



**All-Island Strategic Rail Review – Draft Report for SEA Consultation.**

**Submission by the Irish Academy of Engineering**

## EXECUTIVE SUMMARY:

The All-Island Strategic Rail Review (AISRR) Draft Report has been published for consultation jointly by the Department of Transport in Ireland and the Department for Infrastructure in Northern Ireland. The review is intended to inform the future development of the railway system across the island of Ireland to 2050, in line with net-zero emissions commitments in both jurisdictions.

The Academy welcomes the publication of the draft for consultation as a significant contribution to the development of a sustainable future public transport network for the Island. However, the strategic rail review is deficient if it is not undertaken in the context of and as part of an all-island strategic transport review across all modes. Such a review is strongly recommended – the current AISRR report would form an integral part of that review.

The consultation is part of requirements associated with Strategic Environmental Assessment (SEA). Alternatives are fundamental to the SEA process, and the AISRR is flawed insofar as only rail solutions are considered and the comparison of rail interventions with each other in packages does not satisfy the requirement to examine alternatives. Indeed, the AISRR itself notes that *“demographics on the island are not conducive to supporting high density, high frequency railway networks in many places. There are some corridors and communities whose public transport needs are probably better served by bus.”*. Nevertheless, it only considers rail.

A strategy which envisages a spend of €35bn and only considers rail which can address 6% of passenger kms must be revisited as part of a greater transport strategy review. A low carbon solution will not solve the problem unless it is significantly used.

This report comments on various aspects of the AISRR making suggestions and observations. It also makes a number of recommendations including:

- An All-Island Strategic Transport Review looking at all modes must be undertaken. The AISRR will be an input to such a review.
- The Academy supports investment in and development of rail infrastructure where it delivers sustainable and cost-effective solutions.
- The rail interventions in the AISRR need to be appraised from an economic and environmental perspective with particular attention paid to realistic capital cost estimates as well as realistic forecast trip rates.
- A multi-modal freight study needs to be undertaken (all-island).
- A strategy needs to be developed in relation to electrification.
- A DART Underground solution between Heuston and Spencer Dock should be revisited.
- Benefits could be achieved by developing large P&R facilities connected to motorway junctions and new or redeveloped rail/bus stations.
- Existing infrastructure improvement and quick wins (subject to economic and environmental appraisal) should be progressed as early as possible – including but not limited to
  - Online improvements to increase train speeds and service including Dublin - Cork/Limerick and Dublin – Belfast Lines.
  - Selective Four tracking on the approaches to Dublin and Belfast.
  - Double tracking sections of single track subject to economic/environmental appraisal.

## 1. INTRODUCTION:

The All-Island Strategic Rail Review (AISRR) has been jointly commissioned by the Department of Transport in Ireland and the Department for Infrastructure in Northern Ireland. The intention is that the review will inform the future development of the railway system across the island of Ireland to 2050, in line with net-zero emissions commitments in both jurisdictions. The departments have published the draft report and supporting documentation as part of the public consultation requirements associated with Strategic Environmental Assessment (SEA). The closing date for submissions is 29<sup>th</sup> September 2023.

The Irish Academy of Engineering (IAE) is an all-island think tank whose aim is to advance the wellbeing of the country by marshalling the expertise and insights of eminent engineers to provide independent, evidence-based advice to policymakers on matters involving engineering and technology. The Academy considers that it appropriate and essential to provide an expert response to the AISRR consultation process drawing expertise from across the transportation and engineering sectors. The Academy has previously published a number of relevant documents which are available on the website including:

- IAE/RIAI Integrated Land Use and Transportation Strategy for Dublin – January 2023
- Towards 2040 – The Atlantic City Regions - Essential Infrastructure for Balanced Regional Development – July 2022
- Spatial Planning on the Spatial Planning on the Island of Ireland – IAE Summary Report – NPF Submission – March 2017
- IAE Sustainable Transport 2035 – April 2016

The Academy welcomes the publication of the draft for discussion as a significant contribution to the development of a sustainable future public transport network for the Island.

## 2. KEY FINDINGS:

The stated aim of the AISRR is to “*inform the future development of the railway system across the island of Ireland to 2050, in line with net-zero emissions commitments in both jurisdictions*”. Public transport will be provided mainly by bus and rail systems, the extent being determined by the quality and reach of our road and permanent way infrastructures. However, the entire review only considers rail (predominantly inter-city rail rather than light rail and commuter rail) as a transport mode and having confined itself to rail, compares packages of rail interventions. The Academy considers that a strategic rail review is deficient if it is not undertaken in the context of and as part of an all-island strategic transport review. It is strongly recommended that such an all-island strategic transport review be undertaken with a particular emphasis on decarbonisation of all transport. The future development of the rail system and its potential in terms of decarbonisation would form an integral part of that.

The following paragraph from page 75 of the AISRR is relevant:

*If all the recommendations were delivered, then passenger journeys undertaken on the island’s rail network could double. Similarly, the market share of rail would also double from around 3% of passenger kms today to more than 6% (before any demand management measures are considered, which could increase mode share further). It could also increase the revenues of the rail industry, depending on the fares policy adopted.*

A strategy which envisages a spend of €35bn and only considers rail which can address 6% of passenger kms must be revisited as part of a greater All Island strategic transport review. Page 12 of Work Package 1 states *‘Where attractive rail systems are heavily used, they have greatly reduced carbon emissions compared to other travel modes’* A low carbon solution will not solve the problem unless it is significantly used.

In relation to the Strategic Environmental Assessment, the comparison of rail interventions with each other in packages, does not satisfy the requirement to examine alternatives and invalidates the AISRR.

In a recent article in Irish Times, John FitzGerald wrote that *“the projects in the new rail plan, at best, would only come on stream from 2040 onwards. By then, we expect that our electricity system will have been almost fully decarbonised and that most road transport will be using clean electricity. From a climate perspective, it won’t matter by then whether people travel by road or by rail”*. In a world where funding is scarce, the relative merits of investing in our electricity generation, transmission and distribution systems (including provision for Train, Bus and EV charging) should be compared with investment in some of the proposed rail or other transport interventions.

Notwithstanding the above, the Academy recognises that Rail has an important role to play in the future of transport on the island and strongly supports the use of more sustainable energy for transport. The AISRR addresses important rail issues and rail potential, albeit in a standalone manner. It includes a comprehensive catalogue of rail interventions, and the Academy has considered the Review in detail with the caveat that an All-Island Strategic Transport Review is required before most decisions are taken.

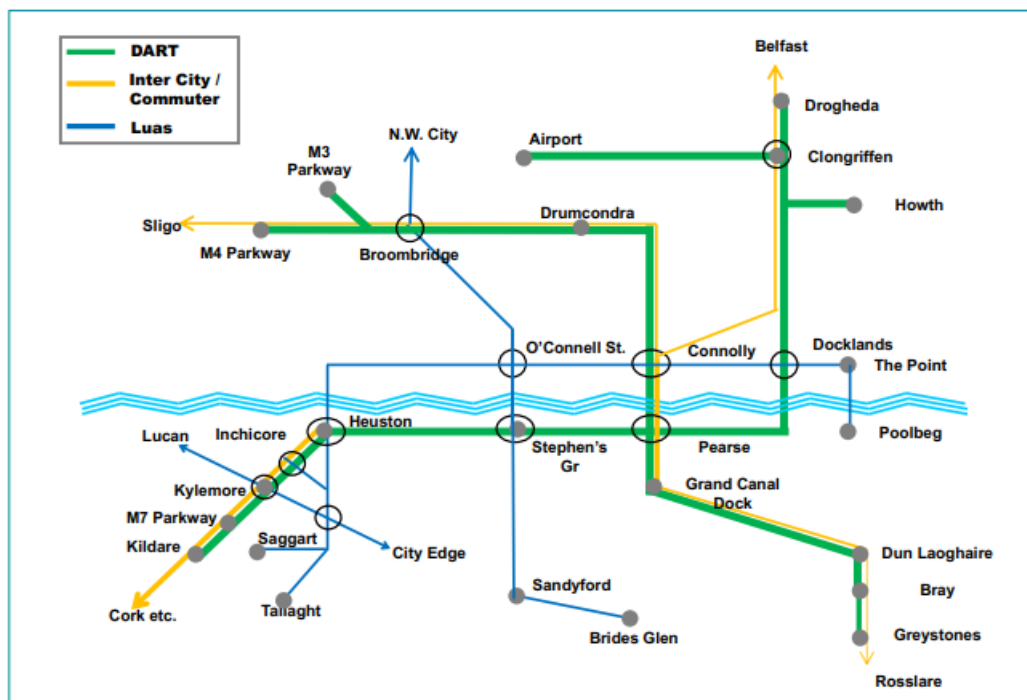
### 3. GENERAL COMMENTS:

- 3.1. On page 31 the following statement is made: *“Demographics on the island are not conducive to supporting high density, high frequency railway networks in many places. There are some corridors and communities whose public transport needs are probably better served by bus.”* The Academy agrees with the statement.
- 3.2. The delivery of interventions identified in the Review could make a significant contribution to decarbonization and to enhanced inter-urban speeds. However, if such an objective is to be met by a certain date in order to fulfil climate change targets, or to meet the needs of a growing population and economy, it is essential that fully evaluated decisions are made in both jurisdictions in sufficient time to facilitate the long lead times involved in design, development consent, public procurement, and construction.
- 3.3. Some of the proposals in the Draft Report have very significant capital cost, the estimates of which have been developed on a fairly coarse, top-down basis by applying generic unit costs to various lengths of the proposed infrastructure. While this may be appropriate for the Strategic Environmental Assessment Report, it will be necessary to develop more robust and reliable estimates for the feasibility studies of individual schemes so that they can be justified, compared with alternatives (both rail and non-rail), and then prioritised.
- 3.4. Of equal importance is reliable forecasting of scheme benefits, where a major factor is forecast ridership. The Draft Report calculated this using a gravity Trip Rate Model (TRM), in which demand for rail travel to key locations is a function of the population and the separation of the two locations (see section 2.3 of the separate Annex - Work Package 3:

Appraisal and Definition). The methodology used was at a very high level, with the TRM used to forecast trips to/from the seven cities and then expanded to infill the remaining (non-modelled) flows. It is not clear whether there was any calibration of the model, for example by using it to estimate flows on existing lines and then comparing with actual usage. Given the importance of realistic trip forecasts, we recommend that multi-modal assessment be undertaken as part of an all-island strategic transport study and also during individual scheme feasibility studies. Given current low end-to-end passenger numbers, this aspect needs to be calibrated and should be subject to constructive challenge by way of independent peer review. We note and agree with the commitment at the end of the Executive Summary on Page 14: *“More work is needed to test the feasibility of many recommendations included in this Report, and each recommendation would be subject to appraisal, environmental assessment, and decision in line with applicable governance processes.”*

- 3.5. The Draft Report does not state the Benefit Cost Ratio (BCR) of the individual scheme proposals because it is being evaluated at strategic, or package level. For each individual scheme to proceed, it will have to have its own economic appraisal to demonstrate value for money (including contribution to decarbonisation). The overall BCR of the final recommendations (all-island) is 1.0 using the Ireland Department of Transport’s Common Appraisal Framework (CAF) approach, and 0.6 using the UK Department for Transport’s Transport Appraisal Guidance (TAG) approach. Within this, it is inevitable that some schemes will perform better than others, which tends to cast doubt on the economic viability of some of the more aspirational schemes. Managing and progressing such a large programme will require significant resources, not least within the Departments and Translink / Irish Rail. To manage this, it will be necessary to prioritise those schemes which are most likely to have a positive economic appraisal.
- 3.6. It is important that the adoption of long-term proposals, such as new or restored railways, does not inhibit the early improvement of existing rail infrastructure. This could occur if these longer-term proposals served to relieve existing rail infrastructure, prompting a misguided temptation to avoid improving existing rail infrastructure. This would be a mistake, as the process to plan, develop, build and commission new and restored railways will take some decades to complete, and the early improvement of existing rail infrastructure will deliver significant benefits in the meantime. It also should not preclude investment in improved road links, which would facilitate high quality bus services, for example Early prioritisation based on value for money and easy wins is essential. These include online improvements to increase train speeds and service.
- 3.7. The cross-Dublin proposal appears to be an Intercity proposal rather than a DART scheme. However, supporting evidence for this scheme is not provided. For example, is there a demand for a direct Kildare to Drogheda train? How many passengers use the Wexford/Rosslare to Dundalk train end to end or between intermediate station either side of the Liffey? The DART Interconnector Project (also known as DART Underground) has been mooted for many years and after significant study and Public Inquiry, received planning approval in 2011. With recent and projected population growth, this scheme makes even more sense now. The joint paper from the Irish Academy of Engineering and the Royal Institute of Architects of Ireland entitled **“An Integrated Land Use and Transportation Strategy for Dublin”** published in January 2023 makes a strong case in support of a DART Interconnector resulting in a network as shown in the figure below extracted from that report. The Academy reiterates its support for a DART Interconnector solution.

Fig 2: Alternative Fully Integrated Dublin Rail Network 2035



- 3.8. To achieve a target of net zero carbon by 2050, or any other date, a fully integrated and sustainable public transport system will need to be developed. This will require the use of cost-effective energy, generated from the highest possible percentage of renewable sources, ideally 100%.
  
- 3.9. The report proposes very substantial capital investment to boost rail passenger traffic to closer to European norms. In particular, it proposes major investment to reduce intercity travel times, by rail, to levels which are better than can be achieved by road and to reduce road transport related emissions. It is noted however, that:
  - End to end journeys are a small proportion of most routes. Most journeys are between intermediate stations and large urban centres, Dublin and Belfast, for example.
  - There has been considerable reduction in road travel times achieved on the primary routes radiating from Dublin as a result of major investment in the national motorway network in the 1990's and 2000's.
  - These motorways are uncongested, by UK or European standards.
  - The primary cause of delay for intercity road travel is on the approaches to the cities.
  - The switch to battery electric vehicles will reduce car transport emissions, in the timeframe required to deliver the rail upgrades proposed.
  - Thus, it may be that much of the time saving benefits could be achieved by developing large P&R facilities connected to motorway junctions and new or redeveloped rail/bus stations on the now planned substantial upgrade of the suburban rail networks in Dublin, Belfast, Cork, Galway and Limerick.
  
- 3.10. Connectivity between the West and South coasts will most likely be achieved by bus services using renewable fuels once the National Roads are upgraded between Cork,

Limerick and Waterford - N20, N24 & N25. Again, it should also be noted that by 2040 it is likely that the vast majority of road vehicles will be powered by electricity.

- 3.11. As described in 3.9, end to end journeys are a small proportion of most routes. For example, Dublin-Belfast 6%, Dublin-Wexford 3% although Dublin-Mayo and Dublin -Sligo are at the upper end with 35% and 23% respectively. Most journeys are between intermediate stations and large urban centres, Dublin and Belfast, for example. It is also noted in Section 6.4.4. of Work Package 1 that *“with a lack of affordable housing in major cities, there is potential to enhance rail links to more affordable housing developments outside of city centres, supported by commuting by rail, particularly for the hybrid commuter who only needs to attend the office a couple of times a week. Developing such housing in a compact, transit-oriented manner around rail stations can help mitigate the potential for urban sprawl which is often associated with housing on the fringes of cities”*. This highlights the strong commuting nature of existing trips and the commuting potential. This is supported by the Academy. However, it is noted that the scope of the review did not specifically include commuter rail other than interactions with commuter rail which illustrates the siloed approach of the AISRR and further confirms that an All-Island Strategic Transport Review is required.
- 3.12. Work Package 1 Section 10 – Potential of Rail includes, inter alia, the following 4 points:
- The road fleet – primarily cars, light goods vehicles (LGV) and heavy goods vehicles (HGVs) – are forecast to reduce in average per-km GHG emissions over time. This is due to improvements in energy efficiency, and the transition away from fossil fuelled power to electric and other energy sources.
  - In the long term this trend will tend to reduce the carbon benefits of rail over road in any given year; as road vehicles decarbonise the net change in emissions between road and rail will reduce. However, rail will continue to provide an energy efficiency benefit for both passenger and freight transportation even when the carbon benefit has diminished and without the congestion issues that vehicles cause in constrained areas.
  - Per kilometre emissions from electrified rail are still lower than EVs, primarily due to the far higher occupancy rates.
  - Some research has shown that the business case for electrifying longer, and less-trafficked routes is diminishing; on such routes, hydrogen is increasingly considered to be the way forward to decarbonise the network.

These are crucial points. Bullet points 1 and 2 speak for themselves. Bullet point 3 is relevant for a potential electrified network, and for high occupancy trains (electric or fossil fuelled). However, many of the trains are not and are never likely to be “high occupancy trains”. Bullet point 4 should be considered when proposing electrification on, say, the full-length Dublin-Galway and Dublin-Cork/Limerick lines.

- 3.13. In Work Package 3 Section 2.4. the estimated passenger demand for rail in 2040 at Belfast International and Shannon airports is given as 0.5m and 0.3 m/annum respectively. This equates to an average of 1,000 and 600 passengers each way/day (based on a conservative 250 day/year calculation). This compares to the capacity of a two-car train of 130 passengers and a 4-5 car train of 250-350. Even if employment at or near those airports doubles the anticipated train passenger numbers, the demand for a regular train service is still minimal. However, a station should be considered at Belfast International Airport on a reinstated Antrim to Knockmore Jct. line if that line can be justified in further studies. A new station at Belfast City Airport on the Belfast Bangor line should also be

considered. It would provide better access to the airport than the existing Sydenham station.

- 3.14. On the other hand, the estimated passenger demand for rail in 2040 at Dublin Airport is given as 5m. A 5m passenger demand (2.5m in, 2.5m out) and likely airport employment demand suggests that a heavy rail airport link to Dublin Airport should be studied in more detail. A 21st century bus transit centre should also be considered, that is a bus interchange with the airport, with airport standard facilities.
- 3.15. No evidence (passenger numbers) is provided to support an upgraded service, for example, between Galway, Limerick and Cork. Current passenger numbers are extremely low between Galway and Limerick, the train speed is slow and cannot compete with a direct bus service. The cost of upgrading the lines Ennis to Limerick and Limerick Junction to Waterford (railway infrastructure and land for track realignment) is likely to be prohibitive.
- 3.16. The proposal to upgrade the core intercity lines to 200km/hr (125mph) will be challenging on some/many lines without acquiring substantial land to facilitate appropriate horizontal track alignment. The proposal should be subject to detailed consideration on specific routes rather than be a blanket aspiration.
- 3.17. For relatively short journeys, say Cork – Limerick (100km/60 miles) and intermediate stations (journeys < 100km) projected frequencies of one and two hours are not attractive to passengers. The Case Study Edinburgh- Tweedbank (50km) train frequency is 30min approx. on weekdays. The Case Study Exeter and Devon Metro also delivers 2 trains/hr (see Case Study text).
- 3.18. A review of the future rail travel times suggests that the predicted end to end travel times are optimistic and probably do not include intermediate station stops. As noted above in 3.9, end to end passengers are currently a minority of passengers on all lines. Example train travel times (WP 2 Table A-5 page 32):
  - Dublin – Limerick (220km) – 1hr 15mins looks very optimistic assuming an intermediate stop, and with a speed restricted curve at Limerick Junction.
  - Cork -Waterford via Limerick Junction – 1hr 30 mins, is also very optimistic, with even more speed constraints than Dublin - Limerick.
  - Dublin -Waterford – 1hr 15 mins looks very optimistic. A train either enters Kilkenny station and exits the same way (Kilkenny is a 'terminus' type station), or it uses a very constrained curved bypass south of Kilkenny at Lavistown.
  - Galway – Limerick -Waterford - 2hr 15 mins looks very optimistic due to turn backs at Athenry Station and at Limerick terminus station. It is not clear if the travel time stated includes a stop at Limerick Junction station or the likely speed restrictions between Limerick Junction and Waterford, for example between Tipperary Town and Cahir.

Predicted train travel times are important as they should be better than both bus and car travel times. It is not clear that they are for a train that makes at least one or more stops at intermediate stations.

- 3.19. The Academy is concerned that there appears to be very little analysis or evidence behind the Rail Freight recommendations. The AISRR itself notes that *“other interventions including enhanced port connectivity, inland freight terminals, reduced freight access charges and customer experience initiatives were **not quantitatively assessed but have been***

*qualitatively assessed and included in the review's recommendations*" (emphasis added). A full and detailed multi-modal study of Freight needs to be undertaken across the whole island – especially in light of changes to shipping routes arising since Brexit. It should consider future potential for decarbonisation of road haulage, origin and destination of freight and the likely modal share of rail.

- 3.20. Dublin Port is by far the largest port in Ireland, handling over 83% of total unitised freight, pre-Brexit, though this has since dropped to 77%., see Table 1. The north port has direct rail connections to all the rail lines in country, with the exception of the Rosslare line. Dublin Port Co. has now terminated rail freight services through the port, for operational reasons. There is at present no rail connection to the south port, where Dublin Port now plans to develop major new Ro-Ro and Lo-Lo terminals. It is noted that 73% of all goods to and from Dublin Port emanate from within 90km of the port and 61% within 40km (Source: Origin / Destination survey - RPS 2023). Of the 27% remaining, only 7% are LoLo volumes and therefore suitable for rail freight and they are widely dispersed throughout the state.
- 3.21. The Strategic Rail Review notes that less than 1% of the freight tonne/kms is now carried by rail in Ireland and sets an ambition that 66% of port tonnage would pass through ports with rail services. To achieve this, it proposes, amongst other interventions, that rail services be re-established from Claremorris to Athenry and from Waterford to Rosslare, to allow the development of rail freight services from Mayo, Galway and Limerick to the ports of Waterford and Rosslare. However, the AISRR does not address the suitability of Rosslare for rail freight - Rosslare is exclusively a Roll On, Roll Off (Ro-Ro) port and thus does not accept rail freighted containers. Waterford Port did handle one third of the Load On, Load Off (Lo-Lo) container traffic through Irish Ports in the 1980's. However, currently the port, which has relocated to Belview, handles less than 4% of Irish ports Lo-Lo traffic and less than 1.5% of Irish ports unitised i.e. Ro-Ro + Lo-Lo, freight traffic, see Table 1 in Appendix A.
- 3.22. The Port of Cork completed a €89m development of a deep-water container terminal at Ringaskiddy in 2022, to add to the existing Ro-Ro and Panamax class bulk terminal facilities at that port. There is no rail connection to Ringaskiddy port or no prospect of one, given Ringaskiddy's location in relation to the existing rail network. The expansion of container operations at the port is tied to the completion of the M28. Yet Ringaskiddy, and Rosslare appear to be the ports best located to capitalise on Brexit as indicated by Table 1. In addition, the further expansion of activities at both ports would appear to offer a solution to the land side access constraints now facing Dublin Port.

#### 4. IAE RECOMMENDATIONS:

- 4.1. **An All-Island Strategic Transport Review should be undertaken** with a particular emphasis on decarbonisation of all transport modes to inform the future development of transport infrastructure across the island of Ireland to 2050 in line with net-zero emissions commitments in both jurisdictions. The review must include all modes of transport and all options/opportunities for decarbonisation including decarbonisation of energy supply for transport. The future development of the rail system as considered in this AISRR would form an integral part of that review.

- 4.2. The **Academy supports investment in and development of rail infrastructure where it delivers sustainable and cost-effective solutions.** The All-Island Rail Strategic Review (AISRR) proposes a number of very important rail infrastructure schemes that have major decarbonisation and travel benefits. These are located where rail works best, where there are significant passenger numbers and where roads can be congested by private vehicles i.e., near and in major urban areas. Other proposals in the AISRR suggest rail infrastructure in more sparsely populated areas of the island of Ireland. However, the needs of these areas are likely to be best served by a high quality 21st century electrified bus network, integrated with an upgraded 21st century rail network.
- 4.3. The **rail interventions in the AISRR need to be evaluated to confirm their viability.** Particular attention should be paid to ensuring **realistic capital cost estimates** at an appropriate level of granularity, as well as **forecast trip rates** on new and improved lines, as these both have a significant effect on the economic appraisal. Both capital costs and trip rate generation estimates should be subject to independent peer review and constructive challenge. This will allow the proposals to be prioritised, ensuring that the considerable additional resources needed to develop the programme (both within the Departments and Translink / IE) can be optimised.
- 4.4. **Improvement of existing infrastructure and quick wins (subject to full economic and environmental appraisal) should be progressed as early as possible.** Even where longer term major interventions might serve to relieve existing infrastructure, it would be a mistake to defer the improvement of existing infrastructure. The process to plan, develop, build and commission new and restored railways will take some decades to complete, and the early improvement of existing infrastructure will deliver significant benefits in the meantime.
- 4.5. **A multi-modal freight study needs to be undertaken** across the whole island – especially in light of changes to shipping routes arising since Brexit. It should consider the future potential for decarbonisation of road haulage, origin and destination of freight and the likely modal share of rail.
- 4.6. **A rail electrification strategy needs to be developed** in the context of decarbonisation of transport over time including consideration of various approaches such as hydrogen as well as modes of transport. The study should also consider systems of electrification having regard to existing systems and compatibility/interoperability as appropriate.
- 4.7. The Academy reiterates its support for a **DART Underground solution between Heuston and Spencer Dock and recommends that this should be revisited.**
- 4.8. **Park and Ride facilities should be provided near motorway junctions and at new, refurbished and existing rail stations approaching Dublin, Belfast, Cork, Limerick and Galway.**
- 4.9. The following proposals (in no particular order) appear to have the best chance of demonstrating value for money and should be prioritised following full appraisal:
  - Four tracking on the approaches to Dublin and Belfast.
  - Upgrade the Dublin - Cork/Limerick and Dublin – Belfast Lines
  - Electrification of the Belfast – Dublin and Dublin – Cork/Limerick lines.
  - Clongriffin to Dublin Airport new line.

- Electrification of track throughout the network subject to economic/environmental appraisal.
- Double tracking sections of track throughout the network subject to economic/environmental appraisal, including but not limited to:
  - Bleach Green (near Belfast) to Antrim and possibly to Ballymena.
  - Dublin – Carlow/Kilkenny
  - Maynooth – Mullingar
- Short lengths of double tracking on targeted single-track lines, for example Mullingar to Sligo and Belfast to Derry/Londonderry.

APPENDIX A:

**Table 1 Irish Ports Unitised Freight Traffic 1987-2021**

**Ro-Ro Freight Traffic 1987-2021**

Units '000

Year	1987	1990	1995	2000	2005	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
<b>Port</b>																	
Dublin	91	102	206	489	630	727	725	810	861	921	868	945	992	1031	923	912	804
Rosslare	43	62	74	101	138	122	118	116	121	123	127	132	131	131	121	99	184
Dun Laoghaire	25	24	41	39	31	1	1	1	3	1	0	0	0	0	0	0	0
Cork	3	3	6	4	8	4	4	1	1	1	1	1	1	4	6	2	7
<b>Total Ireland</b>	<b>162</b>	<b>191</b>	<b>327</b>	<b>633</b>	<b>807</b>	<b>854</b>	<b>848</b>	<b>928</b>	<b>986</b>	<b>1046</b>	<b>996</b>	<b>1078</b>	<b>1124</b>	<b>1166</b>	<b>1050</b>	<b>1013</b>	<b>995</b>
Dublin % Ireland	56.2	53.4	63.0	77.3	78.1	85.1	85.5	87.3	87.3	88.0	87.1	87.7	88.3	88.4	87.9	90.0	80.8

**Lo-Lo Freight Traffic 1987-2021**

Units '000

Year	1987	1990	1995	2000	2005	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
<b>Port</b>																	
Dublin	120	142	182	272	404	319	300	300	293	323	356	374	392	408	433	424	468
Waterford	74	74	77	69	86	36	32	19	19	16	19	21	20	21	24	25	24
Cork	25	22	38	73	100	88	93	97	98	109	117	118	122	129	135	139	156
Drogheda	0	0	4	5	24	0	0	0	0	0	0	0	0	0	0	0	0
Shannon Foynes	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total Ireland</b>	<b>219</b>	<b>238</b>	<b>301</b>	<b>419</b>	<b>619</b>	<b>443</b>	<b>425</b>	<b>416</b>	<b>410</b>	<b>448</b>	<b>492</b>	<b>513</b>	<b>534</b>	<b>558</b>	<b>591</b>	<b>588</b>	<b>648</b>
Dublin % Ireland	54.8	59.7	60.5	64.9	65.3	72.0	70.6	72.1	71.5	72.1	72.4	72.9	73.4	73.1	73.3	72.1	72.2

**Unitised Freight Traffic 1987-2021**

Units '000

Year	1987	1990	1995	2000	2005	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
<b>Port</b>																	
Dublin	211	244	388	761	1034	1046	1025	1110	1154	1244	1224	1319	1384	1439	1356	1336	1272
Rosslare	43	62	74	101	138	122	118	116	121	123	127	132	131	131	121	99	184
Cork	28	25	44	77	108	92	97	98	99	110	117	119	123	133	141	141	163
Waterford	74	74	86	69	86	36	32	19	19	16	19	21	20	21	24	25	24
Dun Laoghaire	25	24	41	39	31	1	1	1	3	1	0	0	0	0	0	0	0
Drogheda	0	0	4	5	24	0	0	0	0	0	0	0	0	0	0	0	0
Shannon Foynes	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total Ireland</b>	<b>381</b>	<b>429</b>	<b>637</b>	<b>1052</b>	<b>1426</b>	<b>1297</b>	<b>1273</b>	<b>1344</b>	<b>1396</b>	<b>1494</b>	<b>1487</b>	<b>1591</b>	<b>1658</b>	<b>1724</b>	<b>1642</b>	<b>1601</b>	<b>1643</b>
<b>Total Ireland Index, 1987 = 100</b>	<b>100</b>	<b>113</b>	<b>167</b>	<b>276</b>	<b>374</b>	<b>340</b>	<b>334</b>	<b>353</b>	<b>366</b>	<b>392</b>	<b>390</b>	<b>418</b>	<b>435</b>	<b>452</b>	<b>431</b>	<b>420</b>	<b>431</b>
Dublin % Ireland	55.4	56.9	60.9	72.3	72.5	80.6	80.5	82.6	82.7	83.3	82.3	82.9	83.5	83.5	82.6	83.4	77.4