

WEST CORK RAIL



SUSTAINABLE TRANSPORT FOR ALL

LOCAL LINES LLR47

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Introduction

Comments and ideas outlined in this document are framed within the context of key developments in current rail transport strategy. There are many models now available worldwide for sustainable regional rail development strategies, which could be applied in the Irish context. Recent work carried out in the UK is particularly relevant¹.

New approaches in Irish Railway Development

This Submission builds upon the increasing awareness of rail transport as a sustainable resource and as a significant contributor to balanced regional development and to emissions reduction. This is commendably reflected in many Regional Planning Guidelines, County Development Plans and Local Development Plans, taking the positive lead shown in the National Spatial Strategy. Rail development is an essential part of car dependency reduction.

Recommendations in this document are made within the context of broader innovations and developments taking place in rail and transportation infrastructure in Ireland;

(a) National Transportation Corridors (NTCs)

The concept of National Transportation Corridors, based upon the National Spatial Strategy, seeks to fully integrate and develop simultaneously road and rail modes within a defined Corridor. It facilitates much more balanced infrastructure project funding, with highly significant social, environmental and economic advantages. It moderates the design requirements for road schemes whilst using the parallel rail mode to its full potential.

(b) InterCity Network Extensions Programme (NEXT)

The NEXT programme has been developed to implement the rail element of the NTCs. It envisages nine projects around the country and details are currently with the government and CIÉ.

(c) Local Lines

Local Lines is a national initiative to establish low-cost feeder rail links from smaller settlements to main lines and regional centres, using a variety of new technologies and practices. West Cork Rail is included in the initial proposal.

(d) New Financial Practices

Rail has traditionally been accounted for using crude income and expenditure-based analyses. At best, these are highly subjective and ignore the enormous indirect benefits of the mode. More sophisticated tools are now available that radically enhance the viability of many rail schemes by analysing their cost / benefits with regard to their indirect benefits².

(e) Railfreight Innovations

Ireland is the only country in Europe that does not currently offer tax incentives for the construction of new railfreight facilities nor encourage logistics operators and their customers to incorporate the rail mode into their

transport chains. This situation is expected to be rectified in the near future. Additionally, a key advance in Railfreight - the Minimodal® system using techniques adapted from aviation cargo - has yet to be adopted here. This is a low-cost, extremely versatile road / rail freight handling system which in trials in the UK has had a dramatic effect in reducing lorry movements without compromising the economics of the supply chain³.

(f) New rail partnership structures⁴

Both the NTC and NEXT concepts embed active participation by the Community and Local Authorities, Chambers of Commerce and other groups, in partnership with Iarnród Éireann. Nascent forms of this are already in existence⁵.

(g) Protection of Rail Infrastructure Bill⁶

This formally secures disused or abandoned rail alignments and protects them from development that would hinder their re-opening. The Bill vests ownership of these rail alignments in Local Authorities and CIÉ and safeguards their future in the national interest.

(h) Regional rail services

The NEXT programme, referred to above, makes possible the introduction of many new high-quality rail services around the country. The majority of these provide strong links between towns and cities not catered for by the existing network, which suffers from being focussed on radial routes emanating from Dublin⁷. The main advantage of these services is high quality and connectivity, both with other parts of the rail network and with other transport modes. Innovative features are use of low-cost construction methods and operating systems, integrated cashless ticketing, ease of use, reliability and faster journey times.

Current Situation

West Cork once had an extensive rail network. All major towns were connected, with a main line from Cork Albert Quay to Bandon and Bantry, and branches to Skibbereen and Baltimore, Schull, Clonakilty, Timoleague and Courtmacsherry, and Kinsale.

In the late 1950s and early 1960s car, lorry and bus transport were seen as the transport modes of the future and this resulted in wholesale closure of the rail network in Ireland, from a peak mileage of 3500 to less than 1200 today (a reduction of nearly 66%).

In West Cork, this led to the very regrettable total cessation of passenger services in 1961, amid highly controversial circumstances as the line carried strong freight and passenger traffic to the very end. Indeed, in railway circles the closure of the entire West Cork system is seen as second only in gravity to the closure of the Harcourt Street line in Dublin in 1958.

However, in these more enlightened times the true costs of road-based modes are now known, in tandem with the true benefits of rail. There has also been a realisation that provision of more and more roadspace is not a solution to the

ever-increasing severity of road traffic problems⁸. This has prompted a re-visiting of rail-based solutions, and has been greatly helped by the current availability of new low-cost passenger and freight rail construction techniques and operating methods.

The Need for the Project

Car- and lorry-dependency are now a significant danger to long-term growth, competitiveness, prosperity and well-being in Ireland. Road-based traffic is “the greatest threat to Ireland’s air quality” (EPA 2004), and a source not only of the CO₂ gases involved in climate change, but also of particulate emissions (PM₁₀s) hazardous to human health. Such particulates have been shown to be responsible for approx. 200,000 premature deaths annually across the EU, and for € 80 million worth of productivity lost to employers in sick leave per year (both EUROSTAT 2004). Increasing levels of road traffic is also inherently dangerous, resulting in very high numbers of deaths and injuries to Irish people every year.

Unfortunately, attempts to address this by building even more roads have failed; new roads generate more traffic (UK SACTRA 1994), reinforcing dependency, undermining public transport viability and generating more costs to the motorist (author’s 2005 study). Road-building also contributes to urban sprawl, fosters inappropriate spatial planning and development patterns, and leads to community severance, loss of amenity, visual intrusion and significantly raised ambient noise levels. Finally, car- and lorry-dependency are huge drivers of energy consumption, contributing significantly to Ireland’s oil dependency and accounting for at least double the energy consumption of other sectors in the economy in the period 1998 – 2002 (EPA 2004). (Also, at the time of writing the price of oil has hit the \$60 per barrel mark).

By way of contrast;

- Rail produces around 80% less CO₂, per tonne carried, than road
- EU figures show that rail is 27 times safer than road
- A typical passenger train trip can take 360 cars off the roads
- An average freight train can remove 40 HGV journeys from the roads
- A 40-tonne lorry causes over 10,000 times more damage to road surfaces than an average car
- Rail freight’s external costs are four times less per tonne kilometre than road
- Rail promotes social inclusion and public mobility
- Rail ensures more reliable journey times for both passengers and freight

The rail mode can thus play a very important role in addressing the urgent need to switch emphasis away from a roads-based transport model to other modes. This can be achieved using a mixture of rail, coach, minibuss and van modes in an integrated passenger and freight system.

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West Cork Rail

This need to move away from ever-increasing car and lorry dependency sets the scene for a realistic and viable partial re-opening of the county's rail network. This study has identified the former main line from Cork to Bantry, and the Skibbereen and Clonakilty branches as being suitable for inclusion in the scheme. It is important to note that the scheme proposed here commences at Bandon; this is due to the fact that the area nearer to Cork city requires its own project. Since the two go hand in hand, the latter is outlined in some detail towards the end of this document.

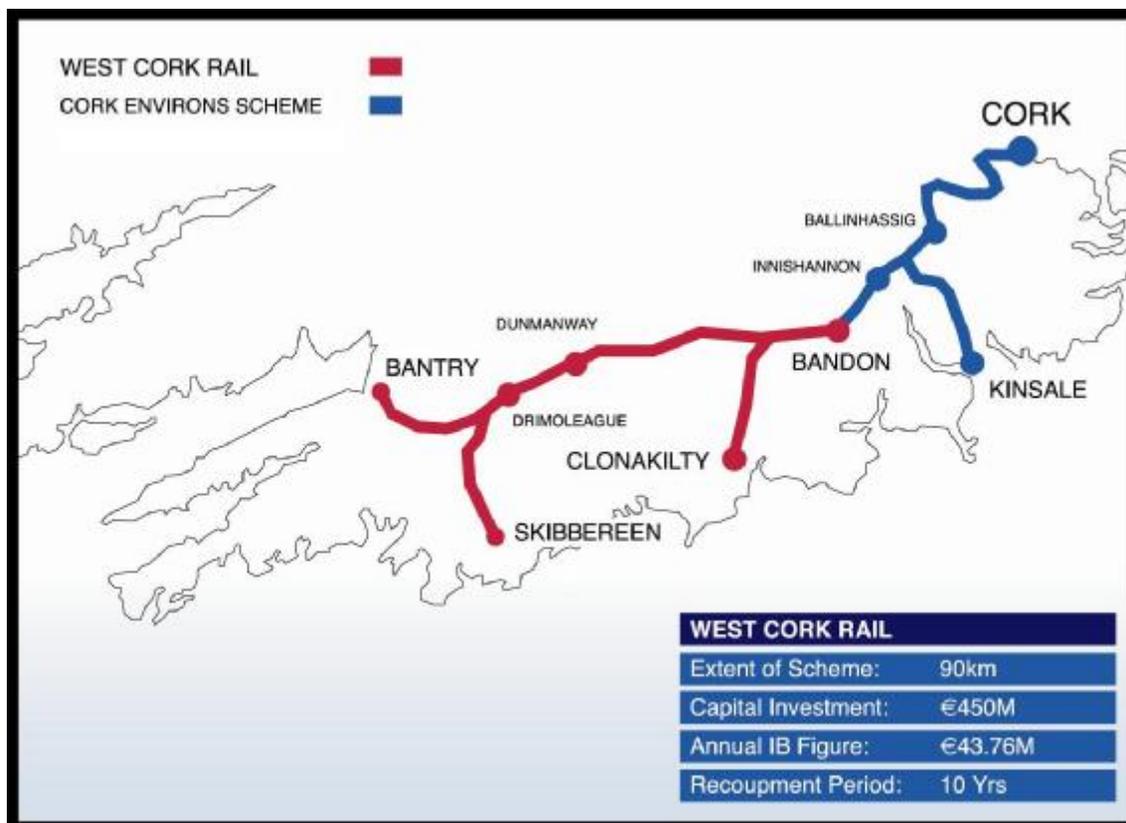


Fig 1- West Cork Rail schematic showing relationship to connecting Cork Environs project

Bandon to Bantry, Skibbereen and Clonakilty

Re-opening to all three former railheads west of Bandon is recommended to obtain the highest value from the proposed investment. A common error in transport system planning is to assume that passengers will travel long distances by car or bus to reach the railhead. In fact, it has been known since the 1960s that if the railhead is beyond a certain distance, convenience diminishes proportionately and the passenger will make their entire journey by car or by bus rather than by train. Therefore inclusion of railheads at Skibbereen and Clonakilty is vital if the project is to work as a whole, both economically and technically.

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Appropriate Technology

It is important to be aware that there are a great many types of train technology, ranging from conventional InterCity-type heavy rail, through to very light tram-style vehicles. Recent years have seen the emergence of hybrid technologies such as the "Tram-Train", and this system is highly appropriate to West Cork.

The Tram-Train

Essentially, the "Tram-Train" is a light rail vehicle which is capable of running on-street in tram mode, but can also run on the conventional rail network. This becomes important not so much in the Bandon – Bantry context as in the Cork City area, so that West Cork Rail vehicles can run through to Kent Station and points beyond, using a combination of on-street and reserved trackwork. This is made clearer when discussing the Cork Environs scheme later, which envisages two routes into Cork city centre from the south and west. The outcome of adoption of such technology is fortuitous, in that it lays the foundation for a larger network of tram routes around Cork, using their own lines or running onto the existing Iarnród Éireann network.

However a spin-off advantage of this technology in West Cork is that it permits much closer location of stops in the town centres than previously, with the tram-train being able to depart the segregated rail alignment and run into the central area via comparatively short lengths of on-street trackwork. This would have application in Skibbereen, Clonakilty and, under the Cork Environs scheme, Kinsale.

Railfreight

Considerable scope now exists to remove HGVs from the region's roads using new railfreight handling methods.

The MiniModal system (www.minimodal.com) has great potential for local deliveries along the main Cork - Bantry rail axis, as well as to Skibbereen and Clonakilty

There is also potential for heavier inter-modal traffic using Standard Demountable Units (SDUs)⁹. In this case loads can travel directly from any point in the country to Cork, then on to West Cork after shunting at Kent Station or the Tivoli terminal in Cork city. Provision for this is made in the Cork Environs Scheme (see below).

Integrated Cashless ("Smart Card") Ticketing

A highly critical aspect of any rail project today is the need to provide a seamless integrated "smart card" cashless ticketing system. Such a card is currently in use on the LUAS system in Dublin, and significantly boosts patronage due to its simplicity and high level of convenience. In contrast, previous methods, where tickets have had to be purchased at booking offices, have been a major deterrent

to modal shift, due to queues, delays and other problems. Further, the “smart card” comes into its own where more than one mode of travel is needed, for example where one uses a bus or minibus to get to the station. Again, the current system where one must produce change and buy a ticket for the bus, then queue at the station for a train ticket, is most unsatisfactory and inconvenient. With the “smart card” however, one only has to “bleep on” when boarding the bus, then “bleep off” at the station, then “bleep on” again when boarding the train, and “bleep off” when the destination is reached. Also, it can be easily “topped up” as required. A system-wide smart card would allow further journeys beyond the destination station, thus providing a highly convenient “door-to-door” public transport solution.

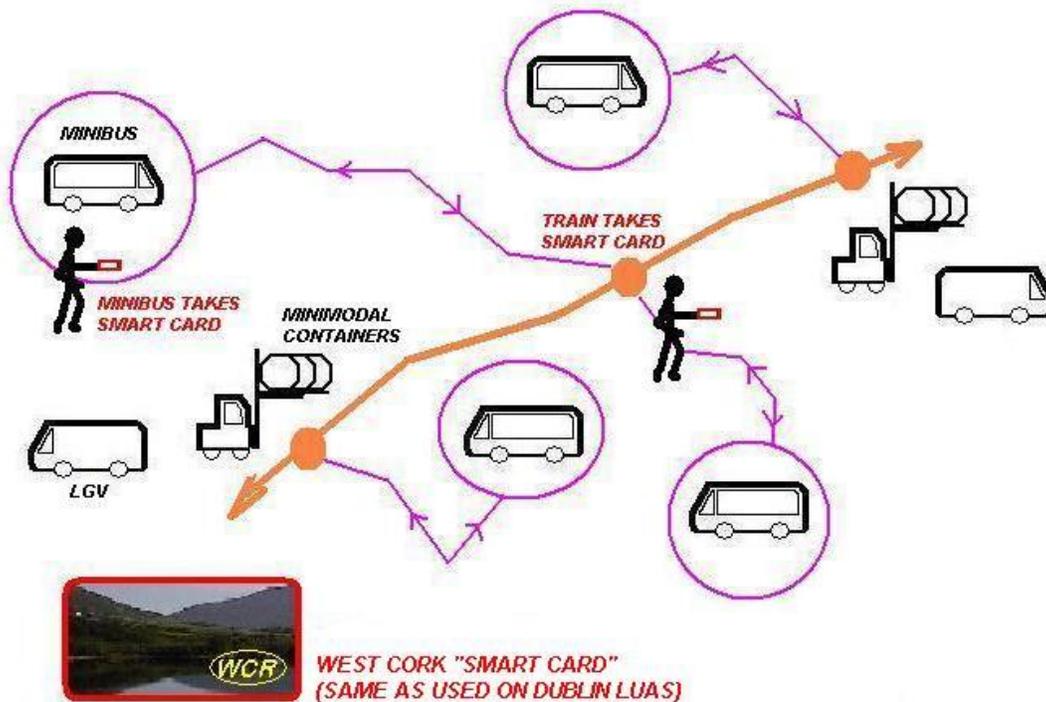


Fig 2 – WCR “Door-to-Door” Integrated System for Passengers and Freight. The former uses feeder bus / minibus services and smart card ticketing; the latter uses Light Goods Vehicles (LGVs) and forklifts for Minimodal loads

Extending the Market: “Plus Bus”

“Plus Bus” is a simple extended ticketing system currently in use by First group in the UK. Passengers can buy a train ticket at a station whose price also includes the cost of a bus journey from the destination railhead to the final destination of the passenger. This significantly extends the reach of the rail network, whilst significantly boosting sales because of the convenience afforded. Though a “smart card” ticketing system would duplicate these advantages, the “Plus Bus” concept could sit alongside it for use by tourists and other occasional users who would not have access to a West Cork smart card.

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Extending the Market: Additional Ticket Outlets

The West Cork lines could further offer on-line ticket purchase, as recently introduced on the rest of the IÉ network. An important additional outlet would be Post Offices, this idea both significantly benefiting both the rail network and the Post offices – a win-win for all.

Rail Vehicle Design and Livery

West Cork Rail rolling stock must be aesthetically attractive, ergonomic, accessible, environmentally-friendly and reliable. Thankfully, many manufacturers have embraced these concepts and foregone the ugly and impractical designs of the past. Good examples are Alstom's Citadis light rail vehicles used on Dublin's LUAS lines (although note these are light rail only).

Reinventing the Station / Stop

West Cork Rail affords the opportunity of completely “re-thinking” the station and its role in the community. Careful attention must be paid to station design, avoiding the trap of cost-cutting and deeply unattractive “minimal facilities”. The rail travel experience can be shattered by having to wait on a freezing, poorly-lit, wind-swept platform, with only a crude bus-type plastic shelter for accommodation – a completely unacceptable approach that will deter the vast majority of potential users. Instead, natural materials such as wood and stone, harmonious design that reflects the locality, and practical ideas for passenger comfort should be vigorously pursued.

There is also a pressing need to get away from simplistic “platform with car-park”-type thinking; this reinforces local car dependency. Instead, heavy emphasis should be put on station access via bus and minibus, and especially by foot and by bike. Far too often, stations are designed around cars and are actually quite difficult to get to safely by pedestrians and cyclists. Also, “park and ride” facilities that are not matched by complementary bus and minibus services can generate local traffic congestion in themselves.

If necessary, “carrot and stick” tactics could be used, rewarding those who travel to stations sustainably, and discouraging unnecessary car trips.

It is also vital to avoid the unmanned station model; this has proven to be a particularly negative form of cost-cutting, deterring user groups such as women because of the risks involved in waiting in lonely, isolated locations.

Instead, the station should be a focal point of activity, perhaps performing additional functions to transport. Some examples include running a café, shop or post office / bank, providing space for community groups, or combinations of these or more. The over-riding imperative is to have activity present whilst trains are running, right up until after the last train. The situation often seen on IÉ for instance, where the station shops or facilities close early in the evening - leaving passengers for later services alone and vulnerable – is unacceptable. The

converse approach will boost attractiveness of West Cork Rail - and generate sustainable local employment to boot!

Finally, stations and halts can be models of sustainable development in themselves, being constructed using energy-efficient techniques and materials and employing systems such as combined heat and power (CHP), and self-sufficient energy-generating methods such as roof-mounted solar panels, windmills - or where there is a watercourse - hydro-electricity (via a water wheel).

There are now many tools and techniques to deliver these technologies, and indeed buildings of this type can be made self-regulating, absorbing heat in the summer and radiating heat in the winter.

Services

Innovation can also be applied to services. Trains should run to “clockface” timings, allowing for ease of use and dispensing with the need for complex and cumbersome timetabling. Frequencies should be as high as possible; high frequencies being now known to be a major driver of attractiveness and patronage.

Another interesting idea is the “leap-frogging” technique, where trains leave for their destination on the hour and the half-hour but buses follow on the same route at a quarter-past and a quarter-to the hour. This is an example of “competition with integration” and is a powerful stimulus to modal shift away from the car. At any given time the passenger knows if they miss a train they can get a bus shortly thereafter, and vice-versa.

Sharing the public transport load between rail and bus in this way adds dramatically to overall capacity and has a “spillover” effect, with higher loadings on both modes because of the attractiveness of the whole package to the user.

There is also scope for running tourist / heritage services in conjunction with companies such as Railtours Ireland and bodies such as the Railway Preservation Society of Ireland (RPSI) and the Irish Traction Group (ITG). However these do depend on the degree of interoperability achieved on the proposed sections in Cork city, and other factors. This is discussed below in the section on the Cork Environs Scheme.

Finally, a tram /train depot and maintenance facility would generate significant employment wherever it would be located.

Community Participation

Full community participation, giving a sense of ownership and partnership, is absolutely essential for the West Cork project to succeed. More intensive participation, e.g. via community workshops, is especially important for all aspects of the work including station designs and feeder services.

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Outline Cost-Benefit Data

A rough outline analysis can be made in relation to reopening these lines as the basic parameters are known. These include known basic international costings for tram / train provision, running on segregated single track, and including construction, electrification, property and rolling stock acquisition and other cost headings¹⁰. Furthermore, a benchmarked indirect benefit per km figure for rail projects nationally has been ascertained by the author.

It is also possible to compare the total investment to current expenditure per month on the national roads programme. This is very useful for putting rail investment levels in perspective. Applying the formulae yields the following;

Bandon – Bantry	62km	€ 310 million
Clonakilty Junct. – Clonakilty	15km	€ 75 million
Drimoleague - Skibbereen	13km	€ 65 million
Total Km /Investment	90km	€ 450 million
Indirect Benefits pa on: 90km		€ 43.756 million
Investment Recoupment Period		10 Years
Roads Programme Equivalent Spend		12 weeks

These basic initial indicators are very positive, with viability meeting the 10-year recoupment period used for evaluation¹¹, and the total spend equating to just 12 weeks equivalent of the current national roads programme expenditure. Also, maximum costs have been used to compensate for over-optimistic forecasting.

Promoting Sustainable Development in West Cork

One of the great advantages of rail development is that it focuses development in a sustainable way on the larger and smaller settlements in a region. It avoids the highly detrimental sprawl which is a by-product of unrestricted road-building, and very importantly, promotes locally-based sustainable travel patterns, as opposed to long-distance commuting and other negative patterns. Sample journeys could include Clonakilty – Bandon for example, or Bantry – Skibbereen, or Clonakilty – Bantry, and so on. The locally-based rail network could be facilitated by enhanced minibus services under the Rural Transport Scheme, feeding into local stations / interchanges. Additionally, such minibus services could be run using sustainable fuels, also produced locally; this new approach would also generate significant local employment.

Other Modes and Integration

Much transport planning suffers from a polarised approach; e.g. the (false) opposition of bus and rail modes. In fact, in a market where there is greater than 90% potential for public transport use¹², it follows that there is a big enough “cake” for all public transport modes.

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In essence, significant modal shift away from the car and HGV requires all these modes, namely, minibus, coach, bus, passenger rail, railfreight and passenger / freight light rail. As mentioned, “smart card” ticketing also allows integration of these modes where the passenger is concerned, thus leading to a boost in patronage across all of them, as the passenger uses a combination of these to achieve a “door to door” public transport journey.

Cork Environs Scheme

As referred to earlier, the West Cork Rail project dovetails with a similar project centred on Cork City and interfacing at Bandon.

This latter scheme is much more complex, as it involves street running in Cork, a connection to the airport and a proposed “dual purpose” link between Kent Station and the line to Bandon / West Cork, capable of carrying both the tram-train vehicles referred to earlier and conventional IE freight and passenger rolling stock. Whilst freight trains would be intended to have the ability to run through to Bandon, Bantry, Skibbereen, Clonakilty etc. (but not on any street-running sections in the latter two places), IE passenger stock would only be handled on a “special working basis”, and only if it were feasible to accommodate such working cost-effectively at the design stage (West Cork and IE rolling stock would probably have different loading gauges).

A proposed schematic of the Cork Environs scheme is shown overleaf. Essentially there are five aspects to the concept;

1. A circle line running on-street mainly in the western half and designed for tram-train and light rail rolling stock.
2. The eastern half of the circle can accommodate both tram-train / light rail rolling stock and conventional “heavy rail” freight stock, as well as IE passenger rail stock via special working arrangements.
3. The eastern half of the circle is not on-street, but runs on conventional track. Likewise the branches from the circle, which would serve the Airport (express line) Ballincollig and Carrigaline as well as the line to Bandon. The Ballyphehane – City Hall section would follow the current South City Link Road (itself formerly the trackbed of the line to Bandon closed in 1961), possibly at high level.
4. Because the tram-train stock can run onto the normal rail network, provision is made for through running up to Blarney and westwards to Cobh and Youghal.
5. A dedicated single-track heavy rail connection - the “Lee Link” - is proposed between Kent Station and the City Hall section of the Cork Environs scheme. Though there would be on-street connection between these two places, this would be suitable only for tram-train / light rail vehicles. Moving freight stock and special passenger workings over this line could be extremely inconvenient due to the length of the trains, and may be technically impossible due to on-street track curvature, etc. It should be noted that though the former Cork City Railway was a conventional heavy rail link running on-street, this operated in a time of very low traffic volumes. Such working today would cause unacceptable traffic disruption. If the link were elevated it could connect at grade to any high level section from Ballyphehane, mentioned above, and also minimise property disturbance.

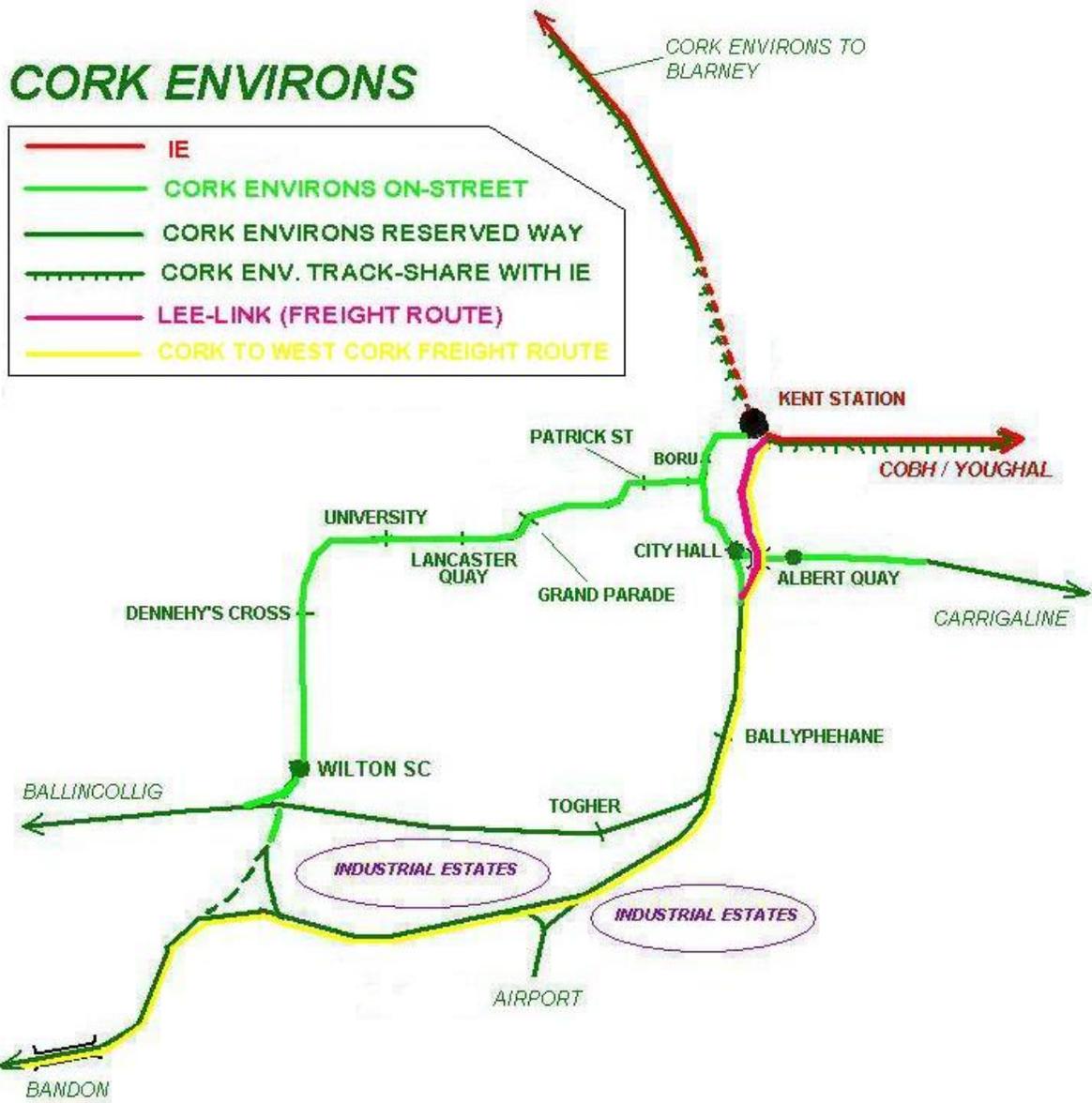


Fig 3 – Cork Environs Scheme, incorporating several different elements, as outlined in the text. Not all stops shown

Scheme Costs and Benefits

Unfortunately, the complexity of the Cork Environs Scheme means an accurate cost / benefit analysis, even in outline form, is beyond the scope of this study and would have to be evaluated by Others. However it should be noted that the last few years have seen significant advances in tramway construction; in particular the introduction of new on-street track technologies which minimise construction costs and importantly, minimise building disruption – a major issue in previous urban light rail projects.

It's also important to point out that the on-street portion of the Cork Environs scheme is only around 50% of the city-based part of the network, and a smaller proportion again of the total extent of the completed project.

Summary

- ✓ **The threats posed by climate change, congestion and pollution are creating a powerful new economic context for balanced road-rail development, augmenting other factors such as balanced regional growth and proper spatial planning**
- ✓ **Preliminary indications are that West Cork's rail network can be revived in a feasible and viable manner**
- ✓ **The selected lines in the county west of Bandon can be reopened for passengers and freight for an estimated € 450 million, this investment being recouped in 10 years and equivalent to 12 weeks expenditure on the current national roads Programme**
- ✓ **New modal switch technologies such as Smartcard integrated ticketing and MiniModal cargo handling, with local minibus and van connections to stations, permit "door-to-door" passenger and freight movements, radically boosting ridership and re-introducing large-scale freight to the railways**
- ✓ **High-frequency "turn up and go" timetabling makes travel highly convenient and also promotes significant modal switch**
- ✓ **Rail routes absorb road passenger and freight traffic growth, facilitating reduced road designs and freeing up space on main routes**
- ✓ **Local stations provide physical integration between road, rail, bus, cycle and pedestrian modes, for both passenger journeys and freight flows**
- ✓ **The proposal develops a strong Cork - Bantry artery, the route having strong end points with excellent connections**
- ✓ **An "all-purpose" railway design, carrying several types of passenger and freight traffics, will maximise direct receipts**
- ✓ **Rail development in Cork as a whole would facilitate policies to promote its growth as an autonomous region with strong local travel patterns and connections, and with access to other points on the national rail network for both passengers and freight**

References

1. c.f. Association of Community Rail Partnerships (ACoRP);
2. Research carried out by the author, based on current data, shows that railways in Ireland are currently returning €486, 280 per kilometre per annum in indirect benefits, such as emissions and accidents prevented, time saved, environmental costs avoided, and so on;
3. c.f. www.minimodal.com; usual disclaimer;
4. c.f. Regional Rail, available from this author;
5. c.f. Ballybrophy-Limerick Rail Partnership;
6. The current draft of this proposed Bill is available from the author;
7. NEXT is available from the author;
8. As far back as 1994, the UK Standing Advisory Committee on Trunk Road Assessment (SACTRA) reported these findings;
9. SDUs use a standard ISO container chassis to transport a wide variety of loads, such as bulks, timber, palletised goods; even cars;
10. Light Rail costs typically €3 million to €5 million per km for segregated single track (electrified); this study has used the higher figure;
11. This is actually more strict than the typical 15 year period often used for infrastructure projects, and the 30 year period used for major schemes;
12. Public transport and rail freight use in Ireland is in the single percentage figures, with differing percentages cited. However railfreight is now confirmed at just 2.5% of all freight movements in Ireland (EUROSTAT 5/2005).