

Transport issues in Jersey

Review of light rail and alternatives

Report

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1 Introduction

- 1.1 The Jersey railway opened in 1870 providing services between St Helier and St Aubin. An inland extension to Corbière commenced operations in 1885. The railway was constructed as a passenger service but primarily carried freight and soon became a tourist line. The railway closed in 1936. The track alignment remains largely intact and for much of its length is a pedestrian and cycle path. The St Helier and St Aubin train stations now house public services (the tourist office and Breilade Parish Hall respectively).
- 1.2 In 1995 Steer Davies Gleave examined the feasibility of a light rail transit (LRT) system along the former railway corridor. The study concluded that an estimated two hundred and thirteen passengers would use the service during the AM peak hour. Whilst physically feasible, an LRT system would not generate sufficient revenue to recoup the construction costs nor operate without significant and on-going subsidy to the operator from government.
- 1.3 The States of Jersey is currently developing a sustainable transport strategy to address the challenges of high car dependency (including local / air noise pollution) and has commissioned Steer Davies Gleave to re-examine the transport options along the original corridor, taking account of changes in technology and the proposed alignment over the past 15 years.
- 1.4 The review is structured as follows:
 - | Chapter 2 provides an overview of the different mass transit technologies that may be appropriate for Jersey, namely LRT, ultra light rail transit and bus rapid transit.
 - | Chapter 3 examines the physical feasibility of these technologies along the former rail alignment.
 - | The potential passenger demand for each technology and a brief discussion of the likely financial feasibility of rapid transit technologies in Jersey is provided at Chapter 4.
 - | The report concludes with a brief summary of the study's findings.

2 Technology review

Introduction

- 2.1 In this context the word 'technology' refers to the aggregated technical system used for a public transport mode. Conventional buses and railways are two such technologies that are familiar and easily defined, but others are more complex to define and may be less familiar, involving various combinations of guidance and track systems, traction power and vehicle type, together with other characteristics such as speed capability, control systems, signalling and capacity.
- 2.2 Numerous such technologies are to be found in operation or under development in various part of the world. Some of these are well-established and widespread, others have been established for many years but have achieved few practical applications, while others still remain relatively unproven. In addition, some systems are flexible enough in their characteristics to be applicable in a wide range of circumstances (in terms of physical constraints, level of demand etc), while others are 'niche players' ideally suited to a particular applications but unsuitable for many others.
- 2.3 Defining an 'ideal' technology for a particular application is very difficult, and is made more complex by the variations between individual existing systems that use the same technology. However, for any particular application, there is normally a relatively small number of technologies that are likely to be suitable for the physical attributes of the corridor in question and the expected level of demand.
- 2.4 In the case of the corridor west from St Helier, the key technical requirements that define the range of suitable systems are:
- | A modest line capacity, and hence
 - | A relatively low construction cost, to ensure cost-effectiveness
 - | The ability to share space with traffic and pedestrians at grade, if not continuously then at crossing points or on short sections of route
 - | A 'line haul' system, i.e. a fixed route with intermediate stops
- 2.5 The first and second of these are a consequence of the demographics of Jersey, with a relatively small population in the catchment area of the corridor.
- 2.6 The third is dictated partly by the physical characteristics of the corridor, within the constraints of the first and second requirements. Taken together, these mean that a fully segregated system (such as a monorail) would be impossible to achieve without disproportionate cost and visual impact.
- 2.7 The fourth means a conventional linear system similar in concept to conventional buses. Since the origin of demand is distributed along the route, it is necessary to allow for a wide range of journeys, even if the bulk of these start or finish in St Helier. While certain high-tech systems such as automated people movers could also provide for this type of demand, they would require full segregation from pedestrians and road vehicles and therefore do not meet the third requirement - and are not generally suitable for highway based corridors.

2.8 A further requirement is that any new system must offer improved quality compared with conventional buses, in terms of journey time (and, perhaps more importantly, journey time reliability), passenger environment (on and off vehicle), ease of use, accessibility and permanence. There are three main technologies that meet all the above requirements and are therefore worth initial consideration for the St Helier western corridor:

- | Light rail transit (or modern trams)
- | Ultra light rail transit; and
- | Bus rapid transit

This chapter provides an overview of these technologies and more detailed information on the different vehicles, system characteristics and potential capital and operating costs.

Light rail transit

Overview

2.9 Light rail transit (LRT) or modern tram is an intermediate public transport mode offering potential for higher capacity and higher quality transit than traditional bus at a lower cost than railways. A development of the street tramway (with which it shares its basic vehicle and track type), LRT is the term generally applied to systems that can operate in a range of environments, from pedestrianised streets and shared traffic to segregated rights of way.



Street Running – Dublin, Ireland

2.10 Trams run on conventional steel rails installed either on a dedicated right of way (in which case ballasted or grassed track can be used) or on-street (with grooved rails set in the surface). They feature various forms of physical segregation and visual differentiation to ensure safety. Priority over other vehicular traffic (via signalling and similar measures) is often used to minimise journey time.



Grass Track – Lyon, France

2.11 There are hundreds of LRT systems operating worldwide and seven in the UK, which vary in the design of vehicles they use, their size and the amount of segregation from other traffic.

Operating characteristics

Vehicles

2.12 A very wide range of different types of tram/light rail vehicles is available, allowing capacity to be increased without changing the frequency of operation and hence the number of drivers. Vehicles range in length from 15 to 70 metres and are typically 2.3 to 2.7 metres wide. Newer systems use low-floor vehicles for step-free accessibility.

- 2.13 Vehicles are driver-operated and generally controlled on line of sight like road vehicles, although it is possible to supplement this with railway-type signalling where safety considerations dictate, for example to prevent two trams entering a single track section. Highway signalling is used at road intersections, usually with distinct tram-only aspects.
- 2.14 Depending on size, each tram can accommodate between 100 to 400 people, with seating for approximately 30 to 90 passengers (30%) and, normally, space for 2 wheelchairs. This proportion is typical for urban applications but vehicles with a higher proportion of seating can be specified.

Power supply

- 2.15 Vehicles are normally electrically powered from an overhead wire with return current via the rails. The power supply may be located under the road surface in visually sensitive areas, though there are limited examples of such an approach and costs are significantly increased. There are examples of diesel-powered tram systems but these are very rare.

Stop infrastructure

- 2.16 Stops are generally high quality, designed to reinforce a brand identity for the corridor. They are generally slightly raised from street level (typically 300mm) providing level access to the vehicle.
- 2.17 Stop facilities are generally more sophisticated than for buses and may include seating, shelter, passenger information (including real time journey screens), ticketing, passenger announcements, CCTV and shelter.



In Street Stop – Lyon, France

Alignment

- 2.18 LRT systems are usually highly segregated, either within the highway boundary or on a dedicated right of way. The alignment is usually at grade, but overpasses, underpasses and tunnels are often used for short sections. They are afforded a high level of priority at junctions to improved journey time and reliability.

System capacity and demand

- 2.19 LRT systems are typically able to carry between 5,000 and 8,000 passengers per hour per direction, though higher figures are possible by using coupled vehicles.
- 2.20 In French towns, a typical figure of 40,000 passengers per day is used as the minimum demand to justify a tramway although a few lines carry less than this in the initial years, e.g. Nantes Ligne 3.

- 2.21 LRT appears to be particularly effective in attracting passengers from other modes, particularly the car¹, as shown below:
- | Tyne & Wear Metro: 16% of users of the Sunderland extension previously used car.
 - | Docklands Light Railway: The proportion of car trips reduced from 22% to 11%.
 - | Manchester Metrolink: Different monitoring studies show that the proportion of Metrolink users to central Manchester who previously travelled by car ranges from 11% to 21%.
 - | Sheffield Supertram: The monitoring study for Sheffield Supertram found that the proportion of Supertram trips previously made by car was around 20%.
 - | Midland Metro: Among users of Midland Metro, 14% of passengers have reportedly transferred from cars (10% car drivers, 4% passengers).
 - | Croydon Tramlink: Monitoring undertaken after the opening of Tramlink indicated that almost 20% of people using the system had previously made their trip by car.

Capital costs

- 2.22 LRT systems typically cost in the order of £10 to £15 million per kilometre though cost depends on the amount of ancillary work required in addition to the system's own infrastructure and vehicles. Overall capital costs have increased by approximately 50% from 1995 costs in real terms. Typical infrastructure cost elements include the following:
- | the track itself, including the means to control stray currents, which can damage underground services
 - | overhead lines and supports
 - | establishment of a dedicated power supply including new substations
 - | communications systems (including signalling)
 - | relocation of underground services from the alignment to avoid interruption to tram services during utility works and to remove the need for potentially expensive reinstatement work
 - | stops and associated infrastructure (e.g. passenger information systems, pedestrian access/signals)
 - | depot and servicing facilities
 - | associated highway works, including junction remodelling and traffic control systems

¹ Steer Davies Gleave for PTEG. What Light Rail can do for Cities. A Review of the Evidence. London, 2005

I land acquisition (noting that many LRT systems are established on former rail alignments which are largely in public ownership).

2.23 To this must be added the cost of obtaining powers to construct, and the cost of vehicles (in the region of an additional £1.5 to 3 million each).

Operating costs

2.24 Operating costs for UK based systems have been between £4 and £6 million per vehicle kilometre.

Ultra light rapid transit

2.25 Ultra light rail transit (ULRT) is a more recent technology, promoted as a low cost alternative to ‘conventional’ light rail. ULRT systems use smaller, lighter vehicles that can run on lower cost rail infrastructure and do not require an overhead power supply.

2.26 Deliverability is a significant concern with this technology as ULRT is still a concept in development. To date only a very few systems have been implemented on short rail routes, where the vehicles are segregated from other uses.

2.27 In addition, ULRT systems have so far been promoted by particular companies offering a bespoke, complete package (vehicles, track and operating systems) from private suppliers such as Sustraco. The technology therefore cannot be yet regarded as ‘generic’ in the way that LRT can, and there is some uncertainty as to the details and costs of its practical application. For example, it is rightly claimed to be cheaper to construct than LRT, but if part of the reduction results from the elimination of the need for utility diversions (unproven) and the use of simple bus-type stops (a matter of passenger environment), then the cost comparison will be less clear cut.

Operating characteristics

2.28 As an emerging technology, the operating characteristics for ULRT are not yet established. The following commentary is provisional only.

Vehicles

2.29 ULRT vehicles are smaller than trams, providing for up to 60 passengers. If required, two vehicles can be coupled to double vehicle capacity during peak-hours in order to reach demand without the need to reduce the headway time (time between trams).



Parry People Mover

Power supply

2.30 The primary ULRT in operation in the UK, the Parry People Mover, uses slow speed flywheels to store kinetic energy to power the vehicle between passenger pick up / drop off stops. An engine powered by liquefied propane gas (LPG) provides auxiliary supplies in conjunction with batteries to maintain the constant speed of the vehicle over longer distances. Alternatives to LPG can also be used such as Bio-Methane produced from renewable waste.

- 2.31 As the system is not electrified, there is no need to insulate track or to provide electromagnetic protection from stray currents. It is also claimed that the relocation of cabling and utility services to accommodate the track is generally not required, though arrangements when work on these services is required are unclear. Assuming a service interruption is not acceptable, temporary diversionary tracks laid on the surface are in theory simpler to provide with ULRT than with LRT.



Southport Pier Tram
(a battery powered 'one-off' vehicle)

Stops

- 2.32 ULRT systems may feature sheltered stops with real time information and other features similar to LRT to deliver the high quality service needed to attract passengers, though a low cost version could have much simpler stops.

Alignment

- 2.33 Systems in operation generally use segregated on-street corridors and run along light weight track. It is as yet uncertain how they will perform with general traffic in an on-street environment.

Capital costs

- 2.34 Promoters of ULRT propose a greatly reduced construction cost of up to 30% less than a standard LRT system, mainly from the elimination of overhead line equipment and utility diversions. However it is as yet unclear whether cost savings would be as high as proposed.
- 2.35 The few vehicles in operation cost in the order of £300,000 to £350,000 each.

Operating costs

- 2.36 As there are very few systems in operation, operating costs for the ULRT can not be established. Promoters of the technology assert that costs will be significantly lower than for LRT.

Bus rapid transit

- 2.37 Bus Rapid Transit (BRT) is a development of conventional bus, usually using standard or modified buses, designed to combine as much as possible of the permanence, comfort and journey time reliability of a light rail or other fixed track system with the flexibility and responsiveness of buses. A key advantage over fixed track systems is that dedicated infrastructure does not have to extend over the whole route.
- 2.38 It consists of a variety of physical measures in conjunction with operational and system elements designed to bypass road congestion and deliver consistent journey times. These include high quality dedicated vehicles, on-street priority, possible use of dedicated corridors (often in the centre of dual carriageways), improved passenger information and high frequency services.
- 2.39 BRT can be used to upgrade or complement existing bus systems.
- 2.40 One of the world's most successful BRT systems is in Bogota in Colombia. The network is formed by 6 trunk routes with 95% segregation and priority at junctions.

Non-segregated feeder services link principal stations and end termini with residential suburbs. All vehicles have level boarding and some have on board next stop audio visual information. Operations are monitored by a central control room identifying and addressing slow running or service gaps - bringing new buses into service as required to ensure reliability standards are met.

Operating characteristics

Vehicles

- 2.41 A variety of vehicles can be used on a BRT system. The choice of vehicle will be governed by the type of infrastructure, the required capacity of the network and environmental considerations. For example where trips are relatively short and there is a significant amount of passenger turnover more room can be given to standing areas than to seating areas.
- 2.42 Average vehicle capacity is in the vicinity of 30 to 44 seats for a 12 metre low-floor vehicle, about 45 to 60 seats for a single articulated 18 metre low-floor vehicle, and 60 to 75 seats for a double articulated 24 metre vehicle.
- 2.43 The number of seats is also dependent on the number of doors, e.g. a 12 m bus can have 1,2 or 3 doors; a 18 m bus 2, 3 or 4 doors.
- 2.44 The need for operator control of vehicles will depend on whether the system is guided or unguided. Further detail is provided below.

Power supply

- 2.45 BRT may be powered by any of the conventional or (so far) experimental fuels used by standard buses - diesel, biodiesel, natural gas, hybrid diesel-electric, hydrogen and overhead electric (trolleybuses).

Stops

- 2.46 Stop infrastructure is of a high quality, similar to that utilised on LRT schemes, in order to reinforce the image, quality and performance of a route and differentiate BRT from standard bus services. Stops may feature on-stop ticketing, passenger information, help points and CCTV.
- 2.47 Raised platforms provide step free, gap free boarding to improve accessibility as well as boarding and alighting times, but this depends on the design of the alignment to allow buses to 'dock' effectively with all doors close to the platform.
- 2.48 To improve boarding times and revenue protection, enclosed stops with entry/exit gates and platform doors (similar to a metro station) have occasionally been used, e.g Bogotá, Santiago.

Alignment

- 2.49 BRT systems are generally segregated from other traffic as far as possible and may utilise segregated traffic lanes within or alongside the existing highway network. To maintain service frequency and reliability, dedicated signalling and lanes are used to give priority to BRT vehicles across junctions.
- 2.50 There are two main types of BRT systems: unguided and guided.

2.51 **Unguided systems or 'busways'** use segregated rights of way in the form of normal roads, but with access restricted to buses only. Since the busway is technically capable of accommodating any vehicle, it is necessary to enforce priority for buses by means of signing, CCTV, police and sometimes opening barriers. The buses themselves can be of standard or enhanced, higher quality specification, and operate as normal buses when away from the segregated right of way



Busway

2.52 **Guided systems** are more complex but can have advantages in terms of ride quality, self-enforcement of priority and reduced width. There are three main types:

I Mechanical or physical guidance:

I Kerb-guided systems using a segregated guideway with vertical guiderails (kerbs) on either side, allowing conventional buses fitted with small horizontal guidewheels to be automatically steered along the route. This is a relatively simple system that can in theory be used by any suitably modified bus (though the guideway must be designed to a particular width of vehicle). However, it is necessary to break the guideway at all road and pedestrian crossing points.



Kerb guided system

I Central rail guided systems using a single central guiderail fitted into a road surface or segregated alignment. There are two bespoke technologies of this type, with the track system and vehicles provided as a package. In one case (the Bombardier system) the vehicles can be driven independently of the guide rail, though this system has seen only two applications (Nancy and Caen). The other system (Translohr) is permanently guided and can be regarded as a 'tramway on tyres' rather than a true BRT system.

I Optical guidance:

I Cameras mounted at the front of the vehicle read markings painted on the road indicating the path to be followed. An image processor ensures vehicles maintain their alignment. Optical guidance systems can in theory be built into any type of vehicle.



Optical Guidance (CiVIS)

I Electronic guidance (magnets):

I Magnetic plugs in the road surface provide and correct the vehicle route information via a GPS device.

I Electronic guidance systems may also utilise power strips (comprised of a series electrical contact points) which are energised only when the vehicle is directly above. The strips are earthed at other times and pose no hazard to pedestrians and other road users.



Magnetic plugs (Phileas)

- 2.53 The most appropriate alignment type depends on cost, physical constraints of geometry/topography and desired ride quality. A combination of alignments may be used.

System Capacity and Demand

- 2.54 Bus Rapid Transit systems typically provide for between 2,000 and 4,000 passengers per hour per direction, though higher figures can be achieved, especially if overtaking facilities are provided. The Avenida Caracas corridor (a 4 lane busway) in central Bogotá is estimated to carry up to 43,000 passengers per hour. However in Charlotte, North Carolina, USA, the BRT system serves only 1000 passengers per day.
- 2.55 An international review² identified that conversion of traditional bus systems to BRT can attract new public transport demand of between 15 and 50% because of reduced travel times, improved stations, and population growth.
- 2.56 In the UK, the ability of bus-based schemes to affect significant mode shift remains largely unproven. A study of existing schemes³ found overall potential passenger uplift from bus quality initiatives ranged from between 4.1% and 6.4% in the medium term (i.e. 3-5 years after implementation of all measures). These responses are encouraging but, in comparison to LRT, suggest a much lower level of car transfer.

Construction costs

- 2.57 Establishment costs of the BRT system will be largely dependent on the range of features chosen (e.g. guided versus unguided systems, segregation from traffic, stop infrastructure) and the bus services and facilities in place. On average BRT infrastructure costs are around £3 million per kilometre.
- 2.58 The approximate cost of a diesel BRT vehicle is £220,000, though again this is dependent on the size and specification chosen. Hybrid vehicles which can reduce CO₂ emissions by up to 38% compared with standard buses cost an additional £60,000 per vehicle.

Operating costs

- 2.59 Operating costs reflect the ridership, type of running way, and operating environment. Comparisons of BRT and LRT operating costs suggest that BRT can cost the same as or less than LRT to operate, per passenger trip. At lower levels of demand, it is likely that operating costs would be significantly lower than LRT. Vehicle life should also be taken into account as a bus will have, typically, half the life of as tram.
- 2.60 Many of the additional costs associated with LRT and ULRT operations (such as specialist staff and equipment) are not incurred with BRT.

² Transportation Research Board. Transit Cooperative Research Program Report 90. Volume 1: Case Studies in Bus Rapid Transit. Washington DC, 2003.

³ Steer Davies Gleave. Rapid Transit Technology Review for West of England Partnership. London, 2008

Other considerations

- 2.61 The above discussion focuses on the general characteristics of each technology. However, Jersey is a small, self-governing island with no history of rapid transit and there are some particular issues that would need to be addressed in the event of any new technology being introduced. Within the scope of this report we have not been able to examine these in full, but the following are some of the particular issues that might arise.

Legal and Administrative

- 2.62 As the Road Traffic (Jersey) Law (1956) and other legislation governing transport on Jersey does not specifically apply to LRT or ULRT, appropriate policies and legislation governing establishment and operation of a new technology and its associated system of administration and governance would be required. It is likely that some legislation applying to Jersey's former railways is still in force, but this might not be suitable for a modern system and current requirements in terms of performance, safety, environmental impacts etc. Some additional legislation would therefore be required. In Dublin, a new transport act was passed in 1996 (amended in 2000) to allow the construction of the LUAS light rail system.
- 2.63 The Isle of Man provides some degree of precedent for the operation of rail-based systems in Jersey, as it has retained several separate historic railways, with both steam and electric traction. However, these have remained in operation almost continuously and have no doubt been taken account of in legislation. In addition, they are historic lines of chiefly heritage and tourism value, rather than modern transit systems.
- 2.64 Bus-based options would be simpler to deal with as the current legislation would be applicable, possibly with some modifications to provide for restrictions on access to busways.

Costs

- 2.65 The island location and the small size of the system would also be likely to result in some higher than typical costs for LRT and ULRT, when expressed in terms of costs per kilometre of route. These might include:
- | specialised servicing equipment which cannot be scaled down for a small system (for example the lathe required for periodic re-profiling of tram wheels), or the additional costs in transferring items to the UK or France for maintenance.
 - | the need to import and store specialist supplies required to keep the system operational at all times
 - | recruiting, training and retaining staff with expertise in maintenance, though there are several systems in NW France (Nantes, Orleans, Le Mans) that could provide support
 - | the administration and enforcement of any new legislation regarding LRT operations in terms of safety, performance, environmental standards etc

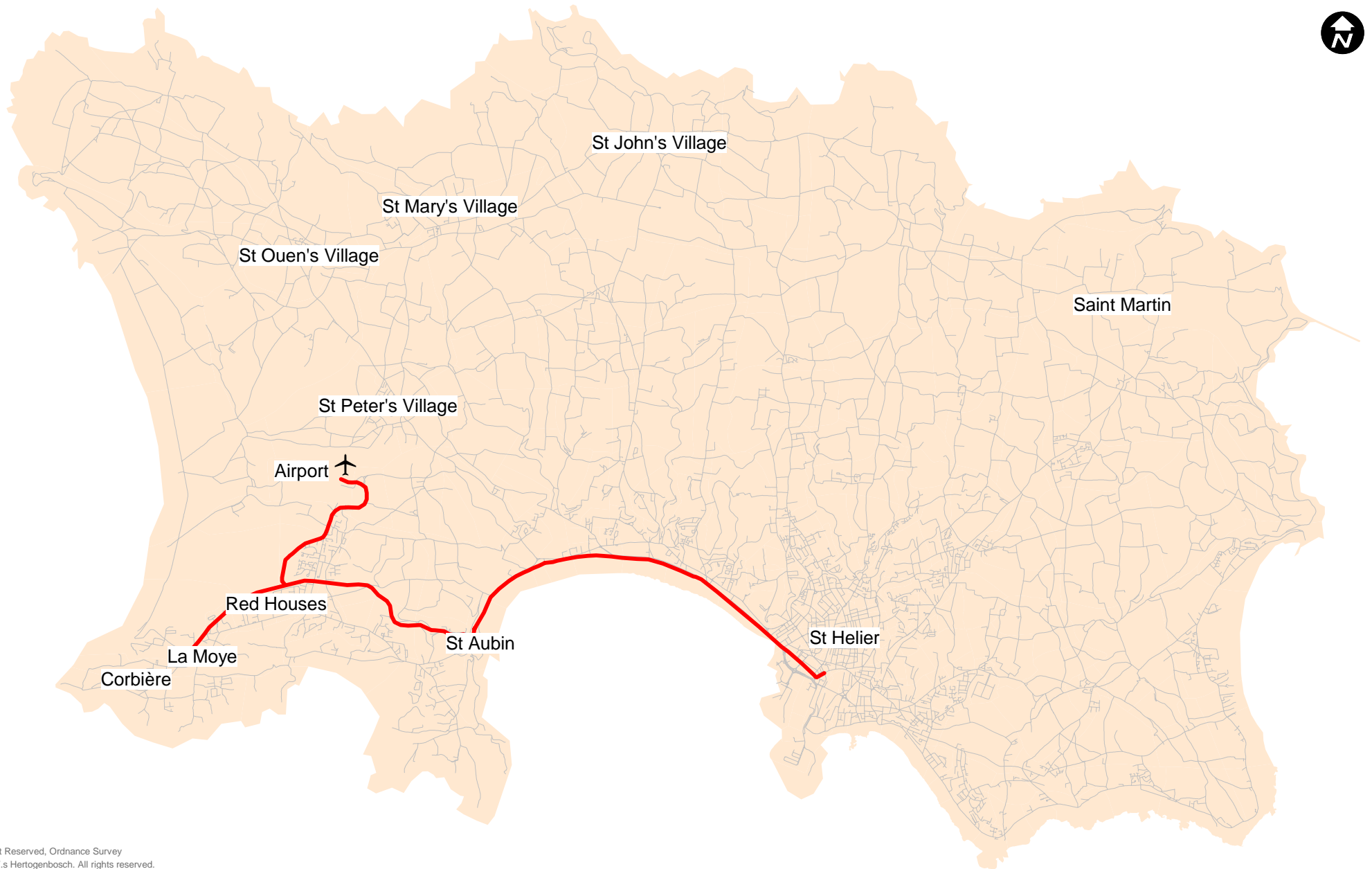
3 Physical feasibility

Introduction

- 3.1 The Transport Issues in Jersey report (1995) investigated a potential LRT route that followed the former Jersey Railway alignment, which ran along the coast from St Helier to St Aubin and then via an inland route to Corbière. An extension from Red Houses to the airport, though not part of the old rail alignment, was also investigated. The approximately 8kilometres length of the route, depicted at figure 3.1, was briefly re-examined during a site visit conducted November 2009.
- 3.2 This chapter provides a high level assessment of the feasibility of an LRT service along the corridor and an outline commentary on the opportunities for and constraints on the use of alternative technologies where these differ. The term rapid transit (RT) is used to refer to all these modes generically.
- 3.3 For most of its length, the route and adjacent land uses remain largely unchanged since the 1995 study. However, recent development at some locations, including the Boat House restaurant at St Aubin and the walk/cycle path along La Route des Quennevais and L'Avenue de la Commune pose additional challenges to establishment of rapid transit system.
- 3.4 Cycle/footpaths, car parking and other facilities would also need to be removed or relocated along much of the route.
- 3.5 The original railway was single track with passing loops. To allow a high frequency rapid transit service, loops or double track sections would again be required at a number of locations, the distance between these being determined by the interval between services. However, much of the route does not lend itself to widening to provide such loops, particularly the section following the off road walk/cycle path west of St Aubin.

St Helier

- 3.6 At present all bus services terminate at the new Liberation station, which recently replaced the old Weighbridge terminus. This is reasonably central to the main commercial and retail area of St Helier, though more remote from the eastern part of the town.
- 3.7 For a rapid transit route the simplest option for a St Helier terminus would be adjacent to Liberation bus station. This would provide a reasonable level of access to St Helier retail and businesses and also allow for modal interchange to buses within the town and beyond. Facilities for passengers and RT staff could be provided within the bus station. The details of the terminal arrangements would depend on the technology, and the BRT could make use of the bus station itself. A rail-based system could either terminate via a loop (possibly via La Route de la Libération and Esplanade) or continue past Liberation station to a reversing terminus on the old Weighbridge site.
- 3.8 Alternately a rapid transit route and terminus could be built into proposed developments south and west of Liberation station, although this could potentially make the system more remote from the town centre and bus interchange.



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Figure 3.1: Proposed RT route



Drawn by:
MTM

Last updated:
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Layout title:
LRT_alignment

- 3.9 To maximise passenger accessibility and perceived security, any alignment through the redevelopment should ideally remain at ground level. Hence any redevelopment plans which place further sections of La Route de la Liberation / the Esplanade or other roads underground would need to provide a surface alignment for RT.
- 3.10 Ideally, however, a RT system would penetrate the central area more effectively so as to maximise its attractiveness (particularly to car users), but there are few opportunities for a fixed track system (LRT or ULRT) to achieve this because of very limited road widths. Since such track-based systems need to be kept free of stopped vehicles at all times, servicing of adjacent premises must be restricted to areas clear of the track. This is not possible in most streets in St Helier. A bus-based system could, however, be extended into the town centre relatively easily. It should be noted, however, that extending RT services on street beyond their dedicated alignment can lead to delays which may affect the reliability of the service.

St Helier to St Aubin

- 3.11 From St Helier the route would follow the Esplanade. The first section would depend on the terminal arrangements as discussed above. Beyond Castle Street, the grass strip along the southern edge of the highway would provide an opportunity for a segregated right of way as far as the junction with Gloucester Street. Significant reconfiguration of the Castle Street/ Esplanade and Gloucester Street/ La Route de la Liberation / Esplanade intersections would be required to provide for a dedicated RT right of way and signal priority.
- 3.12 From Peirson Road the route would run along St Aubin's Bay Promenade between the sea wall and Victoria Avenue. This section is characterised by:
- | a foot and cycle path adjacent to the sea wall
 - | car parks between the foot/cycle path and the main carriageway of Victoria Avenue (broken in places by sections of grass verge)
 - | occasional shelters, cafés and wartime defence works
- 3.13 It would most likely be possible to accommodate single track for much of the route along St Aubin's Bay by altering car parking, retaining most of the foot/cycle path. The car parks would need to be reduced in width and hence capacity to accommodate the rapid transit route. The parking bays could be realigned to angle and/or parallel horizontal parking to minimise loss of spaces.
- 3.14 Such features and for LRT, overhead electrical lines, may impact upon the visual amenity of the bay and promenade.
- 3.15 Passing loops would require a greater width and thus would probably require the complete removal of some sections of car park. All the existing shelters would have to be relocated further back from the sea wall and property acquisition would be likely at the cafés.
- 3.16 To provide journey times needed to attract car users, the RT would need to travel at a competitive speed, preferably in excess of the highway speed limits (up to 65 km/h or 40 mph). This would be incompatible with the sharing of space with pedestrians and cyclists, and fencing would therefore be necessary to maintain safety along much of the route. Crossing points to the beach and foot/cycle path would be provided only at recognised points.

Review of light rail and alternatives

- 3.17 For a BRT system, a single track busway of any length would require a vehicle detection system, signals and probably barriers to prevent access by vehicles in the wrong direction, whether authorised or not. Signalling systems can achieve this as a matter of course with rail-based systems.
- 3.18 Another alternative would be to widen Victoria Avenue to the south and insert a two way RT alignment in the centre. As this would not impact on pedestrians or cyclists, except at crossing points, no fencing would be required. This solution could be applied to any technology.
- 3.19 As buses can use the road network, for a BRT system, a simpler option would be a single lane busway (guided or unguided) used in the peak direction only, with contra-peak direction journeys routed via the relatively uncongested road system.
- 3.20 The parallel bus routes westward from St Helier (7 - 12, 12a and 15) run inland between La Vallee de Saint-Pierre and St Aubins Rd to serve the Bel Royal residential area. A rapid transit route following the former rail alignment along the coast or Victoria Avenue would not be as accessible from this area as the existing public transport services.
- 3.21 At Bel Royal, Victoria Avenue curves inland and beyond this point the former railway alignment along the promenade is occupied by a pedestrian and cycle path bounded by the sea wall and houses on the landward side. A single track could be accommodated along this stretch, but would leave little space (around 3 to 4 metres) for other activities. For safety, pedestrian and cycle access along this stretch would need to be carefully managed (and possibly restricted) and the rear access gates of properties fronting La Route de Haule closed off. A lower speed would also probably have to be imposed on rapid transit vehicles.
- 3.22 At Beaumont, the Gunsite Café would need to be demolished and the adjacent slipway removed or relocated.
- 3.23 Beyond Beaumont, the main road rejoins the coast. For most of the way to St Aubin there is currently insufficient width to run a RT alignment parallel to the carriageway. On-street running would be possible but would result in the RT system being vulnerable to congestion - to be avoided at all costs for a line dependent on precise timekeeping for the operation of single track sections.
- 3.24 It would be preferable to continue along the rail alignment which becomes particularly narrow in sections. To minimise disruption to existing land uses consideration could be given to extending the sea wall outwards and reclaiming land. Regardless of whether this option is selected, the proposed route would be vulnerable to flooding. Account would have to be taken of the effects of exposure to salt water in specifying both infrastructure and vehicles, and it is also possible that there would be an impact upon operating and maintenance costs.
- 3.25 At St Aubin the original rail line ran into a terminus station, which now houses St Brelade Parish Hall. The railway extension to Corbière curved to the seaward wide of the terminus before turning inland across the front of the station. In recent years the Boat House restaurant has been built at the seaward end of this area, between the Parish Hall and the sea wall. As a result the space available is very restricted and the resulting conflicts between the RT route, pedestrians and vehicles would be difficult to resolve safely. Significant changes to the layout would be required to facilitate the RT route. Furthermore service would run immediately to the front of

Boat House restaurant, impeding access. A reduction in car parking spaces would be required.

West from St Aubin

- 3.26 From St Aubin station the RT route would need to cross the restricted junction of La Neuve Route/Charing Cross. Significant redesign of this intersection would be necessary, including the provision of signals for safety reasons, given the poor sight lines. Provision would need to be made for traffic crossing to and from Le Boulevard and Market Hill.
- 3.27 Beyond the junction after running briefly along Charing Cross/ le Mont les Vaux, the railway travelled north west passing through a gap in the buildings on its own reservation and entered a short tunnel. This gap now accommodates a road giving access to:
- | the Corbière Walk (for pedestrians and cyclists only), which follows an earlier railway alignment around the hillside;
 - | the old railway tunnel, now used for storage; and
 - | accesses to adjacent properties.
- 3.28 Construction of a RT system would require closure of the Corbière Walk from St Aubin westward, forcing cyclists onto le Mont les Vaux. This road has no footways and an alternative route for pedestrians would therefore be required. Property access and vehicular access to the tunnel would also need to be carefully managed, and appropriate safety measures introduced.
- 3.29 Beyond St Aubin the original route could be followed relatively simply in engineering terms though there are some potential problems.
- 3.30 Through out the Corbière Walk there are manholes at regular intervals and at the one underbridge at Mont Nicolle pipes are visible along the bridge. It is not known which utility uses the alignment but relocation of the underground services would be required. Much of the route is lined with trees, many of which would overhang the track. These would have to be cut back extensively, and regularly lopped. Even then there could be problems with poor adhesion in the leaf fall season.
- 3.31 Some structural work would be required at Mont Nicolle and les Quennevais. At the former a new bridge would be required, while at the latter the low profile concrete structure installed during road widening would have to be replaced. This is a very deep structure which suggests that it accommodates major services, in which case replacement could provide expensive.
- 3.32 An LRT or ULRT system would simply run on ballasted track on this section. As with the section further east, a different approach could be appropriate for a busway system. Clearly the restricted width and significant earthworks would mandate guidance for safety reasons, and of the available types probably only kerb guidance would offer the degree of safety required (for other types, safety barriers would be required in any event). However, some of the tighter curves would give rise to problems with kerb guidance because of rear end cut-in. Signalling and regulation would also present safety problems, given the poor visibility on curves, lack of lighting and remoteness of the alignment.

Review of light rail and alternatives

- 3.33 Much of the Corbière Walk is too narrow to accommodate both LRT / ULRT vehicles at the required speeds and pedestrians and cyclists. The alignment would need to be closed to other users and alternate cycle / pedestrian routes identified.
- 3.34 It seems most likely that a BRT system would simply run via the road between St Aubin and St Brelade, avoiding such problems and allowing the Corbière Walk to be retained.
- 3.35 Whilst the railway line originally ran to Corbière, the westernmost section of route was, and remains, largely undeveloped and remote, and hence it would clearly not be appropriate to reinstate the whole line with any form of rapid transit. A possible location for a western terminus is at La Moye (at the La Route Orange and La Rue de la Sergente intersection) as this is broadly the end of the developed area and some new residential development is planned.

Airport extension

- 3.36 To serve air travellers and airport workers the RT route could be extended north to the airport using a completely new alignment. The route could leave the old line west of Red Houses and skirt the rear of the new residential development and run alongside the Quennevais Leisure Centre and Les Ormes Golf Club. It could join the roadway by La Rue Carrée before arching round to the airport.
- 3.37 Extensive land acquisition would be required for this new alignment and the new cycleway and sporting fields would be impacted.

Depot

- 3.38 For any fixed track system, a secure depot site to stable and service the fleet would be required, adjacent or very close to the route. We have not investigated in detail, but few appropriate sites appear to be available. Depending on the availability of land, they include a site by the airport and a greenfield site in La Moye.
- 3.39 Both options are likely to be expensive. The first would require the reorganisation of existing land uses including airport car parking. The greenfield site may be environmentally unacceptable, especially in the scenic area west of St Brelade, close to residential areas.

4 Demand Forecasts

Introduction

- 4.1 Passenger demand for a rapid transit service along the proposed alignment will be based on a number of factors including the (perceived) quality of ride, frequency and speed of service, passenger information and marketing and information and the route itself. The superior service offered by RT, in contrast to current public transport options, will attract both current bus passengers and also some car drivers.
- 4.2 Demand has been forecast using a simple diversion model based on likely levels of switching from cars and existing buses, to the transit technologies proposed. Lack of cost (bus and highway travel times) data and the study remit prohibited the development of more detailed logit formulations.

Methodology

- 4.3 The analysis undertaken to estimate the potential demand for rapid transit technologies in Jersey was based on the following data, provided by the States of Jersey:
- I Main mode journey to work data (2001) - which provide information on proportion of workers use of different travel modes (e.g. car, bus, cycle) but only for a single trip purpose - commute to work
 - I Jersey Transport Model (JTM) (2007), developed by Parsons Brinckerhoff which includes demand data for private car trips and all trip purposes

By combining the two data sets we have produced broad estimates, for a nominal 2007 base year, of travel patterns for car and bus passengers for the morning peak period.

Traffic zones

- 4.4 The demand information is stored in the models as a series of tables of movements to and from discreet areas of Jersey. These areas, or zones, contain information on the total numbers of trips, by mode, going to and from them. The Journey to Work data just contains the total trip ends by zone, while the JTM car data contains the proportion of trips going from zone to zone.
- 4.5 The JTM defines 333 traffic zones in Jersey, 98 of which are in St Helier. The JTM zones are a disaggregation of a 1992 SATURN model used for St Helier and other built up areas. The journey to work data shows the mode of travel to work by residents. It was provided at a zonal level, using the same traffic zones used in the JTM. This zoning system is shown in figure 4.12, below.

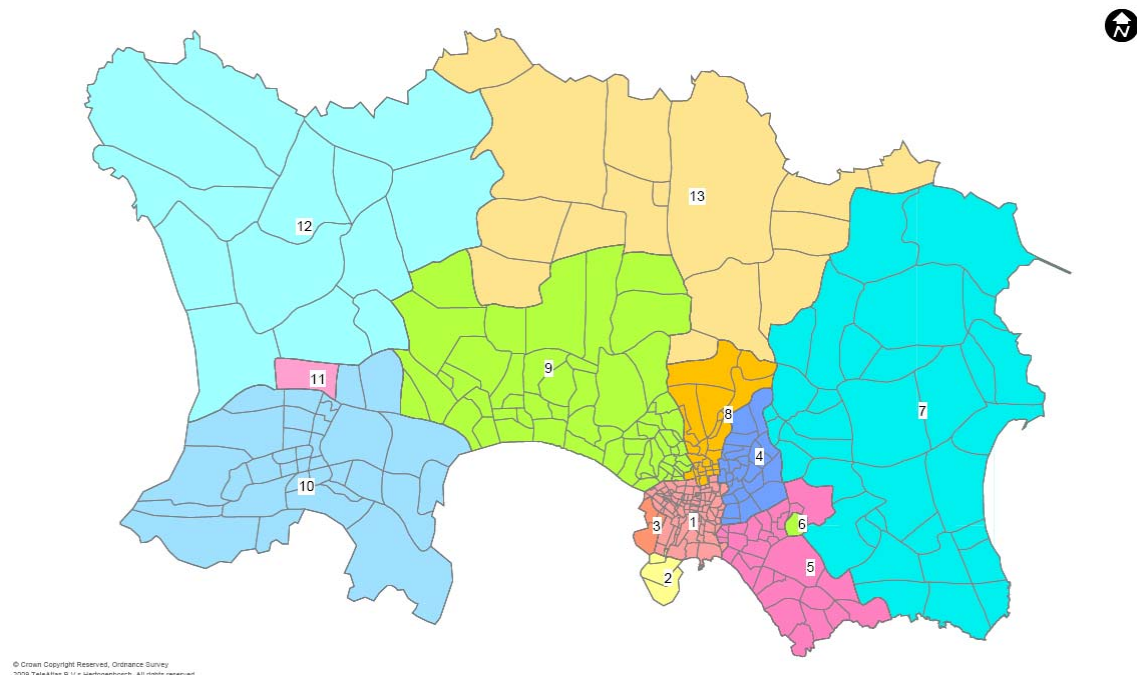
FIGURE 4.1 ZONING SYSTEM



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4.6 If we dealt with these demand tables (matrices) at a zonal level, we would have tables sized 333 cells X 333 cells, i.e. a table over 100,000 cells. To facilitate data manipulation we therefore aggregated the zones into discreet regions. The zonal demand data was aggregated into thirteen sectors as shown in figure 4.2.

FIGURE 4.2 SECTORS

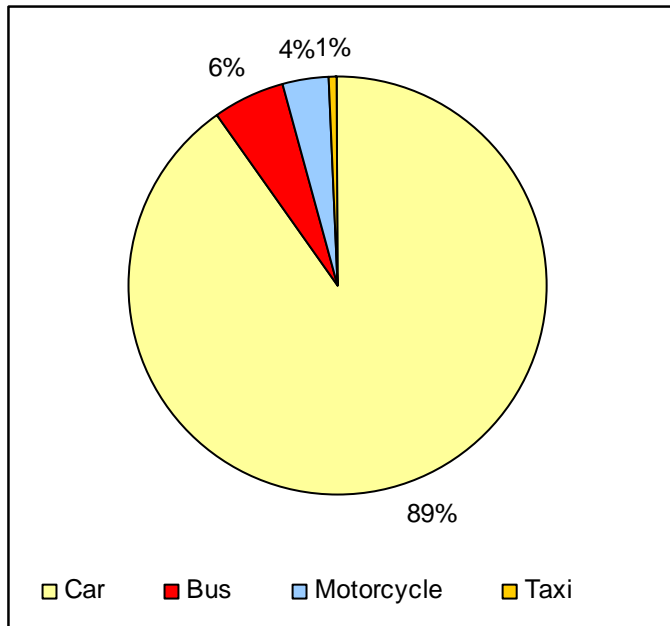


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Journey to work dataset

- 4.7 The journey to work data was analysed at this sector level to show the modal shares for commuting trips. These shares are illustrated at figure 4.3, which shows the dominance of the car, 90% of trips, compared to buses, 6%.

FIGURE 4.3 MOTORISED MODE SHARE OF JOURNEY TO WORK



- 4.8 To assess potential demand for rapid transit we focused on those travellers we considered broadly in-scope to switch modes. The shorter trips we have assumed to be undertaken by pedestrians and cyclists therefore have not been considered as in-scope. For motorised modes public transport (bus) accounts for only 6% of commuting trips in Jersey (only marginally more than motorcycle), while private car accounts for 90% of all commuting trips.
- 4.9 Mapping the Journey to Work data against the sector model (see table 4-1) shows that mode share is broadly consistent across the whole island. The less populated and more remote sectors, 12 and 13 in the north west and north of the island (refer figure 4.4) have the highest car share (94%).

TABLE 4.1 JOURNEY TO WORK BY SECTOR (2001)

Sector	Car (%)	Bus (%)	Taxi (%)	M'C (%)
1	1,659 (90)	105 (6)	18 (1)	63 (18)
2	0	0	0	0
3	12 (100)	0	0	0
4	938 (91)	27 (3)	16 (2)	49 (5)
5	2,877 (86)	314 (9)	18 (1)	143 (4)
6	113 (90)	6 (5)	1 (1)	5 (4)
7	5,141 (91)	297 (5)	25 (>1)	186 (3)
8	1,657 (91)	76 (4)	21 (1)	69 (4)
9	5,344 (88)	488 (8)	52 (1)	217 (4)
10	3,612 (90)	219 (5)	26 (1)	142 (4)
11	0	0	0	0
12	2,885 (94)	71 (2)	6 (>1)	104 (3)
13	2,373 (94)	59 (2)	8 (>1)	74 (3)
Total	26,611 (90)	1,662 (6)	191 (1)	1,052 (4)

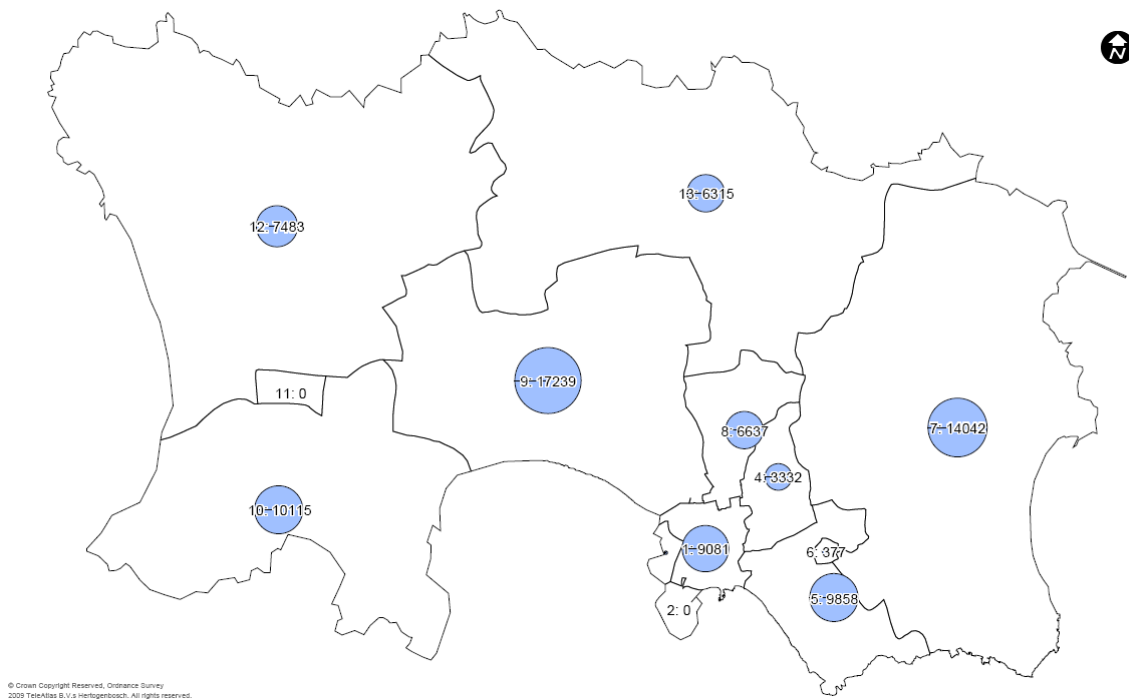
Jersey travel model data set

- 4.10 Highway demand data from the JTM was aggregated into the 13 sectors. Table 4-2 shows the pattern of car travel in the AM peak hour (08:00-09:00) which is the hour modelled in the JTM, as it represents the busiest period across the network. Inspection of these data shows that total car movements across Jersey during the morning peak hour total around 21,000 vehicle trips. Sectors 1 and 9 produce the most trips with 8,500 between them, or around 42%. These areas also attract the most vehicle trips, with 11,000 or 52%, having destinations in there. These sectors correspond to the more densely populated areas of Jersey, as shown in figure 4-4.

TABLE 4.2 AM PEAK HOUR PRIVATE CAR VEHICLE TRIPS BY SECTOR (2007)

O D	1	2	3	4	5	6	7	8	9	10	11	12	13	Total
1	1,044	43	240	508	458	52	359	518	864	228	44	111	115	4,585
2	70	39	3	11	5	0	8	4	44	14	5	9	6	219
3	101	31	0	27	31	14	32	11	39	11	4	8	5	314
4	879	0	9	239	45	20	286	109	309	8	4	10	42	1,959
5	915	1	15	21	19	13	117	9	329	63	20	27	45	1,594
6	96	0	2	1	24	4	22	1	16	1	1	1	1	170
7	1,112	6	19	301	188	35	197	82	310	7	5	35	95	2,392
8	367	2	16	63	7	2	109	20	169	23	3	29	73	880
9	1,754	57	220	271	97	16	320	148	236	448	53	320	316	4,254
10	478	15	58	67	15	2	73	71	316	329	46	137	105	1,712
11	69	12	16	5	29	4	29	3	95	50		28	17	356
12	220	9	26	8	11	2	47	7	180	209	73	29	103	922
13	461	9	37	79	12	3	126	88	497	81	27	100	11	1,532
Total	7,566	223	662	1,599	940	167	1,723	1,071	3,404	1,472	284	844	934	20,889

FIGURE 4.4 2001 POPULATION



Trip Purpose

4.11 Because the data we have for bus and car use is from the Journey to Work datasets, it was necessary to expand this to include all other trip purposes in the morning peak. Analysis of the segmentation used by the 1992 SATURN model and the JTM show that home based work trips (commuting) account for 45% of the car trips (table 4-3), while 28% of trips have origin an destination in places different from home.

TABLE 4.3 TRIP PURPOSE

Trip purpose	Proportion
Home based work	45%
Home based education	14%
Home based other	13%
Non home based	28%
Tourism	1%
All	100%

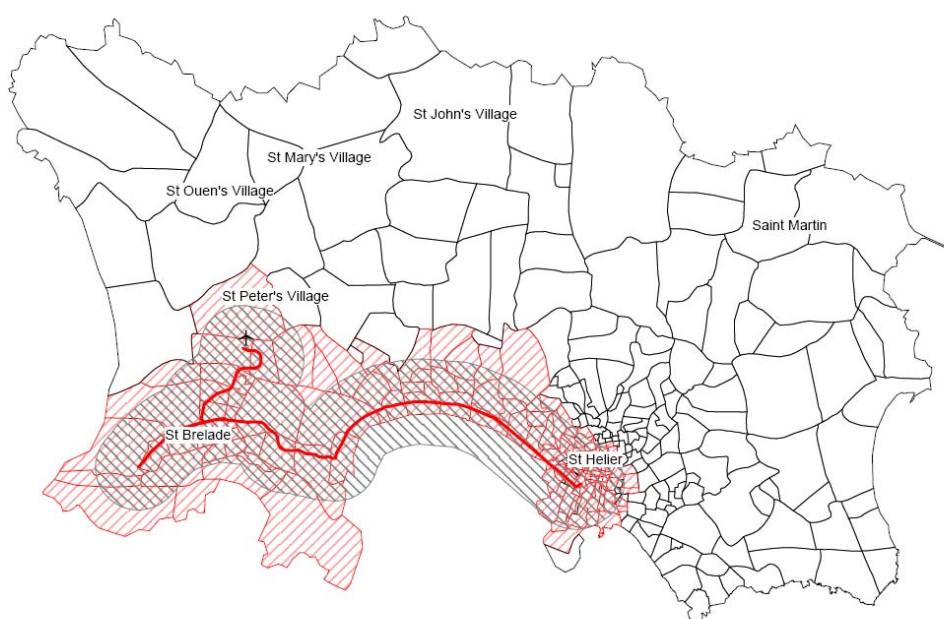
- 4.12 So that we capture all travel across Jersey, not just commuters, these proportions are then used in our forecasts to expand our Journey to Work demand data to include all trip purposes.

Rapid Transit Catchment

Catchment Area

- 4.13 In order to establish the potential demand of the different rapid transit technologies, the zones located within the area of influence of the LRT were identified. For this purpose and through the use of GIS, a catchment zone of 800m around the proposed alignments were generated, which represents an approximate walking time of 10 minutes from the alignment. A continuous catchment was used rather than separate stop catchments. In a more detailed modelling exercise the location of stops could be considered and would reflect where demand was most concentrated. However, given the limited data available we have assumed that 100% of the population of the zones intersected by the 800m band will be within the catchment area of the rapid transit system. The 800m band and the zones within the catchment area are shown in figure 4-5.
- 4.14 Existing bus demand in this corridor was assumed to form the basis for the demand for LRT, estimated using the following assumptions.

FIGURE 4.5 RAPID TRANSIT SYSTEM CATCHMENT AREA



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Current Car and Bus Demand along the catchment

- 4.15 The Journey to Work data on car and bus use gives total demand by origin and destination. To facilitate the estimation of LRT demand it was necessary to produce full matrices (tables) of demand showing the distribution patterns of these trips.
- 4.16 Given that a distribution of bus and car trips was not available, the bus and private car demand matrices were calculated, by assuming that the vast majority of Journey to Work trips are undertaken in the AM peak period (07:00-10:00). To scale this to the AM peak hour data from the JTM was used. This showed that 41% of AM peak period trips take place in the AM peak hour (08:00-09:00).
- 4.17 The total Journey to Work trips generated and attracted in the AM peak hour were then factored up by 1.246 to account for other purposes trips. These trips were then distributed across the whole network by using the distribution of private car matrix used in the JTM.
- 4.18 In order to convert these trips into 2007 vehicle trips, an occupancy factor of 1.34 persons per vehicle was assumed and an annual growth factor of 2.22%, year on year from 2001, was applied to bring demand into line with traffic levels reported in the 2007 JTM.

Airport trips

- 4.19 JTW does not include trips to and from the airport, a major destination along the proposed alignment.
- 4.20 To account for trips with origin or destination at the airport, the number of annual passengers that used the airport in 2008 was converted to AM peak hour trips. To do this, it was assumed that 12% of the passengers arrive or depart in the AM peak hour. This is based in the number of planes arriving and departing to/from the airport in a typical day (November 2009). Mode share of trips to and from the airport was assumed to reflect average bus use in Jersey at 6%.

Forecast demand

- 4.21 Based on our previous catchment definition along the potential LRT alignment any car or bus trip with an origin or destination in these corridors was deemed in scope for transfer to a potential LRT system.
- 4.22 It was assumed that all existing bus demand along the inscope corridor, would transfer to LRT as existing bus services were assumed to be recast to avoid competing directly with the new system. This is somewhat of an optimistic estimate as some bus services would most likely continue to serve the corridor and some travellers would continue to use the bus if it provided a more direct route than the MT alternative.
- 4.23 For transfers from car, to reflect the uncertainty in the simple forecasting methodology adopted for this study, a range of possible mode shares was adopted rather than a single value.
- 4.24 High (3%); medium (2%) and low (1%) scenarios were tested. For the low mode share option (the bottom end of the range in which it is expected that demand might fall) it is assumed that 1% of in-scope car trips transfer to rapid transit. For the medium mode share option it is assumed that 2% of in-scope car trips and for the high mode share it is assumed that 3% of the in scope trips will transfer to rapid transit.
- 4.25 These are rule of thumb estimates used to produce patronage forecasts by previous mode. These car to transit transfer proportions are broadly consistent with our experience of existing systems in Manchester, Leeds and Liverpool
- 4.26 In the UK diversion from the car to BRT are generally lower than for LRT, but do depend on the extent to which BRT systems can be engineered to deliver the high quality service of LRT (e.g. use of guideways rather than driver steered. The latter tend to deliver slower vehicle speeds and a less smooth ride). Diversion rates for ULRT are unknown given the technology's emerging status. For the purpose of this study they are assumed broadly consistent with LRT.
- 4.27 The adopted diversion rates are also inline with the findings of a recent study into the potential mode shift away from the car that could be achieved via introduction of demand management measures⁴. The impacts of parking charges and improvements in bus journey times were investigated. The latter is akin to some of the quality improvements that LRT and other RT systems would deliver in favour of current public transport options.
- 4.28 The resulting demand captured by rapid transit in the AM peak hour is shown in table 4-4 on the following page.

⁴ Parsons Brinkerhoff, 'Mode change study' (Jersey Transport Model Sustainable Transport Plan for Jersey 2010-2014), 2009

TABLE 4.4 AM PEAK HOUR RAPID TRANSIT DEMAND

	Low		Medium		High	
	Demand	%	Demand	%	Demand	%
Transfer from car	52	13%	86	20%	120	26%
Transfer from bus	339	87%	339	80%	339	73%
Total	391	100%	425	100%	459	100%

- 4.29 Previous studies have demonstrated that about 20% of peak hour passengers on UK LRT schemes transfer from car. This is consistent with the figures estimated above for the medium mode share option.
- 4.30 We have not included in the forecasts any estimate of induced demand (i.e. demand generated as people who previously did not travel, now decide to make a trip because of the attractiveness (quality and time savings) offered by the system). At a broad estimate, one may expect to uplift demand by 10% to 15% to reflect this (the standard uplift for interpeak demand in DfT Major Scheme Guidance is 15%). This would give a potential patronage range of around 450 to 500.
- 4.31 As noted in chapter 3, establishment of the RT service would negatively impact upon pedestrian and cycle facilities along the foreshore and Corbière Walk, possibly resulting in fewer people choosing to travel by active modes. Of the 147 people who cycle along the proposed alignment and into St Helier during the AM peak,⁵ some may choose either to commence using the RT service or switch to the car.
- 4.32 Under all scenarios passenger volumes are marginally higher than the 1995 estimate of 213 passengers, due in part to population growth and the optimistic assumption that all existing bus passengers travelling routes within vicinity of the alignment would use the new RT system.
- 4.33 However, the potential passenger demand for an RT system in Jersey is still relatively modest. As noted in chapter 2, LRT systems typically provide for between 5,000 and 8,000 passenger per hour, whilst BRT may carry between 2,000 and 4,000. Though an RT system in Jersey would be smaller in scale than those servicing major metropolitan populations, the establishment and servicing requirements and associated costs would not be equivalently scaled.

⁵ 2009 figure from the annual cordon survey conducted by States of Jersey.

5 Costs

- 5.1 For comparative purposes, we have updated the estimates of RT system operating and capital costs prepared for the 1995 study to take account of more recent data and experience.
- 5.2 It is assumed that the a basic service would operate along the corridor from St Aubin to La Moye and the Airport, consisting:
- | vehicles with capacity for 30 to 100 passengers
 - | simple stops and shelters (e.g. minimum real time information)
 - | a maximum frequency of four vehicles per hour
- 5.3 As an initial estimate, the *operating costs* for such a service is an average of £2.5million per annum (2009 prices). A ULRT might cost around £1.75million, should proponent estimates of a 30% saving on LRT, be correct. The need to import expertise to manage a track system such as an LRT and ULRT would inflate these costs, at least for the first few years of the system’s operation.
- 5.4 These costs are about 80% higher than the figures quoted in the 1995 study. The bulk of the increase (an increase of about 60%) is a result of inflation and real changes in wages and energy costs. The remainder is a result of a reassessment of some of the operational requirements and a consequent increase in some cost elements.
- 5.5 Based on the specification of the 1995 study it is estimated the *costs of constructing* an RT systems would be as follows:

	LRT	ULRT	BRT
Track & infrastructure	£118.75m	£83.13m	£28.50m
Vehicles	£11.25m	£1.95m	£1.68m
Total construction costs	£130.00m	£85.08m	£30.18m

- 5.6 As noted in chapter 2, these are average costs based on reported capital budgets of existing RT systems. They are indicative costs and not detailed calculation of establishing an RT in Jersey.
- 5.7 Once again costs are significantly higher (up to 220%) than 1995 estimates. Inflation, real changes in wages, energy costs and the changes in the technological requirements of LRT systems are key reasons for this.

6 Summary

6.1 The key findings of this study are as follows:

- I It would be technically feasible to operate the following rapid transit (RT) technologies along the alignment: light rail transit (LRT); ultra light rail transit (ULRT) and bus rapid transit (BRT). These technologies can provide a relatively low cost service for modest passenger volumes typical of lower density catchments, such as Jersey.
- I An LRT system would be the most costly to establish at around £130million compared to BRT, which, based on other systems worldwide, might cost around £30million. Operating costs for both systems would be similar at around £2.5million per annum, however the need to import specialist staff and materials to support a track based system may inflate costs associated with LRT. All costs estimates are in 2009 prices.
- I Promoters assert that ULRT systems can be constructed and operated for 30% less than LRT, suggesting that a system could be established for around £85million and operated at £1.75million per annum. These cost estimates are based on the few systems in operation and as such they should be treated with care. Once again the unique operating requirements of track system would impact upon the cost of a ULRT system in Jersey.
- I It is most likely that a rapid transit (RT) system along the former railway corridor would also be physical feasible, though significant changes to current land uses would be required including:
 - I Reorganisation of the road network by the Liberation bus shelter in St Helier to accommodate a terminus;
 - I Significant reconfiguration of a number of intersections including those at Castle Street/Esplanade; Gloucester Street/La Route de la Liberation/Esplanade and La Neuve Route/Charring Cross. Signal prioritization and other measures to provide RT vehicles right of way over vehicular and other traffic would be required.
 - I Fencing of the route along the St Aubin Bay Promenade and fixed crossing points to manage pedestrian and cyclist access.
 - I Reorganisation of the car parks along St Aubin Bay with some removal of spaces
 - I Relocation of the shelters along the bay and purchase of the cafes;
 - I Extension of the sea wall (and association land reclamation) at select locations.
 - I Removal of cyclist / pedestrian path along much of the Corbière Walk and restricted cyclist / pedestrian access at other select points along the route including between Bel Royal and Beaumont.
- I These changes would most likely impact negatively upon journey time reliability of non RT modes (including private vehicles, buses, cyclists and pedestrians).

Hospitality/tourist facilities and physical and visual access to the bay would also be effected.

- | Disruption to pedestrian and cycle facilities along the foreshore may make these modes less attractive, possibly leading to a decrease in the number choosing to travel by active modes.
- | A high quality RT service operating along the alignment may attract up to 500 passengers in peak AM hour, with most transferring from existing bus services. A maximum of around 120 RT passengers would have previously travelled by the car in the AM peak. The majority of RT passengers would have previously travelled by bus. Some existing cyclists and pedestrians may also choose to use an RT service.
- | Based on previous revenue modelling along with current demand and cost estimates for the three RT technologies, this volume of passengers would not generate sufficient ticket sales to cover operating costs. A significant subsidy from States of Jersey to the operator would be required. Government would also be required to fully fund all capital costs.

7 Conclusion

- 7.1 Though the service closed in 1936, the alignment for the Jersey railway remains, for much of its length, largely undeveloped. This report provides a high level examination of the feasibility of establishing a rapid transit system along the former railway corridor. A proposed new extension to the airport was also considered.
- 7.2 The study found that whilst a rapid transit system such as light rail would be technically and physically feasible along the former Jersey railway corridor it would be disruptive to existing activity and amenity.
- 7.3 Sightlines and pedestrian and cyclist access to St Aubin Bay would be disrupted, as would vehicular access to car parking along Victoria Avenue. Re-design of the road network at several locations including the western access routes to St Helier and at St Aubin would impact traffic flow, particularly during peak periods. Pedestrian and cyclists would be largely excluded from Corbière Walk. Acquisition of private land would be necessary as would most likely land reclamation at St Aubin Bay.
- 7.4 A rapid transit service along the proposed route could be expected to attract up to 500 passengers in the peak AM hour. Most would transfer from existing bus services. Current car drivers, cyclists and pedestrians would also be attracted to the service. It is also possible that pedestrians and cyclists negatively impacted by changes to land use necessitated by the rapid transit system would change to vehicle modes.
- 7.5 Depending on the technology selected a rapid transit service along the proposed route would cost between £30 and £130million to establish (2009 prices). A further £1.75million to £2.5million would be required to operate a track based system each year (2009 prices).
- 7.6 The currently estimated volume of passengers using the service would unlikely generate sufficient revenue to cover these operating costs and significant, on-going Government operating subsidy would be likely be required.

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