

C A S E S T U D Y

TRAMS: SUSTAINABLE MOBILITY AND MORE



■ **TOTAL LENGTH OF TRAM LINES IN OUR PORTFOLIO:** 96 KM, 4 PROJECTS

MAIN BENEFITS OF TRAMS: HIGH QUALITY URBAN TRANSPORTATION + CATALYSTS FOR SUSTAINABLE CITY DEVELOPMENT

TRAMS – MAKING CITIES MORE SUSTAINABLE AND RESILIENT

Tram systems are offering cities a form of public transport that is highly sustainable, in terms of mobility and a lot more.

Light Rail Transit networks are more environmentally friendly and healthier for city populations, while aiding municipal authorities' plans for sustainable, high-density urban growth.

Populations in the world's cities are increasing rapidly and as urbanisation grows, the importance of sustainable means of mass transit is becoming ever clearer. According to UN figures, the number of people living in urban areas rose from 751 million in 1950, to 4.2 billion in 2018 – 55% of the global population. **By 2050, the proportion of city dwellers is expected to rise to 68%.**

Light Rail Transit (LRT) or 'tram' systems will provide the **backbone of public transport** in many places. Operational LRT networks are showing a lot of success, with passenger numbers reflecting the popularity of modern tram transport: clean and quick and connecting suburbs and residential areas with city centres and

many other places in-between. Sports and entertainment venues, retail sites, universities and major employers are all benefitting from the **connectivity** provided by having a tram stop on their doorstep.

Meridiam is a principal shareholder and asset manager of four major LRT systems, in Italy, the UK, Canada and the US. All have been built or extended through Public Private Partnerships with municipal or regional authorities.

Environmental credentials typical of these projects are evident in Florence. The city's Tramvia system has been expanded to three lines through a recently completed PPP project, in coordination with the city authority's **exclusion of private cars and buses from the city centre** from 7:30am until 8pm (and also from 11pm to 3am from April to October).

In addition to **freeing up space** and **improving safety** for pedestrians and cyclists, the absence of thousands of cars and buses in the city centre has brought a dramatic improvement in **air quality** – cutting harmful emissions by half, according to figures reported by Italy's environmental pressure group, Legambiente.

Other cities with LRT networks may not be able to restrict private vehicle use to the same extent, but numerous different sustainability benefits are emerging to a similar or greater degree where trams are now running, or even where new tracks are still being laid.

In Maryland, close to Washington DC, the first phased opening of the Purple Line is not due until the end of 2022, with the LRT Line expected to be fully operational in 2023, but already, at least 31 separate residential and commercial developments are planned or under construction along the 25km route.

"Any area with an LRT or Metro rail system will prosper and we are already seeing a lot of evidence of this along the Purple Line route, especially near the stations. We expect to see considerable **social benefit** to come from the greater connections to employment and education after about five years," says the Chief Technical Officer for the Purple Line project, Sami Soufi.

The Purple Line represents one part of a wider transit network, connecting with Maryland's existing Red, Green and Orange Lines. The Maryland Transit Administration estimates the new Line will result in about **17,000 fewer private car journeys daily.**

The principal **sustainability benefits of LRT systems** are clear: Mobility is greatly increased, with other positive impacts, environmentally and for promoting the healthier lifestyles that come with cycling and walking; and for **urban regeneration**. These are transformative effects, as commercial development and an uplift in city streets go hand in hand as the new tracks are laid.



Nottingham, UK



Florence, Italy

In the UK, the Nottingham Express Transit (NET) LRT system has been recognised as adding considerably to the image of the city. This was one key conclusion from a study of the impacts of the extension of NET to three lines, carried out by a team of researchers from The Economic Strategy Research Bureau (ESRB) of Nottingham Trent University.

The ESRB study focused on the economic effects resulting from the construction and early operation of the extended NET

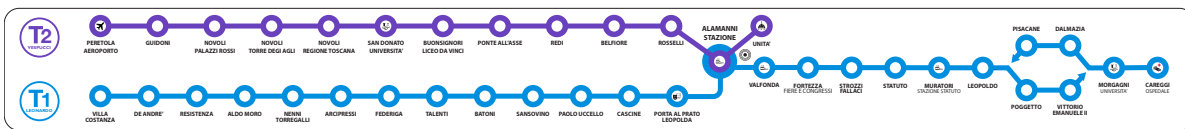
system, finding that the three-year build phase of the PPP project created around 4,500 years of employment and about £217 million of local economic activity, with a further 230 full-time jobs created in operation of the NET trams.

Among a wide range of benefits, the study pointed to NET's stimulus and extension of the wider labour market across the city region. The ESRB researchers found development of NET has 'demonstrated a good level of

strategic integration with other transport and development plans across the city', which is likely to realise further economic and social benefits in future, the report says.

Tram networks offer the **additional transport capacity needed to provide sustainable mobility for expanding city populations**. In Nottingham, Waterloo and Florence, the 3 networks already in operation, the trams transport a total of 60 million passengers a year.

FLORENCE: PUBLIC VOTES FOR TRAMVIA



Florence, as one of Europe's most beautiful and culturally significant cities, might be considered a very tough place to introduce a modern tram system. Yet, in 2019, officials from the municipality proudly picked up Italy's PIMBY - 'Please in My Back Yard' - Green Award, largely due to the benefits brought about by the Florence Tramvia system.



The PIMBY Awards are presented by Italy's environmental services industry, as a counter-point to the pervasive NIMBY (not in my back yard) culture, which is widely blamed for preventing progress of many municipal improvement projects in Italy.

Tramvia had its doubters to begin with. A public referendum held in 2008 revealed 53% of voters rejected the originally proposed route due to fears over its impact on the historical city centre, which led to the 'Variante Valfonda' alterations - rerouting some sections of track further away from heritage sites.

Florence has also rerouted its buses to serve the peripheral suburbs and to link with the outer stations of the three lines of Tramvia. Around 170 daily bus journeys have been removed from central Florence; and a **dedicated Park & Ride facility connects Tuscany's motorway network to Florence's tram system**, meaning visitors and tourists have a quick and easy transport link for reaching the city centre. A Tramvia trip takes 22 minutes from the P&R facility

at Villa Costanza to the Santa Maria Novella station in the historic centre of Florence.

Tramvia has also brought **a significant uplift in the quality of Florence's streets**. The Municipality of Florence used the Tramvia project as an opportunity for **'requalifying' the city's central areas for pedestrians⁽¹⁾, cyclists** and Tramvia, with improvements to street paving and furniture. Air quality has also improved dramatically and the popularity of Tramvia appears to have answered the critics. 35 million of passengers were transported by Tramvia in 2019. ■

⁽¹⁾In October 2009 the full area surrounding the Duomo cathedral became entirely pedestrian

Figures recorded from Meridiam's LRT projects also confirm **the overall popularity of tram transport**. "Passenger numbers on Tramvia have so far performed in line with forecasts, amounting to around 36 million journeys per year on the whole system," says Simone Gianassi, CFO for the Tramvia project SPV, Tram di Firenze.

In the Region of Waterloo, in Ontario, Canada, can be seen an LRT system equally favoured by a growing population and designed to provide all of the same benefits of sustainable mobility and development, with the added explicit target of **encouraging urban living**.

The Municipal Region of Waterloo is a conurbation incorporating the three cities of Kitchener, Cambridge and Waterloo, plus a number of other smaller towns. Its population is around 550,000 and growing – expected to reach 742,000 by 2031. The Region is not all built-up, however.

The Waterloo Region's long-term growth strategy is focused on **increasing urban density** – on 'building up, rather than out' – with the Waterloo ION tram system central to the plans for providing the necessary urban mobility. Five principal objectives have been set for ION: Shape our Community; Move people; Protect our Countryside; Better the Environment; and Manage Urban Growth.

"Essentially what this means is bring transformation to the Region of Waterloo in a way that increases development in its cities and **prevents further urban sprawl in greenfield areas**," says Michael O'Neill, General Manager for the ION project SPV, Grand Linq.

"The Waterloo Region has seen a lot of greenfield urban sprawl in the past, partly because it can be difficult to rejuvenate urban areas without incentive for high density development. LRT transport makes it all work, because it **allows**

planning without allowance for private car parking and LRT connects people to places of employment, leisure and academia," Michael says.

For increased connection to opportunity, ION will join up two universities and retail sites in the City of Waterloo, with the generally less affluent, residential and traditionally industrial area of Kitchener. ION is intended as **a springboard for rejuvenating brownfield sites** in urban areas, Michael says, and there are signs that it's happening already, with high-rise and mixed-use developments coming out of the ground.

According to figures from the Waterloo Region, \$3.2 billion has been invested in new development along the ION route since 2011; and 51% of all private and commercial building is now within existing urban areas.

"From a developer's point of view, LRT is better than conventional bus transport, because the tram tracks are fixed," he says. "There is very

NOTTINGHAM – TOP FOR CUSTOMER SATISFACTION



Nottingham's NET has become a popular and vital part of the city's transport network. The tram system now connects with many of Nottingham's main entertainment and employment sites, including the Queens Medical Centre, the NG2 business park, Nottingham University and both the City and Clifton campuses of Nottingham Trent University, as well as both of Nottingham's football clubs and the Trent Bridge cricket ground.

NET has forged partnerships with all of these businesses, plus numerous theatres, restaurants and other entertainment venues, to provide ticket offers and additional tram services at times of special events. Vital additional tram services operate during the first week of every October, for instance, when half a million people attend Nottingham's annual Goose Fair.

NET has built a **strong relationship in the community**; supporting numerous local charity groups, including the annual Nurse and Midwife of the Year Awards and the Nottingham Hero Awards. One NET tram is named each year in honour of the Nottingham Nurse & Midwife of the year for that year with the name remaining on the tram for a 12 month period.

Passenger numbers continue to grow year on year. In 2018/19 NET recorded a 6% increase on the previous year, to 18.8 million, according to UK Government figures. The NET system came top in a survey of UK transport providers, by the Institute of Customer Service towards the end of 2019. ■



Waterloo, Canada

little risk of LRT routes changing, so there is security for investment and it shows a real commitment from the local authority.

"The whole area gets an uplift. Streets are rebuilt, including utilities, telecommunications, paving and street furniture **from building line to building line**. And the area gets a **frequent, high quality service**. People like it. The Kitchener-Waterloo service is running every 10 minutes and will increase to eight minute intervals in 2020."

Re-routing of bus services is a notable feature of the ION and

Tramvia systems. In both cases, buses now serve wider areas outside core urban centres, with **bus routes feeding into the LRT stations**, so trams in Waterloo and Florence do not compete with bus transport.

In all four Meridiam LRT projects, the new LRT systems are key parts of wider sustainable transport strategies. All being developed through PPP financial arrangements, they also serve to demonstrate how the private sector can help to make such major long-term projects work. Meridiam was instrumental in formulating and

refining the financial model of the Purple Line PPP (see box) and in the case of Tramvia, Meridiam's involvement proved crucial for completing the project.

Simone Gianassi says: "Meridiam has a culture of great appetite for managing assets through long-term projects and SPVs. There was a delay to completion of the Tramvia extension due to a dispute between the grantor and main contractor part way through the construction programme, but **Meridiam stepped in to find a solution, helping to fund compensation for the contractor and to mediate in a**

WATERLOO: FOCUSED ON SUSTAINABLE URBAN LIVING

Stage One of the ION light rail transit system opened in June 2019, operating between terminals at the shopping centres of Waterloo's Conestoga Mall and the Fairview Park Mall in Kitchener and 17 other tram stops in-between.

Key locations along the route include Waterloo University, Grand River Hospital and the Waterloo-Kitchener Grand Central Station, which provides a transit hub for the wider regional and national transport network, connecting with mainline rail services.

ION is a crucial element of the Waterloo Region's transportation and development plans, which are focused on promoting **sustainable urban living across the three cities** of Waterloo, Kitchener and Cambridge. A Stage 2 of ION is planned, for connecting the City of Cambridge with Kitchener. This will turn ION into a 36km transportation system, operating in coordination with local bus services.

High passenger numbers have already been recorded. ION has brought a **36% increase in public transport 'boardings'**, to more than 800,000 per month, according to figures reported by the Region in November 2019. Partnerships with local community groups are helping to promote sustainable transport in parallel with other initiatives, including ION's sponsorship of the Kitchener Blues Festival (with ION promoted as a 'Safe Ride Home' to discourage drink-driving) and the Keolis Scholarship for Women in Electro-Mechanics at Conestoga College. ■





negotiated agreement that got the work finished.”

The new Tramvia Line 3.1 opened to passengers in July 2018, followed by Line 2 in February 2019. Construction was not without some protest due to its perceived impact, which resulted in both new lines being re-routed away from sensitive heritage sites.

“Attitudes towards Tramvia have changed now that it’s operational,” Simone says. “Communities at the outer reaches of the new LRT lines have seen an uplift to where they live. **Many towns in other areas now want the tram system extended to reach them.”**

There is further evidence of **how LRT systems can contribute to meeting the UN’s 17 Sustainable Development Goals (SDGs)**. Meridiam’s head of Environmental, Social and Governance (ESG),



Ginette Borduas, says: “LRT projects contribute to building better cities; increasing sustainable development based on sustainable mobility and responsible consumption of resources.”

LRT transport can therefore be seen to go some way towards

meeting SDG 9 (for industry, innovation and infrastructure) and SDGs 11 (sustainable cities and communities) and 12 (responsible consumption and production). “Additionally, tram projects promote good work conditions, including equality, inclusiveness and diversity. Through fare concessions and good design they improve access to transport for all, including those with disabilities; and with good practice, PPP concessions promote efficient partnerships, so meeting SDGs 8, 11 and 17,” Ginette says.

Nottingham Express Transit (NET) has become an **integral part of the city community it serves**. The LRT system connects residential areas, including underprivileged estates on the outskirts of the city, with key sites including Nottingham’s main Queen’s Medical Centre hospital, the city’s two universities and several business parks, as well as Nottingham’s central shopping areas.

Partnerships have been forged between NET and major entertainment venues, including the Theatre Royal, Nottingham Forest and Notts County Football Clubs, to offer low-cost special fares. NET concessionary tickets for students and families are also available at certain times and for special events, all of which can be accessed via a new NET mobile app. Nottingham, like other cities, is experiencing the benefits of having a modern, sustainable LRT system. ■

CLOSING ON THE PURPLE LINE

When fully operational in 2023, the Maryland Transit Administration’s (MTA) new Purple Line will provide a sustainable transport service east-west across the northern suburbs of Washington D.C. The line will connect Bethesda in Montgomery County, with New Carrollton in Prince George’s County 26km to the east, via 19 other Purple Line tram stops along the route.



The PPP behind it demonstrates **Meridiam’s commitment and capacity to successfully reach financial close**. At the time, in 2016, the project had available an \$875 million TIFIA loan and \$313 million in private activity bonds (PAB), which with equity funding made up the \$1.4 billion of private capital financed for the project.

In a first for US ‘P3s’, the PABs were issued as **Green Bonds** – a financing tool used for sustainable projects with a positive impact on the environment. The bonds were supported by favourable investment grade ratings and sold at competitively low interest rates, which generated savings for MTA. Meridiam, as 70% shareholder, acted as consortium lead and worked with the lenders and design-build and O&M teams, to accommodate changes requested by the client and to bring the project to financial close within six months. ■

