



Environmental Report 2002

In keeping with our commitment to the environment, this report has been published principally in electronic form and can be found on our website, www.thetube.com. Paper copies and large print versions can be obtained upon request.

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Environmental Data

London Underground Data	2001/2002	2000/2001	1999/2000	1998/1999	1997/1998
Passenger journeys (millions)	953	970	927	866	832
Passenger kilometres (millions)	7338	7470	7171	6716	6479
Train kilometres (millions)	65.4	63.8	63.0	61.2	62.1
Total length of track (km)	408	408	408	392	392

Resource Use

Total electricity supplied (gigawatt hours)	1017	1006	1101(a)	1021	997(b)
Energy efficiency (watt hours/passenger km)	139	135	154	152	154
Water used (litres, millions)	670	899	661(c)	480(c)	2030

Waste generated (tonnes)

General	5732	5592	5116	4228	3700
Track	6236	3345	5075	10804	15800
Skip/compacted	2208	2023	2261	3013	2500
Special	(e)	(e)	2000(d)	2376	500

- (a) Includes electricity used for testing on the extended Jubilee line prior to opening.
- (b) Correction to 1997 figures, these were estimated at the time.
- (c) Not including power station water consumption.
- (d) This is an estimate – special waste was only monitored in volume rather than actual weight.
- (e) Special waste transported as part of multi-load consignments

NB: Waste weights reduced in 1999/00 due to improvements in data recording and increased accuracy in recording track waste, using weigh-bridge tickets rather than vehicle capacity

Message from the Managing Director

London Underground Limited (LUL) has six corporate aims. These are to provide a safe, fast, reliable, welcoming, integrated and simple public transport system for London. In providing Londoners and other Tube users with the Underground system we also know that we have to do so in an environmentally responsible manner. People should be able to expect that in travelling on the Underground that they are using a sustainable mode of transport.

The Underground carries over 3 million people a day, and in doing so creates less pollution per passenger kilometre than almost any other mode of transport. We have to ensure that we continue to improve the way in which we manage the significant environmental impacts that we do have and maintain the environmental benefit that the Underground provides.

Our Service Plan sets out the company's strategy and actions and devotes a section to Environmental Management. We use this plan to track actions that we take. In doing so, we make sure that we are working continually to improve our environmental performance, and that we are minimising our negative environmental impacts.

During the last 12 months, the Mayor of London has produced a number of strategies, some of which are still in draft, including Air Quality, Biodiversity, Energy, Noise, Transport and Waste Management. We are working closely with our colleagues in Transport for London, and with the Mayor to help deliver these strategies. This will ensure that LUL continues to make a significant contribution to these environmental strategies as we will have a key role to play in their success.

LUL is working towards the final stages of securing and sustaining investment to improve and maintain the Underground infrastructure. Three companies, Infracos, will be responsible for renewal and maintenance of assets, with LUL retaining the overall function of infrastructure controller and safety authority. LUL will also continue to operate the trains, stations and signalling systems. The next few years are going to be challenging in all areas of work. We will be working to ensure that the profile of environment is raised and that our performance continues to improve once the Public Private Partnership is fully implemented.

This report is the 2nd Environmental Performance Report that LUL has produced and I am pleased to be continuing this important commitment. The report highlights improvements made within LUL and the Infracos during the past financial year, April 2001 to March 2002. We have ensured that we have aligned improvements to our environmental policy 'Caring for the Environment', and that our new structure continues to provide high levels of environmental protection and performance.



Paul Godier
Managing Director – London Underground Ltd

Paper and large print copies of this report are available, but it is published principally in electronic form on our web site www.thetube.com.

Caring for the environment

London Underground's environmental policy

London Underground cares about good environmental performance and, as a public transport operator, we make a significant contribution to improving the quality of the urban environment. We will continually improve this contribution by promoting use of the Underground and by managing our impact on the environment, in ways that are economically and socially justified, within the resources available to us.

London Underground is committed to achieve this by:

- complying with all applicable environmental legislation
- applying industry best practice to improve environmental performance
- seeking to identify and manage our environmental impacts
- setting clear objectives and targets, and management systems, which prevent pollution and promote continuous improvement in environmental performance
- assessing environmental impacts prior to making major investment decisions
- using environmentally responsible procurement and disposal arrangements for the goods and services that we buy
- using resources, such as energy wisely
- monitoring, protecting and enhancing wildlife habitats
- ensuring that instruction, guidance, and training are in place to enable all our staff to contribute towards caring for the environment
- informing our stakeholders of our environmental performance and seeking their help in achieving our objectives where appropriate
- being sensitive to the needs and concerns of neighbouring communities
- playing a key role in the delivery of the Greater London Authority's environmental strategies
- regularly monitoring, auditing and reviewing the effectiveness of the environmental management regime and this policy, and undertaking improvement actions where necessary.

LUL Board, July 2001



Contributing to a better environment

Target summary - what we have achieved:

A number of initiatives have been taken to encourage the greater use of the Tube over the last year, these include:

- Updating our web site www.thetube.com to increase its flexibility and ease of use.
- Provide real time service information on our web site.
- Making improvements in our ticket purchasing facilities. These include: 55 'Queue Buster' machines have been installed where credit/debit cards can be used to purchase 7-day travel cards; internet ticketing for the purchase of most ticket types; and the introduction of 'Ticket line' allowing customers to telephone to purchase most ticket types.
- Giving discounts on tickets for London events and exhibitions on production of a valid Travelcard.
- Producing the 'Real London' series of leaflets – encouraging the use of public transport to get to shops, restaurants, parks, leisure facilities and other places of interest.
- Capping fares last year

London Underground seeks to deliver high quality Tube services which make efficient use of all resources and deliver significant environmental, social and economic benefits. In accordance with our "Caring for the Environment" policy, London Underground Limited (LUL) encourages the use of public transport rather than cars in London. During 2001/02, London Underground carried 953 million passengers across its network of 273 stations (see 'Environmental Data', page 2, for other key statistics).

We recognise that in providing our service, we do impact on the environment. The key environmental impacts of the Underground remain:

- energy consumption, including emissions from electricity generation;
- waste;
- noise and vibration;
- the impact of engineering works on track-side habitats; and
- water consumption;

These environmental impacts are discussed on the following pages of this report. However, by providing a more environmentally efficient alternative to the private car, the overall environmental impact of the Underground remains beneficial.

Partnerships

Target summary - what we have achieved:

- Contributed to the GLA's London-wide environmental strategies
- Participation in CoMET (Community of Metros) and Railway Forum groups
- Doubled membership of Research Contacts Network

As well as managing and improving our own environmental performance, LUL seeks to contribute to developing policies and technologies that will improve the performance of the rail industry in general. We remain an active partner in the Railway Forum's Environment and Noise groups.

Through the Community of Metros (CoMET) programme we seek to share best practice with world-wide metro systems and develop benchmarks against which to measure ourselves.

During 2001/02, the LUL Research Contacts Network has doubled its membership to 160. This network aims to ensure that LUL is aware of developments in railway and transportation related research and technology including environmental issues.

LUL is working with our Power PFI partner, SEEBOARD Powerlink, to develop energy production from Greenwich power station. This will help to reduce our energy costs and reduce demand taken from the National Grid, when our current generating station at Lots Road closes in summer 2002. In addition to the power generated from fossil fuels at Greenwich, feasibility of in-house generation from renewable sources will be explored.

During 2001/02, the Mayor and the Greater London Authority (GLA) have produced a number of strategies to address environmental issues within the Capital. LUL has been actively involved in these strategies. We also hold regular liaison meetings with the London boroughs as a forum for information sharing on issues such as noise, air quality and contaminated land.

Environmental management systems

Target summary - what we have achieved:

- “Caring for the Environment” policy issued (copies are available upon request)
- Full review of LUL’s environmental management system begun
- 4 more sites were accredited to ISO14001(this is an international standard for environmental management systems which ensures continuous improvement), so bringing the total to 6
- Environmental assessment and management requirements now part of procurement process
- Environmental Forum between LUL and the new Infrastructure companies met twice, working group to support this has met four times
- Energy Forum established between LUL, its Infrastructure partners and PFI partner

The Board of Directors approved our environmental policy “Caring for the Environment” in July 2001. This policy is the foundation of the environmental element of LUL’s Health, Safety and Environmental Management System.

The environmental management systems within LUL are being revised as part of a revision of all our standards. This will consolidate and build upon our existing system. During 2001/02, the three Infracos have continued to develop their own environmental management systems, and a number of staff have been trained in environmental management throughout these organisations.

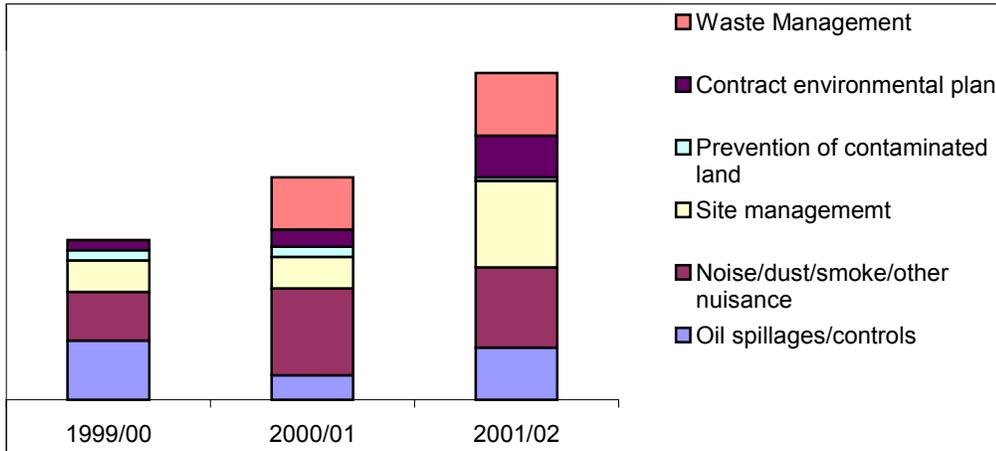
Across the Underground network, there are now 6 sites certified to ISO 14001. Four sites were certified during 2001/02; one site under the management of Infraco BCV; and three under the management of SSL, including the Kings Cross St. Pancras Underground station redevelopment which is due for completion by 2004.

Audit procedures were reviewed during 2000/01 and additional environmental inspections were developed. A series of questions in respect to the environment are now included in trains and stations audits. These new checks ensure that our business is being conducted in line with our environmental management system, and will help managers identify, control and reduce their environmental impacts. During 2001/02 a total of 75 audits were carried out on our stations and 10 were carried out on our train operations.

As in previous years, work has continued this year, to review the key processes that we use to run our business. Our procurement procedures include a mandatory requirement for environmental appraisal and guidance to help staff reduce or eliminate the negative environmental impact of the products and services that we buy. We continue to be successful in moving away from procuring products that contain PVC for plumbing and electrical materials. To ensure that procurement staff have the appropriate skills to assess and reduce environmental impacts, environmental questions have been incorporated into the Procurement Competency Assessment Scheme.

As well as ensuring that our own staff protect the environment, London Underground group requires its contractors to control their environmental impacts. We check the environmental performance of contractors through site audits. The number of audits has increased to 607 during 2001/2 and gave rise to 96 non-compliances. The graph below outlines the key areas of non-compliance.

Areas of environmental non-compliance by contractors



The Environmental Forum that has been established to promote partnership working to maintain and improve environmental performance across the Underground network, met twice last year. This forum facilitates communication and co-operation on environmental management issues between LUL and the new infrastructure companies. The Forum will continue to:

- promote objectives for environmental improvement
- develop performance indicators (which will improve the quality of information contained in this report)
- review environmental performance and share matters of common interest

Air quality and emissions

Target summary - what we have achieved:

- Continued the phase-out of Company Cars
- Completed an in depth study into dust on the Underground
- Contributed to the GLA Air Quality Strategy.
- Secured funding to retrofit CRT's to over 50% of the Emergency Response Unit vehicles during 2002/03.
- CRT's retrofitted to 2 refuse collection vehicle

The Underground, unlike most other motorised transport modes, does not directly contribute to air pollution. However, we have a wide range of vehicles in our fleet, including cars and dustcarts, which are used to support the safe and efficient operation of the service.

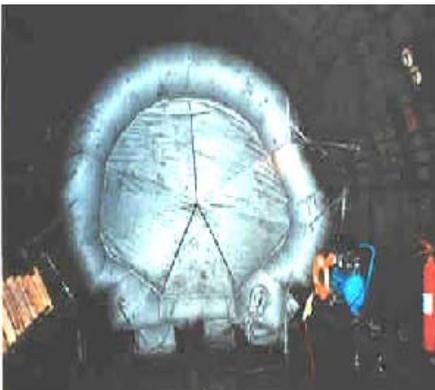
From January 2001, Company Cars ceased to be part of the benefits package offered to senior managers. Existing company cars continue to be phased out as their leases expire. It is expected that this will be complete within the next 2 years.

65% of our fleet vehicles run on diesel, using Ultra Low Sulphur fuel. We now produce baseline fuel utilisation data for non-HGV vehicles. Measures to increase the circulation of this baseline data are being sought to enable managers to collate and use the data for target setting. All of our vehicles are maintained under a strict regime, and all staff are trained in special driving techniques which helps to reduce the impact of our fleet operation on the environment, and to minimise nuisance to our neighbours.

Continuously Recirculating particulate Traps (CRT's) were retrofitted to 2 refuse collection vehicles during 2001/02, and during 2002/03 a further two Euro II vehicles will be replaced by Euro III and CRT vehicles. The policy to fit CRT's to all replacement heavy goods vehicles was met and will remain in place. To test the efficiency of the units, routine emission testing is carried to supplement MOT testing. Also, funding has been secured to retrofit CRT's to over 50% of the Emergency Response Unit vehicles during 2002/03.

Efforts to reduce emissions and improve the efficiency with which our distribution and refuse collecting vehicles operate have been continued and we are seeking to transfer a further 5% of the current scheduled distribution routes to nights within 18 months.

We are currently working with customers to source and provide alternatively fuelled vehicles.



Tunnel plug

The issue of dust on the Underground continues to be monitored. A tunnel cleaning train is used to remove general litter and dust from tunnels, on a scheduled basis. In addition to this, during dust creating operations such as rail grinding, an inflatable tunnel plug (shown left) is being used to aid the evacuation and removal of the dust that is generated.

An independent review of London Underground's dust data was commissioned in 2000. The final report was published in October 2001. The report indicated that levels of the main particulate constituents of tunnel dust, iron and quartz silica were well within Occupational Exposure Levels set by the Health and Safety Executive.

It also showed that past health studies have not shown any evidence of staff having illnesses associated with these constituents. The report indicated that dust levels in the tunnels have fallen since 1989, primarily because of changes in train braking technology.

To ensure that we continue to operate within legal limits, and are able to work towards reducing dust levels, a standard for monitoring dust levels on the Underground has been developed. In partnership with TfL, we have made commitments to work towards reducing Underground dust levels within the GLA Air Quality Strategy.

Energy demand and impact

Target summary - what we have achieved:

- 20% energy recovery from Central Line regenerative braking systems
- Purchase of Renewable energy – 20GWh's for 2001/02
- Successful launch of the Stations Energy Champions League with 13% savings attained
- Expansion of renewables within the existing electricity portfolio – 140GWh's for 2002/03
- "Very good" BREEAM rating for 20 out of 21 LUL buildings surveyed
- Use movement sensitive lighting and energy saving light bulbs to replace existing bulbs during office refurbishments
- Installation of 2 building management systems to monitor energy use

The extreme weather conditions and flooding experienced in the UK during the past year has again served to highlight the potential impact of climate change in the UK. It is generally accepted that global temperatures are set to rise. As a result, the UK is likely to see higher wind speeds, more winter rainfall and a higher incidence of storms. For London Underground this could lead to more flooding; a greater risk of landslips, trees and debris on the line; and power disruptions. All these effects have a potentially serious impact on our capability to deliver a safe, reliable service to London. However, LUL is working to manage and mitigate these risks both proactively and as they arise.

Energy used for transport is a key producer of the greenhouse gas carbon dioxide (CO₂) which contributes to climate change. We are London's largest single consumer of electricity, which in turn is produced by power stations burning fossil fuels and emitting large quantities of CO₂. The majority of LUL's energy consumption is exempt from the governments Climate Change Levy as it is used for transportation. We still work towards reducing our energy use, and during 2001/02 have had considerable success on our stations. This has helped to reduce the cost of the climate change levy on the portion of electricity that we use to which the levy applies.

During 2001/02 we purchased approximately 20GWh's of renewable energy. This cut LUL's accountable CO₂ emissions and reduced our exposure to the Climate Change Levy. Looking ahead, we have bought, and have contracted to buy, 140 GWh's of carbon neutral electricity during 2002/03. This includes 100% of electricity consumed by our offices, depots and larger stations. We are committed to increasing this percentage in the future to further reduce our environmental impact and cut our payments under the Climate Change Levy.



Lots Road

LUL's Lots Road Power Station currently generates power for the Underground. Once this source of internal generation is decommissioned, towards the end of 2002, 100% of our demand will be provided from the Grid. As part of this, approximately 13% of our total electricity requirement will be taken from renewable energy sources. The level of greenhouse gases for which LUL is currently accountable will be significantly reduced through switching to more efficient National Grid supplies. Whilst LUL's procurement of renewable energy continues to increase, the Company strives to ensure that all remaining electricity requirements are purchased from the most efficient generation technologies, so producing the minimum greenhouse gas emissions currently possible.

Around 90% of the energy used by London Underground is for traction – moving trains. The use of regenerative braking, has produced approximately 20% energy recovery on the Central Line. It is expected that future purchases of rolling stock will include the requirement for regenerative braking. To monitor traction usage, LUL in partnership with its Power PFI Partner SEEBOARD Powerlink (SPL), are looking to further develop the traction metering installed within SPL's network of substations so that they are able to provide enhanced traction consumption reports. This will allow greater analysis of train consumption and demand, enabling exploration of further savings.

During 2001/02 the Stations energy saving competition was fully introduced. The Energy Challenge aims to reduce energy consumption by adding a competitive edge between stations, groups and lines. Reductions are achieved through good energy housekeeping, such as making sure lights are switched off when not required, and turning off some escalators outside of peak hours. The competition, which uses a Grand Prix style scoring system, began in April 2001. It has proved a great success, with a 13% saving in energy achieved across the network against normal usage. This is the equivalent to amount of energy needed to run a Tube train for 2,066,360 kilometres. We aim to build on this success and exceed 15% during 2002/03.

From April 2002, LUL embarked on a major project to connect all of our station's electricity and gas meters to our Ethernet. This will allow the remote collection of data on energy consumption and demand. Once the project is completed (expected 2005), this will greatly enhance our ability to control and understand how we use our energy with further savings in cost and CO₂ levels foreseen.

Two new Building Management Systems have been installed within Ealing Common Depot and Northumberland Park Depot. These will allow greater control/monitoring of energy and heating within the depot environment. Monitoring of the systems will be undertaken through 2002/03 to assess the full benefits of the systems.

The details of the independent BREEAM (Building Research Establishments Environmental Assessment Method) assessments of LUL buildings were reported during 2000/01. We can now confirm that this environmental benchmark for a building, its management and operation, rated 20 out of 21 LUL buildings as "very good" and the remaining one as "good".

Heritage and Habitats

Target summary - what we have achieved:

- Over 20,000 trees and shrubs planted along the District Line
- 70 bird boxes erected
- Over 2,500 trees and shrubs planted on the Piccadilly Line
- 50% of timbers purchased from FSC sources
- Bridge restoration
- Environmental improvements during engineering works

London Underground has a total of 49 buildings listed as Grade II by the Department for Culture, Media and Sport. These are considered to be of special architectural or historic interest, e.g. Arnos Grove. In addition, several other stations are located in conservation areas, as are various other LUL properties, such as offices.

Railways are well documented as providing valuable habitats within urban areas. They are relatively undisturbed and provide a valuable link between fragmented green spaces across London.

With over half the network above ground, the London Underground network provides around 220km of potential wildlife corridors, which support over 500 species. We are developing a Biodiversity Action Plan in line with the GLA Biodiversity Strategy to ensure that this valuable asset is preserved.



Arnos Grove



Station gardens can also provide a useful refuge in built up areas. Over the years, a number of station staff have developed and maintained gardens in their own time. Stanmore station is shown in the picture to the left.

Stanmore

During the year, Infracore JNP erected 70 bird boxes at appropriate sites. These were situated at track-side locations and were also put up at Cockfosters, Northfields and Lillie Bridge depots.



Putting up bird boxes

LUL and the Infracos ensure that the negative environmental impacts of their engineering works are minimised and that where possible, improvements are made. The Infracos are committed to promoting biodiversity and protecting flora & fauna. Often essential earthworks are necessary to make sure that the Underground system remains in a safe and stable condition. This may require the clearance of vegetation, but after the work has finished, replanting takes place to restore and often to improve these areas. Various examples exist, including the replanting of an area of land on the Piccadilly Line with native species and species that promote wildlife. This site was cleared so that essential earthworks could be carried out, it has now been seeded with wild grass and wild flowers and over 2,500 trees and shrubs of a wide variety have been planted. These include native British field maple, native hawthorns, common beech, and roses. Each of these will encourage nesting birds and provide ground cover for small mammals and reptiles.

Another example is the planting of 20,000 trees, including oak, hawthorne and hazel trees over a six-week period on the District Line. The trees will attract wildlife and will also have the added benefit of acting as a natural buffer for the District Line's neighbours. This new habitat will be easier to maintain, safer for the passing trains and will stabilise the embankment.

An example of working to improve our services for customers, whilst improving the environment, is the work carried out on a 100 year old bridge spanning the River Lea and Bow Creek, East of Bromley by Bow station. The bridge was returned to mint condition, so improving the aesthetics of the area and improving the journey time for passengers. To ensure that the surrounding environment was not adversely affected or polluted from the removal of old lead based paint, protective sheeting was put in place around the final works structures. Disruption to water traffic was minimised by using pontoons for inspection and repairs, as they could be moved to allow for boats to pass. The track side environment also benefited: the area is part of the Lea Valley Park estate and a popular leisure destination. The team took the opportunity to work with the Environment Agency to clear the riverbed of rubbish, including an old car; and to replant reed beds on ancient sites in the area.



Bridge restoration and car removal

LUL uses softwood, hardwood and timber for crossings. Much of our supply of softwood timber comes from sources certified to Forest Stewardship Council (FSC) standards, which means that the forest is managed in an environmentally and socially responsible manner. Investigations and tests into the use of FSC certified hardwood indicated that FSC hardwood sleepers do meet performance requirements. We now purchase all of our hardwood and softwood sleepers from FSC sources; this accounts for 50% of our timber purchases.

Noise and Vibration

Target summary - what we have achieved:

- Installation of more continuously welded track
- Rail grinding to reduce noise
- Continued to support the CONVURT project to reduce vibration from Underground metros

The operation of the Underground and its associated maintenance activities, give rise to noise. Over the past year we have continued our noise investigation and mitigation activities in order to reduce the impact on our customers and neighbours. We are working to reduce track-generated noise by installing more continuously welded rail, which is quieter than the jointed type.

Work has continued during the year on noise reduction measures, such as trials on rail coating. We are also working with the Railway Forum Noise Group to share best practice and keep abreast of European developments.



Rail grinding to restore rail profiles continues to be a successful noise reduction measure. Last year, over 20 km of track was reground or replaced. Other engineering practices, such as lubrication of curved sections, train speed restrictions in sensitive areas and better line-side vegetation management are also helping to reduce noise levels.

For metro systems such as the Underground, locations of high disturbance are often documented but the cost effective means to eliminate these problems are limited. LUL has joined with the Milan metro, RATP of Paris, a number of manufacturers of rail components, and academic institutions; to develop long term solutions to such problems. The 3-year EU funded “Control of Noise and Vibration for Underground Rail Transportation” Project (CONVURT), which began in January 2001, will address these problems through a series of innovative developments these include:

- A numerical prediction tool to predict ground-borne vibrations and re-radiated noise in adjacent properties for the operation of existing and new metros.
- A computer programme which identifies potential vibration “hot spots” for new metros and models the success of different remedial measures.
- Optimised designs for slab/ballast track forms.
- Design standards for new/refurbished railways.
- Design guidelines for track and tunnel.
- Maintenance guidelines for existing operations, with an emphasis on rail and wheel roughness management.

Day-to-day noise issues are managed on a site-by-site basis; this includes noise monitoring and assessments. We also work to give positive responses at locations where neighbours and third parties have issues to be discussed and addressed.

Waste

Target summary - what we have achieved:

- Implementation of the Cleaning Action Plan, continued promotion of recycling of litter
- Increased numbers of staff for on-train and on-station litter collection
- Increased use of Intranet and e-mail for internal communications
- Updating of stationery contract
- 2% reduction in the amount of waste sent to landfill
- 2% increase in the amount of waste recycled
- Rate of station waste growth reduced to 3% compared with 9% and 21% during the previous two years

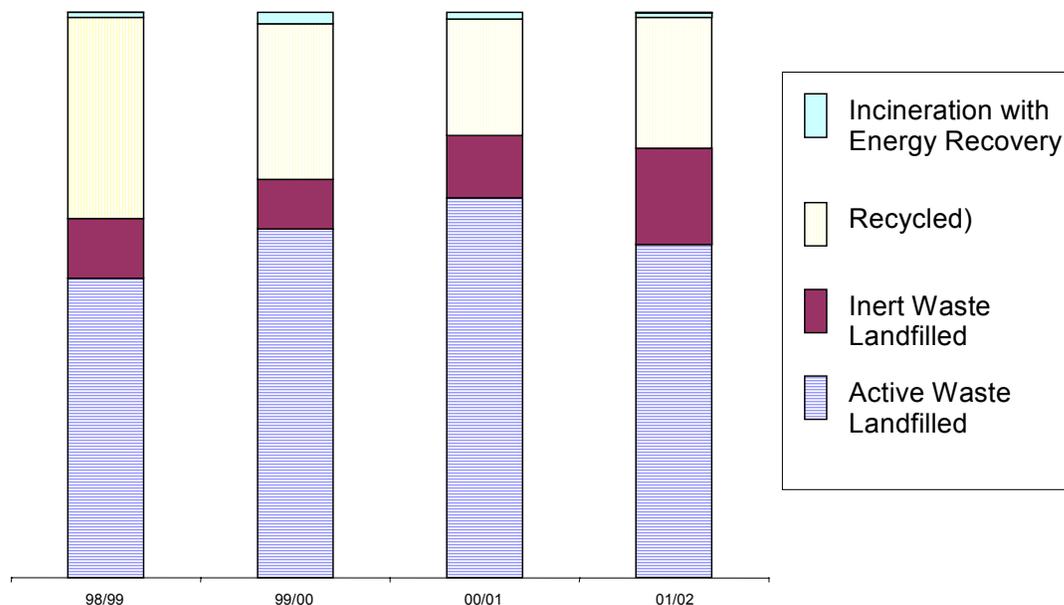
London Underground activities generate significant quantities of waste. Infraco JNP is responsible for waste collection, and handled 14,117 tonnes of waste this year for LUL. This is a rise of 24% on the previous year, and can be almost wholly attributed to the increase in track maintenance activities and track waste; this has increased by 86%.

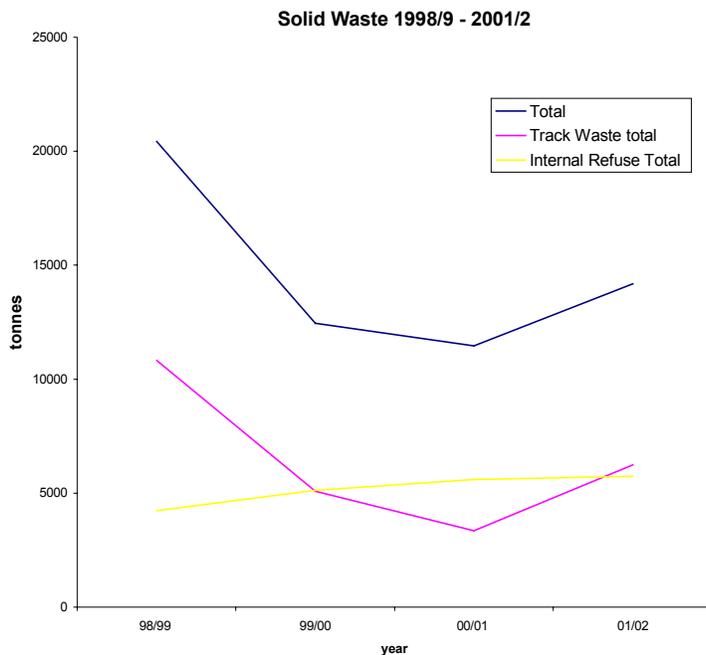


The waste collected is comprised of general waste from stations, train depots, and track maintenance activities. Current management information reporting relates to waste managed by Infraco JNP. It does not include any waste managed on major projects by outside contractors. The rate of growth for station waste was low at just 3%, compared with 9% and 21% during the previous two years. Overall there was a 2% decrease in the amount of waste sent to landfill over the last year and a corresponding rise in the proportion recycled.

Waste collection

The graphs below show how waste levels and disposal methods on the Underground have changed in recent years.





The total waste levels will vary according to the level of maintenance and renewal works being undertaken. Track wastes e.g. ballast and rail increased considerably last year, and it is expected that these levels will continue to rise in future years as the PPP investment brings increased levels of works on the Underground. Track waste, which is more readily recyclable than our other wastes, has brought about a further increase in the percentage of our waste that is recycled.



Some years ago, litter bins were removed from Underground stations on security grounds. This, combined with an increasing amount of litter in public spaces, has meant that we have had to react to this to prevent litter accumulating on our stations and creating a hazard for customers. Quantities of litter collected from our network have increased over the last few years and continued to rise during 2001/02. Recognising that this is an environmental problem as well as a cosmetic one, LUL has continued with its implementation of a Cleaning Action Plan. This year, litter bins have been replaced on some open section Underground stations, and recycling bins have been placed outside a number of Tube stations in Camden and Westminster to encourage passengers to recycle their newspapers, such as The Metro.

Encouraging customers to recycle

Features of the Cleaning Action Plan include:

- More on-train and on-station litter collection. More litter bins on open sections.
- Trial of fragrances at 3 stations.
- Publicity to help customers understand why there are no litter bins on many stations, and encourage them to take their litter away with them.
- Promotion of recycling points where these are adjacent to stations.
- In partnership with a number of local councils, posters promoting local recycling facilities are displayed at the stations nearest to them, to encourage customers to dispose of their rubbish correctly.

During 2000/01, a waste audit of LUL office premises indicated that our paper use is higher than we would wish. A number of measures have been taken over the past year to try to reduce our resource use and the associated waste. LUL offices have paper recycling facilities; and in larger offices, cardboard can also be recycled.

The Company encourages e-mail for communication and use of the Intranet system for information sharing. This will help us reduce the quantity of paper used, and waste produced. LUL Facilities negotiated a new stationery contract during the year. Changes have been introduced to minimise the impact of the company's stationery use on the environment and to comply fully with our Corporate Environmental Policy. Paper, envelopes and other paper products made from 100% recycled paper are available. Lever arch, suspension files and regular folders made from 100% recycled paper and board are available, as are pens made from recycled plastic.

Water

Target summary - what we have achieved:

- London Underground/Thames Water Utilities GARDIT project helping to control rising groundwater;
- Further installations of waterless urinals.
- Partnership with South Bank University to consider using aquifer water for cooling purposes

London Underground has two broad areas of interest in water:

- the rising water table causes large volumes of water to seep into the London Underground tunnel system and;
- water used at all operational and office sites.

Over recent years there has been a rise in the water table beneath London, this is due largely to the decrease in manufacturing industries. Activities such as brewing and paper manufacture used large quantities of water which were abstracted from artesian wells beneath the capital. As these and other industries have moved from London, the level of water used has decreased dramatically. In addition there has been a general move away from water extraction from the ground to other sources. The result of these changes has been that the water table has risen and is continuing to rise.

LUL is currently pumping over 30 million litres of water from the Underground system every 24 hours. To achieve this, there is a network of 1,030 pumps in 630 locations. The amount of water being pumped out is enough to fill a typical municipal swimming pool in less than 20 minutes.

London Underground is also working with partners in the GARDIT (Ground Aquifer Research and Development Implementation Team) consortium to implement a London-wide pumping strategy for controlling rising ground water. This includes bringing existing boreholes back into use as well as seeking new ones.

We are also conducting research in partnership with South Bank University to investigate the potential for pumping and using ground water from aquifers as a means of cooling the Tube environment. This research is in its early days, but if practical, this project could achieve both cooling on the Underground and energy saving.

LUL is working to adopt industry best practice concerning the conservation of water in buildings. Our programme to install waterless urinals continues. As washrooms are refurbished, automatic light switching and low water flushing systems are installed.

A review is planned for all of LUL's water accounts during 2002/03. This will highlight areas of high or unusual usage. These areas can then be investigated and where appropriate, actions taken for reduction.

Towards sustainability

Target summary - what we have achieved:

- 'Ending Harassment' video produced and distributed
- Increase in station assistants
- Introduction of staff language badges
- Tube Access Guide produced
- CCTV installed at 14 station car parks, improved lighting at 56 station car parks

The UK Government Sustainable Development strategy is based on the maxim of 'Quality of Life' with the following key areas of focus:

- social progress which recognises the needs of everyone;
- effective protection of the environment'
- prudent use of natural resources ; and
- maintenance of high and stable levels of economic growth and employment.

LUL also seeks to make progress in a range of areas to improve our sustainability. This report has focused on environmental issues, but in the wider context of sustainable development, we have made considerable progress on a range of other sustainability issues.

A video titled 'Ending Harassment' was produced, and issued to all staff. This will complement the network of Harassment Advisors that are available to help staff experiencing problems within the workplace. In order to help make sure that reported incidences of harassment are properly investigated and resolved, a comprehensive training programme, leading to accreditation, has been implemented



During 2001/02 there has been an increase in the number of station staff employed to help our customers. A new initiative was also launched to help customers whose first language is not English. Staff who are able to speak different languages are wearing specially designed badges indicating the language that they speak, and so can be identified by customers. Sixty volunteers, who between them speak 24 languages, will be based at 30 stations across the network.

A guide, called the 'Tube Access Guide' was produced this year. This contains information to help mobility impaired customers travel safely on the Underground system. The Customer Services Centre has also altered its complaints system so that it is able to capture complaints regarding inequality.

A number of stations have undergone works during the year to increase their accessibility. This includes raising platforms to make boarding trains easier, for example at Upton Park; and 'ridging' the platform edges to make them safer for sight impaired customers.

A number of LUL station car parks have undergone various refurbishments. These include introduction of CCTV, improved lighting and resurfacing. In addition, tariffs have been frozen or reduced at lightly used car parks and increased by 50p a day at busy car parks. A new car park was opened at North Greenwich station featuring CCTV and 24 hour security. This will make the journey into town faster for travellers from south-east London. These measures are consistent with the Mayor's Transport Strategy, and it is hoped that they will encourage motorists to park and complete their journey by public transport rather than drive into the centre of London.

An undertaking by LUL for all staff to attend a training course to raise awareness on disabilities has been made. Many staff attended the course this year, and it will continue to be run during 2002/03.

Progress against 2001/2002 Environmental Targets

The following is a summary of last year's performance against our environmental targets.

Develop and implement environmental management systems

Target	Progress to date	Status
London Underground group members to develop documented Environmental Management Systems to meet the requirements of ISO14001.	4 new sites have gained certification to ISO14001 bringing the total to 6.	Ongoing
Reissue London Underground's corporate environment policy	"Caring for the Environment" policy reissued July 2001	Complete
Review London Underground's HSEMS (Health, Safety and Environment Management System)	Review underway – completion date Winter 2002.	Ongoing

Reduce energy consumption and air pollution

Target	Progress to date	Status
Introduce measures at Underground stations to reduce energy consumption.	Stations energy champions league achieves a first year saving of 13% against normal usage. 15% target set for 2002/03	Ongoing
Reduce the environmental impact of energy consumption by incorporating renewable energy into the corporate energy basket.	20GWh's of renewable energy purchased for 2001/02. 140GWh's of renewable energy purchased for 2002/03	Further future purchases to be investigated
Development of LUL Energy Policy in tandem with Mayor's office	LUL comments submitted on Mayor's draft policy. LUL's Energy Policy to be progressed once final GLA document is issued	Ongoing, awaiting final GLA Policy
Lots Road generating station closure	Closure now expected September 2002	Ongoing

Reduce noise created by operations

Target	Progress to date	Status
Carry out more research into railway noise. Study how tunnel activities cause noise and vibration problems.	European funding gained for CONVURT project with RATP, and Milan Metro.	Ongoing (due for completion end 2003)
Collate and reduce complaints about noise from Underground operations.	Noise complaints collated for all lines.	Ongoing
Carry out rail grinding to restore suitable rail profiles.	Rail grinding undertaken on several sites.	2001/02 programme Complete

Manage other environmental aspects

Target	Progress to date	Status
Develop a Biodiversity Action Plan in line with London BAP.	A number of initiatives and management practices help to protect and promote biodiversity; the plan will be now developed during 2002/03.	To be progressed next year.
London Underground will work to promote environmental procurement of goods and services with exact measures subject to business case.	Procurement process includes environmental appraisal. Environmental features have been included in contracts for energy supply and washroom refurbishment. Stationery contract now includes recycled and recyclable alternatives.	Ongoing