

Organisation Background

Luas (the Irish word for "speed") is the name for Dublin's light rail transit (LRT) system. There are two main Luas lines (Green and Red), covering approximately 37km. Luas Cross City (LCC) is currently under construction and will link the two existing lines in Dublin City Centre and will connect Cabra to St. Stephen's Green. Luas carried over 34.6 million passengers in 2015 and has proven very effective, efficient and flexible to operate; achieving remarkable economic and social results.

The Luas system consists of:

- 66 trams
- 36km of track
- 68 road junctions
- 7 park + ride facilities
- 2 maintenance depots
- 54 stops/platforms

Transdev: Transdev is responsible for the operation of Luas and currently employs more than 290 people. As part of Transdev's overall business vision "Mobility Inspired by You" and as the Luas operator, Transdev is committed to working towards a more sustainable future for Dublin's businesses and citizens. Transdev employed an environmental and sustainability manager in 2015 who is responsible for environmental compliance, coordinating CSR activities and promoting environmental and sustainability awareness initiatives across the operating system and internally.

Alstom: Alstom is a provider of transport and energy infrastructure solutions. Whether limiting the impact of activities on the environment, promoting sustainable development for all stakeholders and partners or improving the lives of those who come into direct contact with its products, Alstom takes sustainability very seriously. People, sustainability and the environment are at the heart of all of Alstom's decisions. In Ireland, Alstom is responsible for the maintenance, power, infrastructure and service of Luas. Alstom Transport Ireland is based at the Luas Red Cow Depot in Dublin. The 66 trams were manufactured in Alstom's plant in La Rochelle, France.

Sustainable Vision

As a sustainable public transport option, LUAS is addressing one of the most pressing environmental concerns worldwide, "the growing impact of transport on the environment". Countries around the world still rely heavily on cars as the primary transport mode, and with this come a reliance on diminishing fossil fuels and other natural resources.

Light rail transport is vital if reducing this reliance is to happen and LUAS is evidence that this movement towards more sustainable transport modes is happening here in Dublin. LUAS represents less air pollution, less noise, less vibration from road traffic and less traffic jams.

Those involved in LUAS believe that protecting the environment and contributing to sustainable economic and social development is an essential part of our ongoing activities.

In 2010, Transport Infrastructure Ireland (TII) established the Environmental Impact Steering Group (EISG) which includes senior management and a multi-disciplinary representation from TII, Transdev and Alstom. The EISG is responsible for the development and implementation of sustainability initiatives for Luas. Currently, 14 people, from the three organisations, comprise the group and they meet on a quarterly basis. The EISG developed the Dublin Light Rail Sustainability Plan 2011-2015 and are developing the new plan to run from 2016 through to 2020 with new and ambitious targets and objectives to be achieved.

The targets set out in the plan ensure that Luas is continually working to reduce waste generation, energy consumption, CO2 emissions and also working to improve CSR performance.

A Green Team was established in 2015, with members coming from across Alstom and Transdev and other contractors. The team come together on a monthly basis to discuss:

- Energy
- Waste Reduction
- Resource Use
- Workplace Transportation
- Purchasing
- Staff Education and Community Engagement
- Annual Green Week
- CSR activities

Implementation

Both Alstom and Transdev operate Environmental Management Systems, externally accredited to the ISO 14001 standard. These systems put in place environmental policies, risk assessments, objectives and targets, and procedures to continually improve the operation and maintenance of the system

Transdev has a Corporate Social Responsibility plan, "[Going the Extra Mile](#)", in place and was awarded the Business Working Responsibly Mark in 2012, 2014 and 2016 by Business in the Community Ireland (BITC) and NSAI, based on excellence in sustainability activities.

- All staff have been trained on environmental issues and are involved in the sustainable effort through the following: All new staff are provided with environmental and sustainability awareness training during inductions and existing staff through annual refresher training.
- 'Green Weeks' are held annually in the depots where awareness messages are run about chosen environmental topics. All employees are asked to share ideas that could contribute to the company's sustainable effort;
- All staff are regularly consulted on Green initiatives through surveys, newsletters, email shots and text messages; and
- Environmental Awareness campaigns are run twice annually throughout the LUAS system to raise awareness of waste management and sustainable transport amongst the public.

LUAS actively monitor energy, water and waste consumption in each of the depots at Red Cow and Sandyford and electricity consumption across the tram traction supply network.

A smart metering system, known as Powersoft, is used for electricity and water monitoring, allowing for remote visibility and analysis of key areas of usage. Through this system, spikes in energy consumption or leaks in water can be quickly identified and rectified.

The LUAS is an electrified system, using incredibly advanced technologies sourced by Alstom when building the trams, hence fuel use cannot be changed or reduced considerably. Annual consumption for tram running alone is 20GWh. This does not stop all at LUAS exploring opportunities to reduce usage. Systems have been put in place to ensure heating and ventilation is not activated when the tram is powered up solely for maintenance or cleaning. Further to this, the trams practice regenerative braking whereby trams send power generated during braking to other trams travelling along the same section of line, hence reducing power draw from the supply network. In 2016, Transdev made the commitment to change electrical supplier to Vayu who guarantee a 94% renewable fuel mix as part of its generation, hence committing to reducing the CO2 emissions associated with running trams.

Alstom have installed an Energy Mapping System on one tram on both of the Luas lines. This system meters, records and remotely transmits the energy used by all major components of Luas trams while operating in passenger service. This system allows for increased visibility of Luas tram energy consumption (see image below). Further to this, research has been undertaken by Alstom and Transdev into altering the heating and ventilation system on the trams during operation. Trials were carried out in 2015 using a

CO2 sensor on one of these trams to dictate when the heating and ventilation system should kick in. Results are currently being assessed and a business case being drawn up by Alstom. The system, if viable, could realise a 12% reduction in tram power requirements.

At the maintenance depot at Red Cow, new overhead LED lighting were installed in 2015 to reduce electricity consumption and to improve visibility for hard to reach areas. Sensors and timers were also installed to ensure areas of the depot that are not being used are not being unnecessarily lit at all times. Due to the success of this project, the second depot at Sandyford and a number of out buildings have been approved by TII for similar lighting installation.

One challenge that the Green Team worked to overcome was the exorbitant use of disposable cutlery and crockery in the canteen. Staff sentiment was that they did not want the 100,000 plus coffee cups used annually taken away from them. The Green Team decided to survey the usage, highlight the consumption through a newsletter and then gave all staff re-usable LUAS branded travel mugs and water bottles as replacement.

Another mechanism for promoting sustainability within the work force was the holding of a Green Week in 2015. This was a major success and involved a number of events to highlight environmental awareness to staff. The Green Team organised the week, with a selection of electric vehicles on offer to test drive, a bike shop on site showcasing bikes and the bike to work scheme, a biodiversity workshop offsite at a community garden, an Oxfam pop-up shop, home energy monitors for staff to try out, competitions.

Transdev are members of the Smarter Travel Workplaces Programme, an NTA initiative that aims to promote more sustainable travel/transport choices for staff and our customers in order to reduce costs from business travel, and enhance employee/customer wellbeing. In 2015/2016 the following initiatives were run to promote more sustainable transport choices amongst our employees and our customers:

- Bike to Work Scheme (separately during Health Week and Green Week)
- Pedometer Challenge
- Eco-Calculator awareness campaign on social media
- Electric Vehicle test drives during Green Week

The majority of track and infrastructure maintenance activities take place during the nighttime throughout the LUAS network. In order to minimise nuisance to those living beside the tracks, Alstom use best practice where possible and in 2015 sourced battery operated chainsaws and leaf blowers to reduce noise pollution. Contractors also use specially designed noise insulated vans housing power washers when cleaning platforms and track.

Results:

In 2015, LUAS transported 34.6 million passengers by Luas, up from 32.4 million passengers in 2014, and 30.5 million in 2013. The **6.1% increase** from 2014 to 2015 was the largest increase of any public transport provider in Ireland over the period. This is a reflection of the LUAS team's passion and commitment to safety, customer service, punctuality and reliability, the hall-marks of customer satisfaction and a first class quality transport service.

Recycling Rate: Up 19% since 2011 - The recycling rate across all activities has increased from the baseline rate of 8% in 2011 to the current rate of 27%. Increased awareness in the office and depot environments has ensured a high level of recycling is maintained. New labelling on bins throughout these areas has improved performance.

Water Conservation: Down 25% versus 2011 - Through water reduction campaigns and alterations to the tram wash system, the water consumption levels in 2015 were down 25% compared to 2011 levels.

Gas Saving: 9% saving versus 2010 - Gas consumption (kWh/m² depot floor space) used for heating and hot water has improved considerably since 2010, down 9%. In 2015, new more efficient hot water boilers were installed in both depots and changes were made to the heating system to ensure that the automated system is better aligned with outside air temperatures.

CO₂ Saving: 16% saving versus 2010 - Through a combination of electricity and gas reduction measures and improving passenger usage of the LUAS, the CO₂ emissions (kgCO₂/passenger) has decreased by 16% between 2010 and 2015.

Energy Saving: 13% saving versus 2009 - In 2015, kWh/passenger carried was down 1.5% on 2014, despite the 6.1% increase in passengers over the same period as mentioned above. Since 2009, kWh/passenger has reduced by 13%. This is testament to the management of electrical use by the contracts team, the vigilance by tram drivers in their driving techniques and also in the promotion of LUAS as a sustainable means of transport and a smarter choice for commuters, boosting passenger numbers overall. Transdev showcased LUAS's sustainability commitment in their global magazine in 2016, highlighting the efforts being made on the ground.

Green Week 2015 - During Green Week 2015 it was decided to provide all staff with new LUAS travel mugs and water bottles. This resulted in a reduction of over 100,000 polystyrene cups and plastic lids that were previously being used annually in our canteen.

Future Plan/Targets:

Luas is committed to a more sustainable future and aims to proceed with the following in 2016/2017:

- Investigate the installation of a cloud based metering system, linked to the current metering system for Luas depots with real-time mobile dashboard for staff and display screens in canteens/receptions to highlight usage and communicate targets/trends to all Luas staff and stakeholders. These screens will also be used to communicate with and update staff on CSR campaigns in the workplace such as recycling initiatives and staff activities in the community, carbon footprint of the operational system and embodied carbon calculations for the LCC line.
- Progress possibility of converting heating and ventilation systems of all trams to the CO₂ based system trialled during 2015
- Explore possibility to install photovoltaic solar panels on the roofs of Luas depots in order to reduce the carbon footprint of Luas
- As part of CSR activities, raise awareness externally through two high profile environmental marketing campaigns and one internal environmental communication campaign as well as a new quarterly update to all staff on achievements
- Update the EMS to incorporate the new ISO 14001:2015 standard
- Implement energy and resource saving initiatives already in place at existing depots at the new Broombridge depot due to open as part of the Luas Cross City in 2017.

The new Luas Sustainability Plan for 2016 – 2019 includes for the following ambitious objectives and targets:

- 2% reduction in kWh/passenger electricity consumption from 2015 to 2019
- Increase recycling rate to 35% across all areas by 2019
- 5% reduction in kWh/m² (depot/office floor space) gas consumption from 2015 to 2019
- 10% reduction in mls/passenger water consumption from 2015 to 2019
- 2% reduction in KgCO₂/passenger km from 2015 to 2019
- Two energy awareness initiatives each year
- Waste reduction awareness initiatives will be run each year across LUAS and internally

GREEN TEAM UPDATE

A Word From The Green Team

NEWSLETTER VOLUME 1 2015

CORPORATE SOCIAL RESPONSIBILITY

Transdev's Corporate Social Responsibility activities are showing no signs of slowing down. Watch out for the 2014 CSR Digest to be issued in June, detailing our performance in meeting targets and objectives as outlined in our CSR Plan 'Going to Extra Mile'.

2015 was another successful year for the Schools Business Partnership Programme with 50 students from St Aidan's, Tallaght and St Terman's Duncrum participating in interview and CV preparation skills, a Day in the Life workshop with LUAS staff and a Customer Care day.

Our work with local communities is well recognised, with many staff actively involved in volunteering and school visits as well as collecting for charities and seeking donations for sports clubs groups close to where they live. Keep up the good work everybody.

Our Business Impact map, detailing our community CSR activities can be seen by going to the Business in the Community Ireland website www.bic.ie

RETURN OF GREEN WEEK – PUT IT IN YOUR DIARY 7TH - 11TH SEPTEMBER

Back by popular demand, Green Week this year will run from the 7th to the 11th September 2015. The location will be the Red Cow depot, with the following activities taking place throughout the week:

- Eco-Driving – Electric Cars by Nissan and Mitsubishi
- Bike to Work – Wheelson information display and stand
- Energy Awareness – ICTI and Renewable energy grants information
- Waste Management – Information Display, WEEE collection
- Charity Partnerships – Barbecue and Cleanvision collection
- Competition – Ten Blue Challenge in association with Wheelson
- More to be announced.....

RESOURCES

Through our newsletters we will aim to update you on consumption of natural resources as a result of our business activities. The consumption of paper and certain disposable crockery and cutlery are detailed below. As we quantify other supplies we will incorporate into future newsletters.

Paper use in printers/copiers only at Red Cow and Sandford is monitored through a smart cloud-based system, reporting usage on a continuous basis for each printer and user. Transdev usage for Quarter 1 2015 was equivalent to:

- 1.12 trees consumed
- 454.8kg CO2 Consumed
- 25,487 lightbulb hours



Use of disposable tableware and cutlery is alarmingly high at the Red Cow depot, with none of the items recyclable. A more sustainable option must be investigated if we are to reduce the following consumption:

- 100,000 cups
- 20,000 lids
- 100,000 stir sticks
- 30,000 plates
- 20,000 forks, spoons and knives

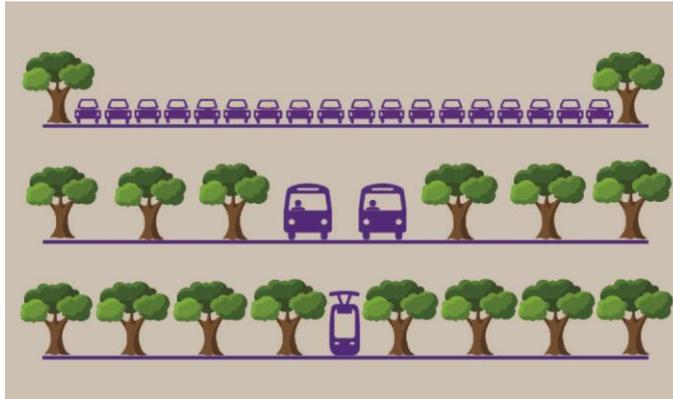


(All above figures are based on trends from 2014)

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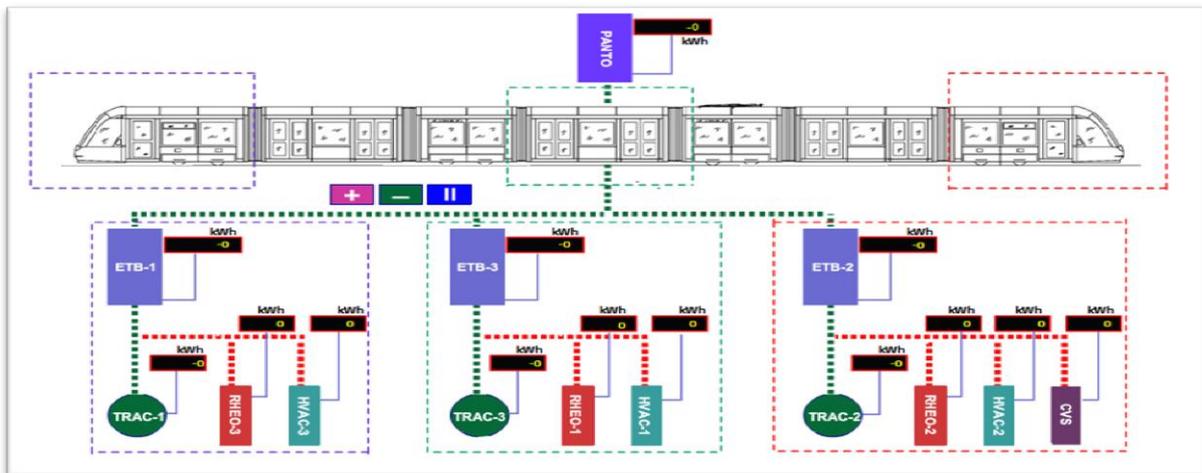
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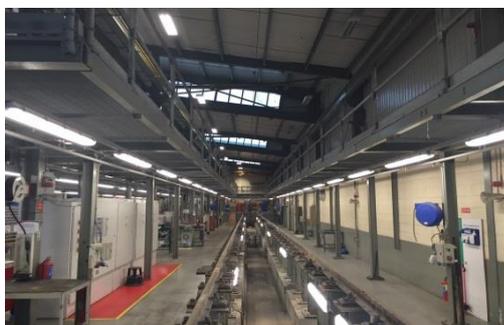


Earth Day Campaign

Green Team Newsletter



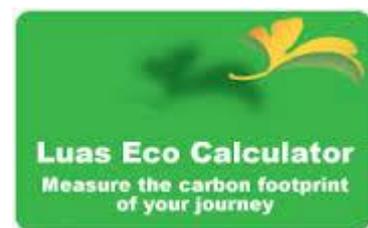
Tram Energy Mapping



LED Lighting



Travel Mugs



Eco-Calculator



Pedometer Challenge



Depot Waste Segregation



Transdev Global LIVE Magazine



Green Week Activities