may include isolated improvements to particularly poorly (vertically and / or horizontally) aligned sections, appropriate vegetation removal or relocation to improve sight-lines, lining, signing and surfacing improvements.



Figure 2.2 – DoMin – Town centre and Lucan

2.2 Active Modes Strategy

The aim of the active modes strategy is to identify new paths which will improve access for non-motorised modes to key destinations in Leixlip. To support this strategy, a number of upgrades to existing cycling and walking paths are also required, some derived from the GDA Cycle Network Plan.

The active modes strategy is shown in

Figure 2.3.



Figure 2.3 Active mode upgrades required to existing routes

2.3 Public Transport Strategy

2.3.1 Rail Strategy

The rail strategy MCA identified two rail options which should be progressed as they expand access to the existing train station for limited cost:

- **Option 5:** Provide new Confey Station access to the east of existing platform to link with Cope Bridge
- **Option 6:** Provide new Confey Station access at the western end of existing platform linked to footbridge across Royal Canal to connect with Confey UDF lands

All other options were determined to have a detrimental effect on rail travel in Leixlip or had an unacceptable level of financial and environmental impact. Very few towns have two rail stations and so Leixlip is well placed to build significant levels of rail patronage in the town without need for extensive rail infrastructure investment. Instead, the focus in Leixlip should be on improving existing access to both stations and ensuring that all future development provides efficient routes for pedestrians and cyclists to access rail. The location of the Confey UDF lands is well suited to maximising rail patronage, particularly for commuting trips to Dublin or other towns on the line westward.

2.3.2 Bus Strategy

The bus strategy MCA identified three bus options which should be progressed (Figure 2.4):

- **Option 1:** Bus priority (rush-call) for town centre signalised junction (R148 / R149)
- **Option 2:** Bus gates on both approaches to Cope Bridge prior to the construction of a new two-way bridge, seeking to advance stop lines as far forward as practical to achieve improved signalised operation.
- **Option 3:** Merge 66e and 66 bus services and rerouting via Green Lane (prior to BusConnects implementation) to provide a commutable public transport service on Green Lane.



Figure 2.4 – Location of bus options

Rerouting the 66 via Green Lane would expand the catchment for frequent public transport services to this rapidly developing area. This will be essential to reducing car dependency as residents along Green Lane do not currently have a weekend or all-day bus service. As this area is furthest from the town centre for active modes, and has few local services, the provision of a frequent bus route is essential to provide a viable sustainable travel alternative to the private car for these residents.

3. Phasing Matrix (Recommendations of the STA)

Completion of the MCAs has allowed a prioritised list of schemes to be developed – these are provided as a phasing matrix overleaf.

The phasing matrix acts as the recommendations derived from this STA.

From top to bottom the matrix has been reordered and summarised as follows:

- **Active Mode Area 1 through 5** – In consultation with Kildare County Council throughout the development of this STA, and with feedback from several stakeholders, active mode improvements are seen as essential in delivering on the study objectives. Active modes will deliver well for the emerging Confey development, such that it remains connected and an integral part of the town (i.e. not being interpreted or treated as its own isolated township). Active modes will provide some alleviation of congestion for Confey, and will give some longevity to Cope Bridge before requiring replacement. Importantly, Cope Bridge (in its single-lane form) will anecdotally act as a throttle or barrier to excessive vehicular growth and may promote more sustainable travel.
- **Rail (Options 5 and 6)** – Two rail options are recommended in this STA for progression being the connectivity improvements at Confey Station. The intended pedestrian connections from the eastern and western ends of the existing platforms to Cope Bridge, and Confey UDF lands respectively.
- **Bus (Options 1 to 3)** – The three bus options are put forward as being positive for improving transportation in Leixlip. The town centre may reasonably be considered lacking in bus accessibility and use. BusConnects will enhance Leixlip's bus services and therefore the minimal but reasonable proposed improvements to bus infrastructure should be pursued. The bus options present some local challenges (notably the required space to implement a Cope Bridge bus gate and limited remaining capacity of the town centre signals).
- **Road options** – The phasing matrix indicates the elements (or components) required to create the overall route options (presented in Section 2). Some of the Road options may be combined to create a route option, or in the case of Cope Bridge and Kellystown Bridge, will be common across several route option tests.

The elemental road options in the phasing matrix may or may not be progressed depending on the year and level of development, although commentary is provided for each.

The benefit of the phasing matrix is that it provides progressive recommendations for infrastructure development over several years, or as the expected number of residential units are developed at Confey. Traffic modelling was undertaken for different future route option scenarios and levels of development – this is reflected in the matrix.

It is recommended that the level of transport infrastructure developed be proportionate to the need, and without undue burden on existing facilities or residents of Leixlip. An over or under-provision of infrastructure should be avoided with the phased approach, and ultimately support a sustainable Confey development.

Level of development: All KDAs, plus no. of Units Provided at Confey (residential units):			500	800	1200	1500	2500		
Year (expected completion)			2023	2023	2023	2025	2025	Comments	
Intervention									
Type	Location	Description							
Active Modes - Area 1	Confey Station and UDF Lands Access	Three footbridges across Royal Canal to improve north-south accessibility between Leixlip and future Confey UDF area. New northern and southern access to Confey station. Supporting paths eliminate cul-de-sacs and link to new footbridges.	✓	✓	✓	✓	✓	Required as Confey UDF lands are developed	
Active Modes - Area 2	Rye Water and school access	A new footbridge over the Rye Water with associated paths to connect Confey Community College with surrounding estates. A new path links existing estates to new development in Black Avenue.	✓	✓	✓	✓	✓	Required as Confey UDF lands are developed	
Active Modes - Area 3	Louisa Bridge and Intel access	Creation of extensive path network to the north east and south west of Louisa Bridge station to expand catchment area. Creation of one footbridge over Royal Canal from housing estates in the west and improved access from the canal path to the Intel site to encourage the use of active modes to work.	✓	✓	✓	✓	✓	Required as Confey UDF lands are developed	
Active Modes - Area 4	South west Leixlip permeability	Creation of numerous permeability paths and links to improvement movement between existing estates and future development at the Wonderful Barn KDA. Access to Green Lane and a crossing point are also provided.	Permeability improvements expected to be an on-going exercise across existing residential areas. All new development sites should seek to maximise permeability by design					Measures support improved bus services in this area	
Active Modes - Area 5	Town Centre and school access	A mixture of new paths, a footbridge and short permeability links to integrate areas to the north and west with the town centre along with improving the pedestrian experience on the main street.	✓	✓	✓	✓	✓	Required as Confey UDF lands are developed	
Rail	Confey Station	Provide additional walking and cycling bridges in the vicinity of Confey Station, with direct access onto Confey railway platforms	Eastern access	Eastern access	Eastern access	Eastern access and western footbridge	Eastern access and western footbridge	Eastern access to Cope bridge should be provided first, then western from the proposed footbridge developed along with Confey UDF.	
Bus	Service improvements and Confey connection	Through consultation with public transport providers, improve access to bus services in Confey through the provision of turning locations and appropriately located stops with direct walking and cycle access. Bus stops, services and frequencies should promote sustainable travel to Celbridge, Blanchardstown and other areas of employment less accessible by rail	✓	✓	✓	✓	✓		
Bus	Route 66 Re-Routing Via Green Lane	Through consultation with public transport authorities and providers to deliver rerouting of 66 bus route via Green Lane to provide a viable public transport alternative to the private car. This area currently only has an off-peak weekday services yet residential areas are expanding.	✓	✓	✓	✓	✓		
Road & Bus	Cope Bridge - Bus Gate	Provide a bus gate, or other urban design mechanisms which prioritise sustainable travel movements over car-based trips for both approaches to Cope Bridge (where buses service Confey UDF area)	Optional	Preferred*	Preferred*	N/A**	N/A**	* Where buses serve Confey UDF and the one-lane Cope Bridge remains ** two-way bridge expected to be in-place	
Road & Bus	Junction R148 / R149 (Main St / Captain's Hill)	Improvement of town centre signals, seeking to maximise capacity for expected future use (including a review of parking and town centre pedestrian accessibility and enable future functionality for bus priority)	✓	✓	✓	✓	✓	This junction is known to be physically constrained, with existing congestion issues prevalent	
Road	Junction L1014 / 1015	Assess and improve function and safety of the junction (alignments and sight-lines)	✓	✓	✓	✓	✓		
Road	Cope Bridge - 2 way	Cope Bridge replaced to permit unsignalised, two-way travel (in consultation with Iarnród Éireann)	Optional	Preferred	Preferred	✓	✓		
Road	Kellystown Lane Bridge - 2 way	Kellystown Lane (L1014) bridge replaced to permit unsignalised, two-way vehicular travel. May be direct or parallel replacement (depending on conservation status)	x	x	x	Optional - Kellystown lane route not under particular pressure due to circuitous nature of the route. The central-west link would be preferred as a more direct access		Care should be taken in planning construction activities, such that a temporary alternative route remains available for Confey residents and users of both bridges.	
Road	Captain's Hill	Seek to improve on-going vehicle accessibility (alongside applicable walking and cycling improvements), to improve movements as a key access route to Confey	Preferred			✓	✓		
Road	Canal corridor 'central-west' link	In continued consultation with land owners and environmental stakeholders, assess the viability of creating this link (requiring a compact junction between Intel entrance and Louisa Bridge Station)	x	x	x	Preferred - Of western Leixlip routes this is expected as most suitable for traffic connectivity. Additional, focused analysis of route option is desired with improvements to the R148 also being necessary to improve the capacity, particularly with consideration of 2500 residential units at Confey			
Road	Eastern link to Lucan	Improve existing R149 (Confey Road) east of the Confey UDF lands, connecting to L3005. Priority of existing junctions changed to facilitate this improved Confey link	✓	✓	✓	✓	✓	Eastern Link and Ongar are outside Kildare and will be pursued in conjunction with Fingal County Council.	
Road	Minor improvements to Ongar	Undertake minor improvements between Confey UDF lands and Ongar	Undertaken minor works improvements between Confey and Ongar to cater for the expectant limited rural traffic increase						
Road	M4 Link	Provide a new link road from Confey to M4 J5 to the east of St. Catherine's Park						x	A new road link may have concerns from stakeholders, possible conflicts with St. Catherine's Park, requires two significant bridge spans and is expected to be significant cost. While such a link may become increasingly warranted at a later date as development occurs, by 2025 it is not favoured.
Road	Woodside to Rockingham Ave link	Provide a vehicular link between Woodside and Rockingham Avenue (or another appropriate street south of Rye Water)	Preferred - This route is expected as required where a western or central-western route is not progressed. A pedestrian and cycle link is critical in this location (listed within Active Modes)					This link may expect some local resistance, however, it may alleviate the moderate-to-high levels of congestion expected in the town centre.	
Road	Barnhall Road link	Provide a new public road link between M4 J6 and Celbridge Road (R404)	Optional - Would serve for general improvements to traffic flows throughout western Leixlip		Required if Canal Corridor is progressed to alleviate R148 congestion issues				

4. Conclusion

On completion of the STA, a number of infrastructure and service interventions have been identified to progress. These have been developed with the input of many stakeholders and through the support of technical analyses, such as traffic modelling and catchment analyses in-line with best-practice.

Multi-criteria analyses were undertaken on each mode independently to assess the needs of different user groups and yielded sets of options which may be combined to form an overall package for Leixlip's transport improvement. Each MCA has developed a logical set of options, and importantly sifts-out options which would result in weak transport benefits.

The study and optioneering process has taken cognisance of many local considerations, including the historic nature of many sites across the town, the built and natural environment, the unique topography of Leixlip and expected enhancements like DART Expansion and BusConnects.

Confey UDF is particularly well suited for development, perhaps in preference to other KDAs, due to its proximity to Confey Station and ability to increase the levels of sustainable travel. The Confey UDF area will be immediately served by high-quality rail services from Confey station to Dublin, Maynooth and further afield, and may be imminently supported by new bus services and bus facilities as development of the area progresses.

The outcome of the study concludes that there are numerous ways to support the increased residential development of the coming years, most notably at Confey, but undoubtedly across the town as a whole.

4.1 Next steps

The STA has been completed in response to the Ministerial Direction, and to inform the Leixlip LAP revision. Some difficulty was experienced throughout the study to deliver a singular road option for Confey, noting a distinct difference in travel patterns of those expecting to travel west compared to east. Some further, increasingly detailed study may be appropriate to determine and refine the most appropriate direction of road improvement for Confey, or whether both eastern and western corridors remain appropriate (as assessed in the STA).

In consultation with Kildare County Council, appropriate monitoring of the Confey UDF development may be appropriate. As the Confey community develops increasing insights may be gained from local study, for example, assessing actual trip rates of the UDF area, directionality of trips and integration with Leixlip Town Centre services. A greater understanding of local travel trends may allow for appropriate updating of staging / timing of interventions, with and appreciation of council financial planning, and early construction programming for large scale interventions such as bridge replacements.

