BUS2020

Lothian

BUS2020

OUR ENVIRONMENTAL JOURNEY

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MD Statement

Lothian is one of Scotland's leading public transportation experts. We are not just about physically transporting the thousands of people we carry every day but go far further than that, looking to the future and how public transport will play a role in the evolution and development of society.

Lothian is part of the fabric of Edinburgh, Scotland's great and majestic capital city. We are 100 years old and have long been embedded in the society, culture and everyday living of the thousands of people that live and work in Edinburgh, as well as the vibrant tourism economy of those that come and visit every year.

Public Transport is critical to the economy of any major city and plays it's part in the wider strategy for any successful, forward thinking and continually developing country, be that in supporting and developing retail, tourism, workplace and of course supporting the social aspects of any society. Without it vital links do not exist or are created, people and customers cannot move around and make the vital connections that they need.

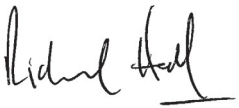
Lothian is a socially aware public transport operator, we know that our operations if not correctly managed can contribute to environmental impacts on society, however we also are very aware that mass transportation is the solution to most if not all of the environmental impacts arising from transportation. The reduction of private cars on the road has to be a key target for government at both national and local level in tackling the environmental and climate change issues that we are faced with today. Bus and other mass transport methods will do this.

Lothian is also aware that just the supply of an environmentally friendly 'green' bus is not enough to change opinion and induce modal shift by attracting new and non users. We have to create the right environment for travel within the vehicle, thinking about the aesthetics of both the exterior but particularly the interior, creating not only a safe but also a comfortable and social space for an enhanced travel experience.

At Lothian we have been researching this in depth and working with manufacturers to ensure that we create a vehicle interior with the right ambience. Ensuring that every detail is picked up is of major importance, from customer information screens with next stop audio and visual display, live social media and marketing feeds to the seat fabric, design and textures, recessed low energy spotlight lighting, flooring colours and tones and improved customer saloon heating and cooling. We also have to think about the functional aspects, ingress/egress, ticketing and the like, the journey for our customer has to be smooth and seamless.

All that however is not enough and alone will not deliver the results and aspirations that we all want and need whether that is private, public or governmental sectors. Local Authority partners need to think about the design of our cities and towns from the road layouts and designs to other measures that speed up and prioritise public transport, taking learning from other cities and countries that have experimented and implemented successful projects and delivery.

The need to have open minds is critical, to make decisions that are sometimes unpopular but safeguard the future for many generations to come.



Richard Hall
Managing Director
Lothian

Introduction

Cleaner and greener buses save thousands of tonnes of greenhouse gas emissions every year and help to tackle the growing issue of air pollution in Scotland's towns and cities.

As one of Scotland's largest transport providers, we operate throughout Edinburgh and the Lothians and we are critically aware of our impact on the environment and how we are part of the solution to reducing environmental impacts on our towns and cities and improving life for all. Back in 2009 we began a journey of environmental improvements, with corresponding investments in our fleet to reduce overall emissions and support air quality improvements within our operational environment.

Lothian, as a socially responsible transport provider, is self-funding and prioritising the investment in over 300 low and zero emission vehicles to reduce our impact on the environment and ensure we meet the Scottish Government's 42% climate reduction target. By 2020 the Lothian family of businesses will have dramatically cut our emissions footprint and operate at a minimum vehicle standard of Euro 5 across our fleets.

To achieve this ambitious target, Lothian developed and formed the Bus 2020 Environmental Strategy which incorporates all aspects of our operations not just the substantial road and passenger transport elements but also many other parts of our business. The strategy contains an outline of the vehicle investments at the time of writing required in order to meet the 42% target.

Furthermore under the strategy, we seek to address the internal use of resources such as energy and water and the generation of waste which impacts on the environment. Under the Environmental Strategy, we will continue to investigate measures to lower our internal impact through the implementation of resource efficiency projects and high levels of staff engagement with colleagues and unions.

Setting the Scene

Concern over air quality is now widely recognised as a public health emergency and road transport is a major cause in large cities.

In 2009, the Scottish Government unanimously passed the Climate Change (Scotland) Act, which was considered by Parliament as the most far-reaching environmental legislation during it's first ten years of devolution. The Act creates the statutory framework for greenhouse gas emission reductions in Scotland by setting two key targets, an interim 42% reduction target for 2020, and an 80% reduction target for 2050. By 2050, the road transport sector is projected to be almost completely decarbonised:

"Ultimately, by 2050 Scotland will be free from harmful tailpipe emissions from land transport, with other transport modes decarbonising at a slower pace, resulting in a healthier, more active population."
(Scottish Government)

Though there are ambitious targets in place, transport still accounted for 28% of total Scottish emissions in 2014. The largest contributor to transport emissions is the road sector, accounting for 73% of total transport emissions.

Transport Emissions in Scotland

According to Transport Scotland[1], cars (including taxis) are the largest source of road transport emissions, accounting for 54% of total road emissions or 5.7 mega-tonnes of CO2 (44% of all transport emissions in Scotland). Though there has been a small overall reduction in car emissions due to engine technology, there has been a significant increase in kilometres driven in the last 12 years at 1.3 billion kilometres.

With the added emissions from Heavy Goods Vehicles (HGVs) accounting for 24% of Scotland's transports emissions (1.68 mtCO2) and vans accounting for 15% (1.54 mtCO2), these transportation sources account for a substantial amount of road emissions and heavily contribute to increases in harmful nitrogen oxides (NOx) and Particulate Matter (PM) emissions. The pollutants are linked to health problems such as heart disease and cancer, and can exacerbate asthma.

Overall road transport emissions show that buses account for only 5% (0.1 mtCO2) of total emissions. Buses can and are part of the solution to transport emissions due to huge advances in technology far ahead of other modes and their ability to carry a large number of people. .

Only one fully loaded double decker bus can take the equivalent of 75 cars off the road and substantially reduce emissions per passenger kilometre.

Though bus emissions contribute to a small percentage of overall road transport emissions, due to numerous public transport operators in a highly competitive market, thousands of buses on the roads every day have vastly differing emission standards.

The market has many larger groups who operate not only in Scotland but throughout the UK market, with many smaller operators in local areas. Lothian is often acknowledged as an industry leader and example of best practice due to our strong track record of environmental responsibility and innovation. We have one of the youngest fleets in the country and ensure our lowest emitting buses are strategically deployed in areas with declared Air Quality Management Areas (AQMAs).

With Lothian's ongoing vehicle replacement programme, low emission buses will be continuously introduced onto our services and into our fleet.

Euro 6 buses are really clean, they reduce harmful NOx emissions by 98% and Particulates by up to 75%.

[1] https://www.transport.gov.scot/media/20413/140674.pdf

The Edinburgh Story

Edinburgh, Scotland's vast and historical Capital City, is characterised by hills and small winding streets. Previously built up in the 14th and 15th Centuries, population growth has been substantial alongside expansion of its physical footprint. In 2016, Edinburgh housed 507,200 people. This number however doesn't include the millions of commuters and tourists who swell the City all year round.

Edinburgh is not particularly car friendly with minimal parking and high charges, but there is still a high commuting rate by the single occupancy car at around 40%. Though there has been a decline in commuting to work by bus in Scotland on average, Lothian has bucked the trend, with 21% of commuters travelling by bus in Edinburgh. In 2016 Lothian carried over 120 million passengers.

Fig 1. AQMA locations in East Scotland

Air pollution has been a growing area of concern in Edinburgh for a number of years due to increases in traffic and congestion, leading to breaches in acceptable levels of NOx. Air quality is monitored under the Environment Act 1995, and due to increasing pollution levels, six Air Quality Management Areas (AQMAs) have been declared in Edinburgh (Fig 1). This includes St John's Road, hailed in 2015 as the 'most polluted road in Scotland.' In addition, the first AQMA in East Lothian was declared in Musselburgh in 2013.

Bus travel is recognised as an integral part of the solution to improving air quality in towns and cities. Data from 2016 showed a steady decline in NOx emissions in Edinburgh, due in part to Lothian's bus fleet improvements[2].

With air quality high on its agenda, the Scottish Government made a pledge to implement the first Low Emission Zone (LEZ) in a Scottish City during 2018. This LEZ came into effect in Glasgow city centre on 31st December 2018, initially applying only to local service buses. On 31 December 2022 when the LEZ is fully implemented, all vehicles entering the zone will have to meet specified exhaust emission standards. Edinburgh, Aberdeen and Dundee will eventually operate LEZs, due to continuous breaches in the maximum legal limits of NOx in the atmosphere.

[2] http://www.airqualitynews.com/2016/09/16/edinburgh-nox-emissions-data-suggests/

Bus IS part of the Solution

Lothian, as a socially responsible transport provider, is prioritising the investment in new, low emission vehicles to reduce our impact on the environment and ensure we meet the Scottish Government's climate target targets. The Bus 2020 Strategy outlines the vehicle investment plan over 5 years.

Investing in low emission buses supports in air quality improvements, reduces impacts to health and encourages car users towards public transport. Investment in emissions alone won't make people change so we also have to create and supply vehicles that meet the expectations of our existing customers and even more so the non-users in order to attract them to and get them to successfully switch modes. Due to the technology available for Euro 6 diesel buses, emissions are substantially reduced including harmful NOx emissions by 98% and Particulates by up to 75%. As a cost effective solution, Lothian will purchase large numbers of these vehicles to support improvements in AQMAs.

As demand for low and zero emission vehicles increases so do purchasing and operating costs for bus companies. This is not just the initial capital cost and outlay but also the ongoing 'whole life' costs with the potential to also reduce the historic life cycle of the vehicle due to technology advances and component durability. It is therefore imperative that the Scottish Government continues to support operators. The Scottish Green Bus Fund (SGBF) has so far supported Lothian in the investment of 85 hybrids and 6 fully electric vehicles at a cost of £58 million (£5.8 million funded from SGBF).

Hybrid buses are an important and complementary technology but have premium costs due to the added battery components on board.. The buses use a combination of batteries and a smaller diesel engine to power the bus, with regenerative braking and start-stop technology, the buses move from stationary under electric power then progress to hybrid operation when up to speed.

Lothian added a further 20 Euro 6 hybrids to the fleet in 2017 due to a successful round 6 SGBF application. These vehicles are an important part of the technology required to assist with the emission reduction targets. However, reductions in funding mean they are fast becoming a far less viable option. Advances in Euro 6 diesel technology also reduce significantly the impact that hybrids once had.

Bus IS part of the Solution *(continued)*

With the move towards LEZ's on Government agendas, the appeal of ultra-low emission buses increases. Over the next two years, Lothian will invest in fully electric single deck buses, though this technology is still developing and is not as yet mature. With ever changing technology, the range of a full electric bus is increasing though still does not meet what an operator needs to run full service and route diagrams. Today they have a range of around 150-180 miles when an average route covers 250 to 300 miles daily. Lothian is committed to further exploring this technology and purchasing buses which have full and complete electrification of the vehicles including heating and air conditioning requirements, unlike many products on the market which have these powered by ancillary diesel powered systems.

Whilst there is a push towards full electric technology, with no infrastructure funding support, bus operators must bear the full burden of the costs alone. This as it stands is not a sustainable solution.

For buses to be part of a real solution, wider issues have to be considered including overall bus prioritisation measures to support modal shift and tackling congestion.

Without these the bus industry will only scratch the surface of what is required, despite the monumental efforts and investment being made by vehicle manafacturers and operators. With the addition of the low emission and full electric buses being introduced by Lothian, this will support to significantly reduce emissions in the city.

Climate Change and Resource Use

Climate change is a global issue, however, to support Scotland and the wider United Kingdom to transition to a low carbon economy, all businesses must consider the impact of their strategies and operations on climate change matters.

In addition to vehicle investment to meet the obligations of Scottish Government's climate change targets, we must take into consideration the other resources and methodology that we use across the company which add to our overall carbon footprint and operational costs.

Lothian will further show our commitment to meeting the targets by managing the resources which we use company wide.

Following an extensive review of Lothian's resource usage, an Environmental Strategy has been formed for electricity, gas, water and waste. We will take steps to reduce our energy and water consumption, maximise waste resource recovery and minimise waste disposal.

Bus 2020 Environmental Strategy

The Bus 2020 strategy is central to the achievement of the Lothian's overall vision to meet the 42% reduction in greenhouse gas emissions target set by the Scottish Government. The 2020 Vehicle Plan sets out the investment required for the purchase and disposal of vehicles in order to achieve a minimum vehicle standard of Euro 5 by the end of 2020.

Lothian is projected to invest in 346 innovative, environmentally friendly and quieter vehicles for our operational network by working with key partners in the manufacturing industry. The approximate number of vehicles we are required to dispose of is circa 300 in order to comply with 100% of our vehicles at a minimum Euro 5 standard by the end of 2020. All incoming vehicles will also arrive with significantly upgraded and luxury features for an enhanced customer experience.

The total investment under the strategy is estimated to be £78 million, over a 5 year period. Lothian will continue bidding for the Scottish Green Bus Fund to support in the uptake of hybrid and/or ultra-low emission technologies, for as long as it is available or where this support works financially for Lothian to bridge any funding gaps for other technologies.

Fleet Investment – 2016

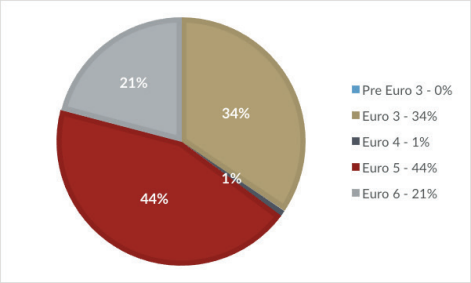
Edinburgh Bus Tours: The first step under the Environmental Strategy was to invest in our Edinburgh Bus Tours fleet. This is Scotland's second most popular paid-for visitor attraction, which offers a five star city centre sightseeing operation and contributes significantly not only to the city economy of Edinburgh but also the wider economy of Scotland by attracting and delivering a significant experience for visitors to the capital. Older vehicles were previously in operation across three key city routes, carrying over half a million tourists per year.

30 state of the art, Euro 6 low emission open top vehicles were specially designed and commissioned to provide an enhanced visitor experience whilst reducing carbon emissions by 40% and NOx and particulate emissions by 95-99%, compared to the previous tour buses. All tour buses utilised previously were removed from the fleet operating Edinburgh Bus Tours. The investment in these vehicles, allows Lothian to operate at a Euro 6 minimum on Waverley Bridge in the centre of Edinburgh.

City Bus: At the end of 2016, 25 Euro 6 double deck vehicles converted Route 22, one of our most frequent and cross city services, to a low emission operation. This high profile route which connects Ocean Terminal to the Gyle Centre, also services the key education establishments of Edinburgh Napier University and Edinburgh College. These vehicles offer significant emission reductions, with up to 25% savings in CO2, 99% in NOx and 80% in Particulates over previously operated vehicles.

Ancillary Fleet: With our operations also requiring the use of a fleet of vans for crew transfers, the emissions from the ancillary fleet were also reviewed with a view to reduce them in tandem by moving towards low emission alternatives. Older vehicles have begun to be removed and replaced with Euro 6 equivalents. After a successful trial period, a full electric van joined the fleet. This vehicle operates between our depots and travel shops mainly in a City Centre operation delivering internal mail and other resources and has removed 4 tonnes of CO2 from our footprint. A grant from Energy Saving Trust also supported Lothian to install two fast charge points in our Central Garage and Head Office for internal use.

Fig 2. Status of the fleet as of the end of 2016



At the end of 2016, 65% of the Lothian fleet met the minimum Euro 5 emission standard (Fig 2). Over 800 tonnes of CO2 were removed from our carbon footprint.

Euro 6 technology substantially reduces harmful emissions and so 19 tonnes of NOx and 167 kg of Particulates are also projected to be removed. Total investment is estimated at £11.5 million.

Fleet Investment – 2017

Lothian invested in a substantial number of low emission vehicles on our journey for environmental compliance. 2017 saw 86 vehicles introduced into the fleet and strategically deployed on routes running through AQMAs.

EastCoastBuses: The first delivery was 15 Euro 6 single deck vehicles for our EastCoastBuses operations. These replaced the existing Euro 3 vehicles running on services. With an operational depot located within Musselburgh's AQMA, all vehicles utilised within EastCoastBuses main services now operate at a minimum Euro 5.

City Bus: Further investments included 45 Euro 6 double deck vehicles. Thirty were allocated to one of our busiest routes, service 26, which operates through the St. John's Road AQMA in Corstorphine. These vehicles will make a significant impact to addressing the air pollution issues on this busy corridor. The remaining 15 featured an enhanced vehicle for our premium Airlink service which connects the City Centre to Edinburgh Airport.

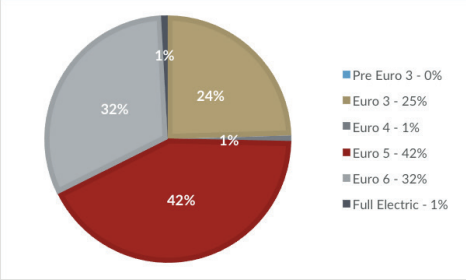
A successful application to the SGBF round 6, awarded Lothian with £1.5 million to support in the purchase of 20 Euro 6 Hybrid double deck vehicles. These vehicles have Start-Stop technology which allows the bus to utilise electric running, reducing roadside emissions and minimising the impact to passengers at bus stops. The vehicles were allocated to service 300, a high profile route connecting Ocean Terminal to Edinburgh Airport.

As part of Lothian's continuing commitment to reducing our impact in Edinburgh, we took our first steps towards an electric future by investing in 6 innovative single deck full electric vehicles to run within the city centre. With these, Edinburgh became the first city in Scotland to incorporate an all-electric city centre bus route.

In pursuit of our overall target, 65 Euro 3 vehicles were removed from the fleet during the year.

With this number of low emission vehicles joining the fleet, we saw substantial savings in emissions throughout our entire operational network. We removed over 1,000 tonnes of CO2 from our footprint, 38 tonnes of NOx and 226 kg in Particulates. At the end of 2017, 75% of the Lothian family of businesses was Euro 5 or above (Fig 3). The total investment in 2017 equals £20.9 million.

Fig 3. Status of the fleet as of the end of 2017



Fleet Investment – 2018

As Glasgow was announced as Scotland's first city to operate a Low Emission Zone, effective from 31st December 2018, Lothian continued to invest in our fleet to ensure that we will be able to operate in the LEZ planned for Edinburgh in the near future, thus future proofing our business and investment. This year also saw investment in over 70 low emission vehicles.

Euro 6 vehicles joined the fleet, removing the equivalent number of Euro 3 vehicles. These vehicles have been deployed in AQMAs, converting more routes to a Euro 6 operation.

Lothian is also continuing to explore developments in full electric vehicles as the technology improves.

Lothian was awarded funding from round 7 of the Scottish Green Bus Fund, which was used to fund the six fully electric vehicles now operational in the city centre.

Buses this year converted an entire route running through one of the most polluted roads in Scotland, St John's Road. At the end of 2018, all buses operated at a minimum euro 6 emission standard along this corridor. These buses have removed up to 34% of the carbon emitted by buses currently deployed on the route and have further reduced other harmful emissions by 95-99%.

Investments in 2018 have resulted in 84% of the Lothian fleet meeting the minimum Euro 5 emission standard with 1% of the fleet full electric. Over 1,800 tonnes of CO2 has been removed from our carbon footprint alongside 61 tonnes of NOx and 282kg of Particulates. Total investment was £22.5million.

Lothian continues to explore the fitment of retrofit emission systems to Euro 5 specification vehicles as they see fit. Lothian firmly believe that no vehicles prior to Euro 5 should be retrofitted as, whilst they may meet the required emission standards, they will not deliver the required customer experience to retain our existing customers, create further modal shift and to ensure that bus not only remains but becomes the optimum solution to improve air quality for future generations whilst delivering cost effective transportation solutions.

Lothian believes it is critical that the Scottish Government supports fully the funding around appropriate retrofit systems to bring vehicles to Euro 6 standard.

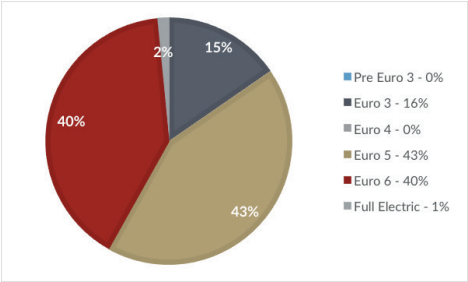


Fig 4. Status of the fleet as of the end of 2018

Fleet Investment – 2019

As we move towards 2020, the majority of the fleet at this stage will meet minimum Euro 5 emission standards. Lothian will continue with its fleet investment programme and invest in around 50 Euro 6 vehicles.

These vehicles will be strategically deployed on routes most affected by air quality issues. The subsequent removal of Euro 3 buses will lead us towards our target of a 42% reduction.

Over 2,000 tonnes of CO2 will be removed from our footprint, 41 tonnes of NOx and 246 kg of Particulates, leading to 92% of the Lothian family of businesses meeting Euro 5 emission standard or above (Fig 5). The total investment in 2019 equals £11 million.

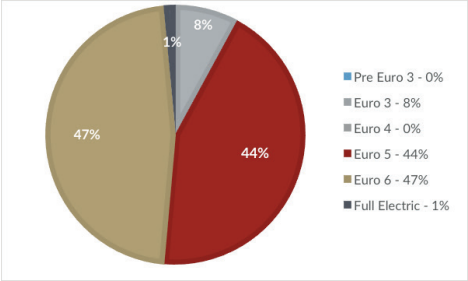


Fig 5. Status of the fleet as of the end of 2019

Fleet Investment – 2020

Lothian began improving the environmental quality of our fleet in 2009 and since that time we have made substantial and continuous investments in order to reduce our impact on the local environment. The Environmental Strategy led us on a path towards meeting the Scottish Government's Climate Change reduction targets and to a cleaner Edinburgh.

This year, 100% of our vehicles will reach the minimum Euro 5 emission standard (Fig 6). In order to do so, a large batch of 80 Euro 6 vehicles will be delivered, removing the remaining Euro 3 vehicles from our fleet.

Over 2,500 tonnes of CO2 will be removed from our carbon footprint alongside significant reductions in harmful NOx at 50 tonnes and 279 kg of Particulates emissions. Total investment is estimated at £17.8 million.

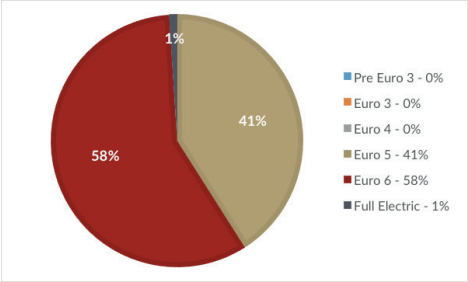
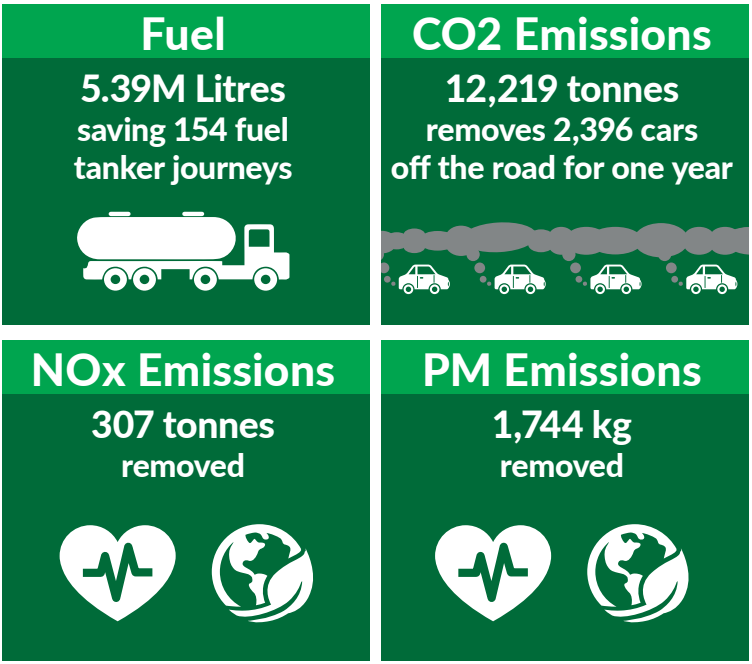


Fig 6. Status of the fleet as of the end of 2020

Vehicle Replacement – Summary Results

From the beginning of our journey in 2011, we have seen substantial emission reductions and with the purchase of over 300 vehicles and subsequent disposal of older vehicles, Lothian will have removed…

- Litres - 5.39 million - saving 154 fuel tanker journeys
- CO2 – 12,219 – fills Wembley stadium 1.5 times, removes 2,396 cars off the road for one year
- NOxt - 307
- PMkg – 1,744



Internal Environmental Strategy

The environmental impact from Lothian also includes our internal operations and the resources that we use during the day to day running of our garages and property portfolio. Climate change is a worldwide threat and with the strain on resources and growth of industries, companies must acknowledge their personal impact on resources and strive to manage and reduce them.

With offices, canteens, engineering workshops and substantial maintenance works, resource use is significant at Lothian. As a large company, we must acknowledge the resources we use and move towards low energy alternatives and the circular economy model.

The Lothian portfolio includes a number of older buildings which date back as far as the early 1900's. Older sites are often inefficient and not fit for modern day use, therefore utility usages will be higher unless modern, fit for purpose environmental technologies are utilised.

Lothian have a stringent monitoring and measuring process in place to review electricity, gas and water purchase and usage, as well as the waste that we generate and have to dispose of.

A 2015 baseline was established to set ambitious reduction targets to minimise our impact. Supporting implementation measures, bespoke to each operating garage, will ensure the success of meeting the targets as we move towards 2020. With two new buildings added to our portfolio in 2016 under our subsidiary EastCoastBuses, utilities have increased, and it is important to manage and reduce resources company wide.

Energy

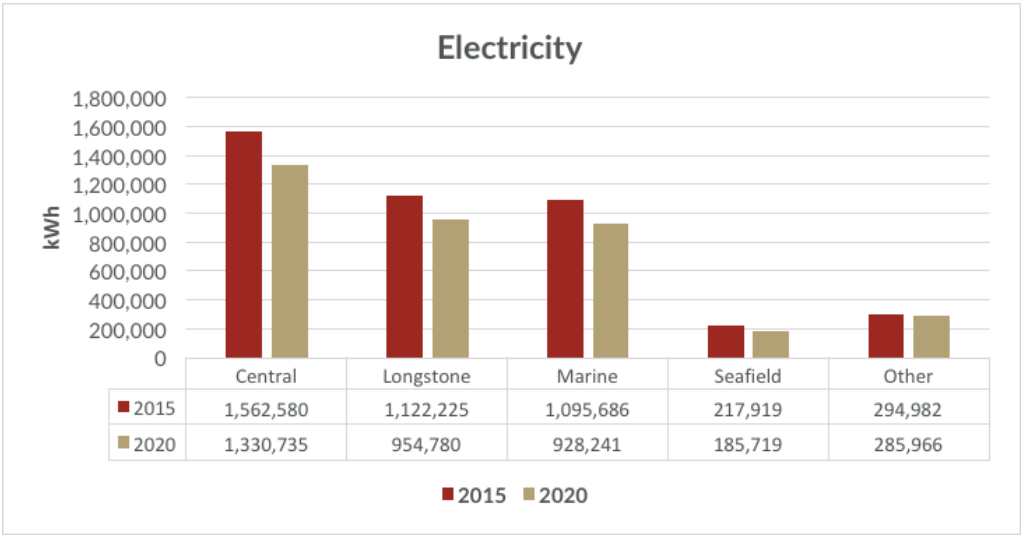
Energy use, which includes electricity and gas across the company is significant.

Electricity is one of the highest used resources across all sites due to our vast operation (Fig 7). During 2015, Lothian's electricity consumption was 4.3 million kWh company wide. With the costs of electricity continuing to increase and the associated emissions with energy use, managing our electricity is a priority.

Lothian aims to reduce electricity by 15% by 2020, saving 644,000 kWh and 330 tonnes of CO2. In order to do so, electricity projects have been established with key actions to implement with the ultimate aim of reducing usage across all sites.

Such projects include:

- Continuing with the roll out of LED low energy lighting company wide
- Implementing smart lighting technologies including control and management systems
- Engaging with staff in awareness raising campaigns over usage



	Central	Longstone	Marine	Seafield	Other
2015	1,562,580	1,122,225	1,095,686	217,919	294,982
2020	1,330,735	954,780	928,241	185,719	285,966

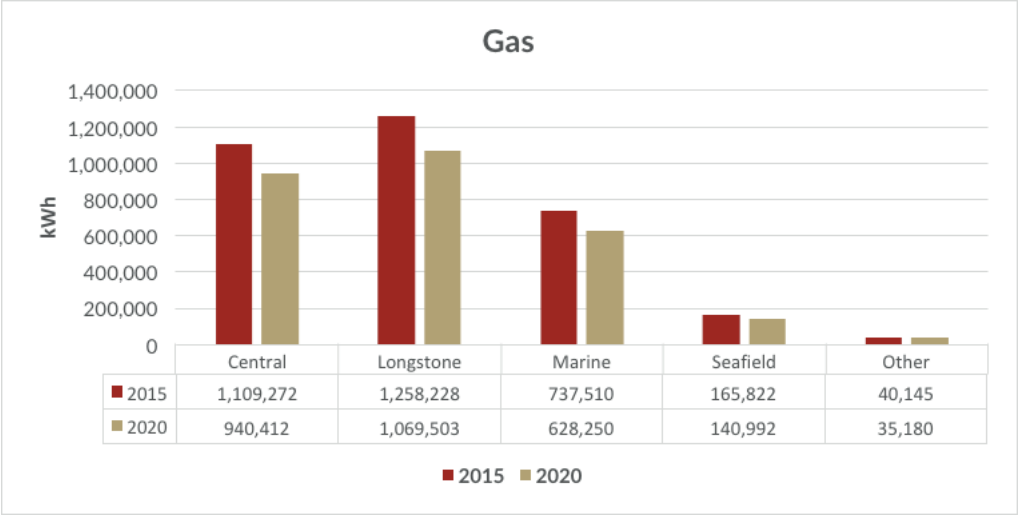
Fig 7. Projected savings in Electricity 2016 to 2020

Energy *(continued)*

Under the energy heading, gas is another area of high usage, due to the heating requirements in many of our older buildings. Gas usage was recorded as 3.3 million kWh in 2015 and continues to rise.

Gas is targeted to reduce by 15% by 2020, saving 500,000 kWh and 90 tonnes of CO2 (Fig 8). In order to do so a number of measures and controls will be implemented, such as:

- Implementation of a Building Management System
- Review of older heating systems and replacement with low consumption energy efficient boilers and heating systems
- Installation of smart controls and management systems



	Central	Longstone	Marine	Seafield	Other
2015	1,109,272	1,258,228	737,510	165,822	40,145
2020	940,412	1,069,503	628,250	140,992	35,180

Fig 8. Projected savings in Gas 2016 to 2020

Recycling and Waste Disposal

With the introduction of the Waste (Scotland) Regulations in 2012, recycling became mandatory for every business operating in Scotland.

With multiple sites producing waste from a number of operations including, engineering works, canteens and customer waste, the recycling and disposal operation at Lothian is complex. Though we have traditionally maintained a high recycling rate, the focus is on reducing the waste we produce by reviewing all aspects of the waste that we generate and then dispose of.

In 2015, Lothian disposed of over 933 tonnes of waste. The recycling system went through a number of changes in 2015 in order to segregate waste at source and on the disposal side, the results of this activity showed a 91% recycling rate. With the costs of waste disposal increasing and awareness surrounding the circular economy increasing, Lothian aims to reduce waste by 25% over the next 5 years. This target will save 235 tonnes and minimise our impact on the environment (Fig 9).

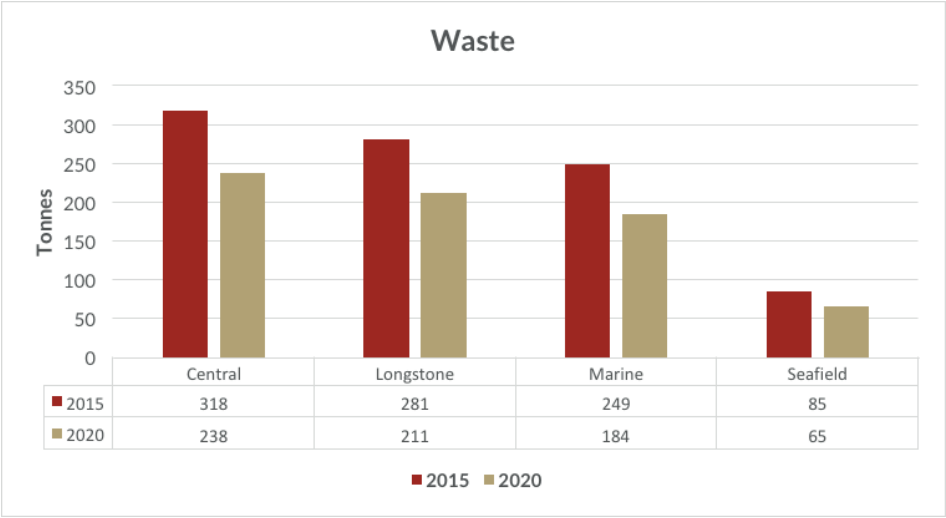


Fig 9. Projected savings in Waste 2016 to 2020

In order to continue with the successes, Lothian worked closely with our waste contractors to ensure maximum resource recovery and designed a recycling system which would accommodate this whilst being fit for purpose for our operations. This also involved high levels of engagement with our supply chain in respect of the packaging they use to deliver goods and products to Lothian, ensure that waste is proactively reduced right at the start of the supply journey.

In order to ensure we reduce waste, a number of measures will be implemented including:

- A new recycling system with further segregation of materials to include paper
- Maximum resource recovery in all department
- An aim of working towards paperless offices
- Biodegradable food packaging
- Removal of individual bins in offices
- Creation of recycling stations throughout our premises

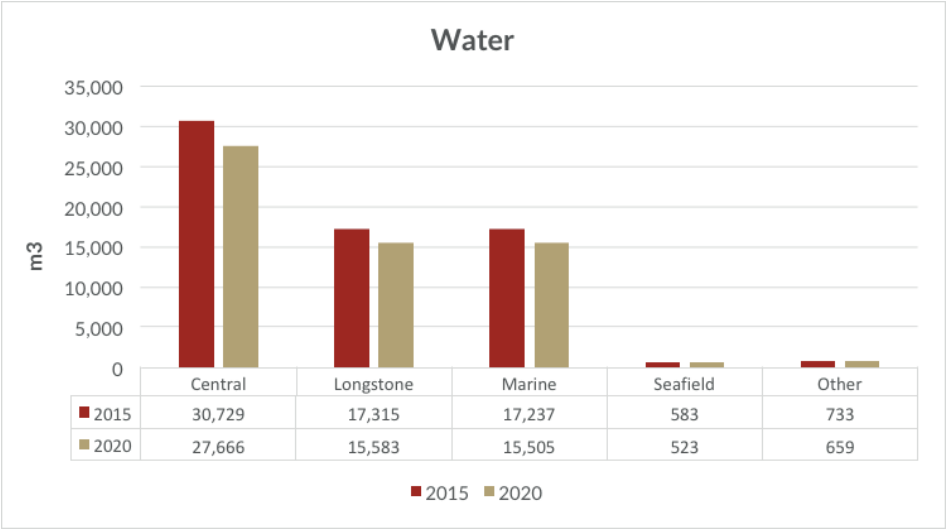
Water Usage

Lothian's vehicles are maintained to a high standard with a rigorous daily process of cleaning. Most sites also have installed bathroom and shower facilities for colleagues. Water use is high across all operational depots.

In 2015, water use was recorded at 66.6 million litres. With water acknowledged as a precious resource, Lothian aims to introduce further strategies in order to reduce water use by 15% by 2020, saving over 10 million litres of water (Fig 10).

Rainwater harvesting is already utilised at our Longstone Depot and is proving successful. We have already implemented vehicle wash recycling technology at all our sites buy investing in modern fit for purpose vehicle wash systems, other measures will be investigated and implemented in order to support the reduction in water, such as:

- A review of the potential to implement rainwater harvesting at other sites
- Roll out of a leak reporting system
- Continual assessment and review of the current bus wash recycling system.



	Central	Longstone	Marine	Seafield	Other
2015	30,729	17,315	17,237	583	733
2020	27,666	15,583	15,505	523	659

Fig 10. Total Water Use across all sites in 2015

Internal Environmental Strategy *(continued)*

Resource Use – Summary Results

We are a environmentally conscious company, mindful of the impact of our operations.

With reduction targets, we aim to remove an additional 2,700 tonnes of CO2 from our carbon footprint. Savings of approximately £100,000 will be realised by reducing the use of resources.

In order to meet the 42% reduction target by 2020, we must continue to engage and motivate our staff to make small changes to their behaviour which can make a big difference to our usage.

To accompany the targets, a number of other measures will be implemented including a sustainable procurement policy, ISO 14001 Environmental Management System accreditation and the establishment of an Environmental Awareness Team through selecting multi functional environment champions at all sites across the company.

Vision for Lothian in 2021 and Beyond

By the end of 2021, Lothian will have removed almost 15,000 tonnes of CO2 from our carbon footprint both from the fleet replacement and internal environmental strategies.

However the journey doesn't stop here...

Lothian will build on our commitment to sustainability. We will have learnt from the successes of this Bus 2020 strategy and commit to even longer term goals. We will operate a world-class, efficient and green transport service by ensuring we are leading the way in tackling air quality and climate change. The dedicated efforts of our colleagues and evolving usage patterns of our customers will work to deliver new targets successfully.

The Future for Buses

Lothian is committed to helping to improve air quality in our operational environment and reduce resources. The Environmental Strategy will see Lothian meet the level of compliance expected, putting us in a strong environmental position.

By 2021, we will comfortably operate in areas with air pollution concerns throughout our operational network. With the introduction of Low Emission Zones across Scotland beginning at the end of 2018, we will be able to operate the majority of our fleet under the minimum Euro 6 requirements as set by the Scottish Government.

With legislation continuing to tighten on emissions, Lothian will continue on our fleet replacement journey. The ultimate aim is to operate at a minimum of Euro 6.

Euro 6 buses are so clean and are streets ahead of comparable cars, trucks and other modes. With this goal, Lothian will continue on our fleet replacement journey and replace or upgrade the remaining 300 Euro 5 buses to a full low emission Euro 6 standard of operation. Euro 6 diesel buses reduce NOx output by 98% compared to a Euro 5 bus, and up to 75% Particulates. Investing in these vehicles will support the Scottish Government and our local council's air quality strategies.

As technology moves forward, Lothian will continue to review, trial and invest in full electric buses. This technology is still developing and maturing and is some years still away from being both operationally efficient, sustainable and cost effective solution. With ongoing and increased government funding and support, we will be able to achieve this goal and continue to support in air quality improvements in areas of concern.

Vision for Internal Resources

By 2021, Lothian will have a more efficient utilities operation with a clear waste disposal approach. To continue on our journey of managing and reducing our resources, and with Lothian's operations increasing due to demand, reducing resources is no easy task.

With renewable technology emerging as an alternative energy type and continued focus by the Scottish Government, Lothian will look to explore the potential to implement technologies in our depots. Such technologies include solar panels and wind power as well as enhancing our use of rainwater harvesting. Retrofitting older buildings can be expensive and timely and with Government funding reducing for these technologies, it may not be feasible to implement.

Behaviour change is proven to make huge differences in the workplace and Lothian will continue to engage with our colleagues and unions and embrace and imbed new technology and cultural changes.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