



OFFICE *of the*
RAIL REGULATOR

**RAILWAY OPERATIONS AND THE
ENVIRONMENT GUIDANCE**

A CONSULTATION DOCUMENT

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1. The Regulator's Environmental Guidance

Introduction

- 1.1 The Railways Act 1993 requires the Regulator to have regard to the effect of railway activities on the environment in carrying out his functions under the Act. The Railways Act defines "environment" by reference to Part I of the Environmental Protection Act 1990. This definition and others from that Act which might be helpful are reproduced at Annex A.
- 1.2 Conditions in the network, station, passenger, non-passenger and light maintenance depot licences require licence holders to establish environmental policies together with operational objectives and management arrangements to give effect to those policies. The policy must take account of any guidance issued by the Regulator on environmental matters and must be sent to the Regulator no later than six months after a licence has come into force.

The impact of railways on the environment

- 2.1 In many respects, railways have a relatively good environmental record. On some specific environmental issues, such as asbestos stripping, the railway has set standards for others to emulate, but on others, performance has been patchy. The objective must be to build on the strengths of the industry and to correct the weaknesses. The restructured industry should achieve at least current standards at the outset and strive for improvements as technology progresses and opportunities arise.
- 2.2 Because of the complexity of railway operations, many operators will already have management systems and processes in place to handle other requirements such as safety validation. In many cases, safety and environmental issues go hand in hand, e.g. the carriage of dangerous goods, so it may well be an advantage to integrate an environmental policy into other management systems.
- 2.3 A particular issue which the restructured industry will need to bear in mind is the need, in many cases, for co-ordinated or joint action between industry parties to resolve problems. For example, mitigation of noise nuisance will require measures to be taken by train operators, rolling stock companies, Railtrack and the infrastructure maintenance units for such actions to be effective. This will require a significant effort

of co-operation amongst all parties if the railway is to maintain its reputation for being environmentally friendly and for improvements to take place.

The Regulator's environmental guidance

- 3.1 The Regulator's environmental guidance is not and does not seek to be a substitute for current environmental legislation. The Regulator assumes that all operators will comply with environmental statutory requirements. He expects operators to take their environmental responsibilities seriously; to achieve all statutory requirements; to make improvements in those and other areas wherever practicable; and to have appropriate management and monitoring systems in place. The Regulator also expects operators to bear in mind the financial benefits of good environmental practice. It is often the case that relatively straightforward measures can make good commercial as well as environmental sense. The way in which the Regulator believes that operators' environmental policies can most appropriately reflect all these aims is set out in paragraphs 8-11 below.
- 3.2.1 Appendix 1 is a summary of issues and seeks to identify current best practice. It is a guide rather than a prescriptive code. Operators have to decide for themselves how to reflect this in their environmental policies, in the light of their financial circumstances and the nature and scale of their operations.

The environmental policy

- 4.1 An acceptable environmental policy is not simply a broad statement of good intent, but a package of practical initiatives which will help the organisation ensure good environmental practice. The package should therefore include:
- a broad statement of policy;
 - the detailed objectives which have been or which are to be set;
 - a statement of the management arrangements and systems in place to deliver the policy and objectives;
 - a statement of the arrangements for monitoring progress and achievements.

The policy statement

- 5.1 The Regulator expects that this will be a general statement setting out the operator's commitment to:

- compliance with relevant environmental legislation;
- carrying out its business with regard to the need to minimise the adverse effect of operations on the environment;
- continual improvement in environmental performance across the range of activities.

Objectives

6.1 Where an operator has not previously set out formal environmental objectives, it may well be necessary to undertake an initial environmental review. The aims of the review would be to determine all the significant environmental impacts of an operator's activities and establish a baseline against which clear objectives can be set, with management arrangements appropriate both to the scale of environmental impact and the organisational structure. The objectives resulting from this exercise may include:

- objectives for meeting current legal requirements or for meeting them more effectively;
- objectives to anticipate tightening of legal requirements;
- objectives for areas not covered by legal requirements;
- objectives for training, staff briefings or communications generally on environmental issues;
- objectives for liaison with other industry parties.

6.2 Each objective should quantify the improvement planned and the timescale.

Management arrangements and systems

7.1 Environmental issues should not be perceived as a bolt-on to an operator's core business interests but as an integral part of running a high quality railway activity. It may also be possible to link environmental systems with other management arrangements, e.g. for securing appropriate authorisations from environmental agencies. The statement of management arrangements should therefore show:

- how environmental issues are integrated into the business and operational structure;

- how managers are made aware of their environmental responsibilities;
- what systems are in place to ensure that environmental issues are not overlooked, e.g. when new projects are being planned;
- what systems there are for assessing the costs and financial benefits of environmental improvements;
- what procedures are in place for liaising with other industry organisations, particularly for ensuring action is taken jointly where necessary.

Monitoring

8.1 Operators should underpin their environmental objectives and management arrangements with appropriate systems and processes to monitor where standards are and are not being achieved and what progress is being made towards improvements. The statement of monitoring arrangements therefore needs to make clear:

- how the organisation collects and collates environmental information, including financial information relating to environmental measures;
- to whom reports are made;
- the point in the organisation where progress can be reviewed and the frequency of such reviews;
- arrangements for joint monitoring with other industry parties.

Other sources of advice on environmental policy

9.1 The summary above describes the coverage of a policy statement likely to be acceptable to the Regulator. For operators who have not previously set out a formal environmental policy and are in the process of establishing new organisations within the new railway industry structure, this may be all that they can aspire to achieve, at least initially. There are, however, two existing voluntary environmental management certification schemes which provide a more detailed framework for environmental policies and procedures. Operators who wish to work towards certification as a longer term aim might find it useful to refer to:

- BS7750: Environmental Management Systems;

- The European Community eco-management and audit scheme established by Council Regulation (EEC) No. 1836/93 (OJ No. L168, 10/7/93).

9.2 Further information about these schemes is available from the British Standard Institution (for BS7750) and from the Department of the Environment.

Updating the guidance

10.1 This guidance will be reviewed in twelve months' time, to determine whether any changes are needed to the policy framework in the light of environmental policies received, and whether technological or other developments require the guide to best practice to be updated.

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INTRODUCTION

1. This summary reflects work previously carried out by the British Railways Board to identify environmental issues of concern to the railway industry and document best practice. It is, therefore, largely a snapshot of BR's perception of the current position. There are seven sections, each dealing with a particular aspect of railway operations. Each section begins with a general introduction to the issue setting out its environmental impact. Following the introduction are sub-sections which cover specific issues in more detail.
2. Not all of these specific areas affect all operators. Some are applicable only to one type of operator - e.g. a freight operator; while some apply to the interface between two different operators, e.g. network and passenger operators, and require co-ordinated or joint action to alleviate particular problems.
3. Apart from legislative requirements, there are a number of guidance documents produced by the British Railways Board which provide advice or outline procedures and processes in relation to specific environmental issues. There are also a number of railway technical standards relating to the issues in this summary, which are promulgated and enforced by Railtrack in their role as safety authority for railway operators. The summary includes a list of relevant guidance documents and technical standards as well as useful contacts for further information and advice.

1. NOISE AND VIBRATION

1.1 Operating the railway

Issues

1.1.1 Older rolling stock uses iron block tread brakes, which roughen the wheel treads during braking making vehicles relatively noisy. Track imperfections, such as corrugations and dipped rail joints, will add to noise levels. More modern disc-braked vehicles are quieter but may suffer from wheel flats.

Current best practice

1.1.2 Noise emissions can be minimised by the use of rolling stock which uses disc brakes with a body profile that is aerodynamically smooth. The track should be uncorrugated continuously welded rail (cwr), where the track layout and design precludes wheel squeal. Current achievement of best practice reflects past patterns of investment in both trains and track.

Options for improvement

1.1.3 In the short term, measures to mitigate noise emissions include:

- elimination of wheel squeal by lubrication of running check rails or by damping wheels acoustically;
- grinding of corrugated railheads;
- regular inspection of wheels to detect flats and prompt attention to damaged tyres.

1.1.4 In the longer term measures include:

- adoption of tighter noise standards in the specification of new rolling stock, including details such as aerodynamic design, cooling fans and wheel slide protection;
- conversion of jointed track to cwr in built-up areas.

1.2 Diesel traction

Issues

1.2.1 Diesel-powered traction represents a substantial part of the fleet of locomotives and multiple units. The operation of diesel engines is a significant source of railway noise. Although absolute noise levels are highest during acceleration, noise nuisance is frequently associated with idling, either at depots, stations or at signals en route.

Current best practice

1.2.2 With existing trains, current best practice requires active management steps to restrict noise in sensitive locations. In some terminal stations and depots, provision of shore-based electrical supplies has greatly reduced the need for engines to idle. For new trains, lower noise levels have been incorporated in design specifications, together with automatic engine shut-of after a predetermined period.

Options for improvement

1.2.3 The following steps will mitigate the noise nuisance from diesel trains:

- ensure that drivers are fully aware of the location of signals adjacent to buildings sensitive to noise (e.g. hospitals and schools);
- ensure that instructions are given to minimise noise nuisance in such locations (e.g. maximum idling period and stopping short of signals);
- investigate the provision of shore-based electrical supply at depots and terminal stations.

2. FREIGHT TRANSPORT

2.1 Carriage of hazardous cargoes

Issues

2.1.1 Some of the goods carried by rail freight operators can damage the environment if they are spilt in transit. These include:

- crude petroleum and petroleum products;
- compressed, liquefied and refrigerated gases;
- flammable/corrosive/toxic chemicals;
- hazardous wastes.

2.1.2 Although serious railway accidents are rare, minor mishaps can result in the spillage of a hazardous cargo. This may result from:

- damage to intermodal containers;
- damage to tank wagons;
- fire damage.

Current best practice

2.1.3 Basic safety procedures are designed to ensure the secure containment of goods, particularly those of a hazardous nature. Specific instructions cover the procedures when a mishap causes spillage of such a cargo.

2.1.4 The instructions for handling dangerous goods are contained in:

- BR MT/219 Requirement for Design, Construction, Testing and Use of Tank Wagons Running on BR Lines;;
- BR 30054/3 Working Manual for Rail Staff – Handling and Carriage of Dangerous Goods;
- Group Standard GO/OT0004 `Accident Management and Investigation';
- Group Standard GO/010717 `Dangerous Goods – Management Incident and Irregularity Information'.

- 2.1.5 BR's Dangerous Goods Incident Management Group assesses Dangerous Goods Incident Analyses for trends or specific problem areas requiring management attention.
- 2.1.6 A particular requirement is to advise the National Rivers Authority (NRA) (or equivalent in Scotland), of the release of dangerous goods, which have escaped, or could escape into ground water or controlled waters.
- 2.1.7 Radios are fitted to most locomotives hauling trains conveying hazardous cargoes, and can be used to speed up the reporting of incidents.
- 2.1.8 Risk assessment can and is used as a means of focusing management attention on key risks, e.g. on rail routes where dangerous goods may only be one element involved in total operational activity. Regular liaison with regulatory authorities is maintained by BR and Railtrack. Specific dangerous goods regulations have been developed to deal with the disaggregated railway.
- 2.1.9 There is also liaison between BR, industry and the emergency services involving training and information awareness to maintain a full joint understanding of roles and responsibilities especially relating to command and conduct on site. This involves table top exercises supplemented by full scale exercises.

Options for improvement

- Ensure that the procedures for handling dangerous goods are comprehensive. Conduct a regular review to ensure that all employees understand their personal responsibilities;
- consider carrying out risk assessment to estimate the frequency and severity of incidents involving dangerous goods;
- establish a working relationship with regulatory and emergency services. Consider developing an incident response plan and test it by simulating an incident on site.

2.2 Dust from Open Wagons

Issues

- 2.2.1 Certain commodities carried by rail in open wagons are formed of crushed materials where the size of particles is sufficiently small to permit them to be removed as dust by the wind. The extent of the loss will be determined by factors such as particle size,

load profile, the speed of the train, the speed and direction of the wind and how full the wagon has been loaded. Commodities where particle size may be sufficiently small include coal, limestone, dolofines (a type of finely divided limestone), stone dust, fly ash and coke.

- 2.2.2 The resulting dust can create a nuisance for neighbours and for lineside staff and passengers on adjacent platforms. When deposited on the track it fills the interstices within the track ballast, impeding drainage.

Current best practice

- 2.2.3 Installation of "spreader bars" at loading points controls the load profile and ensures that the profile is less susceptible to dust loss in transit.
- 2.2.4 Where cargoes are particularly susceptible to dust loss, modification of the wagons by fitting aerodynamic canopies may be required. To be effective, the design of such canopies needs to draw on appropriate fluid dynamic modelling.

Options for improvement

- 2.2.5 When new open wagons for the conveyance of dusty materials are being designed, aerodynamic modelling, supported by prototype field tests, is one way of ensuring that the risk of dust loss is minimised.

3. ATMOSPHERIC POLLUTION

3.1 General

3.1.1 There is growing concern about materials being released into the atmosphere. Air pollution, global warming and the depletion of the ozone layer contribute to health risks. This concern has been addressed through the introduction of legislation such as the Clean Air Act, Environmental Protection Act, EC Directives and Regulations. R4way operators should therefore take steps to reduce the potential sources of air pollution resulting from train operations.

3.1.2 These principally stem from:

- pollution by diesel exhaust as a consequence of using diesel powered locomotives and multiple units;
- operating air conditioned trains and buildings;
- use of ozone depleting substances as cleaning agents.

3.2 Diesel exhaust emissions

3.2.1 The exhaust from diesel powered trains contains the acid gases sulphur dioxide and nitrogen oxides together with Particulates. These are formed from the fuel, air and lubricating oil used in the diesel engines. Particulates contribute to the unpleasant smell of diesel exhaust, may soil lineside buildings and are now considered to be a health hazard.

Current best practice

3.2.2 With existing trains, current best practice requires active management steps to control exhaust emissions in sensitive locations. In some terminal stations and depots, provision of shore-based electrical supplies has greatly reduced the need for engines to idle. For new trains, better fuel consumption control has been incorporated in design specifications, together with automatic engine shut-off after a predetermined period.

Options for improvement

3.2.3 The following steps can help to minimise the exhaust nuisance from diesel trains, as well as minimising noise nuisance and contributing to energy conservation (see sections 1.2 and 6):

- ensure that drivers are fully aware of locations sensitive to smoke emission;
- ensure that maintenance procedures identify and remedy malfunctioning engines which are producing excessive smoke;
- ensure that instructions are given to minimise exhaust nuisance in sensitive locations (e.g. maximum idling period at stations, depots and sidings);
- investigate the provision of shore-based electrical supply at depots and terminal stations.

3.2.4 Longer term measures include:

- adoption of tighter emission control standards in the specification of new diesel powered trains, including details such as improved fuel consumption control and automatic engine shut-off equipment.

3.3 Cast iron brake block dust

Issues

3.3.1 A significant part of the rolling stock fleet uses iron block tread brakes. When the blocks are clamped against the wheel tread during heavy braking, a fine iron dust is produced. During wet weather the dust may stick to buildings and vehicles parked alongside railway lines. Removing this dust requires the use of special chemicals which create a toxic effluent needing careful disposal.

Current best practice

3.3.2 Most modern passenger rolling stock has disc brakes. Some locomotives fitted with the latest systems of modified braking and high phosphorus iron blocks have significantly reduced brake wear and cut the amount of iron dust produced.

Options for improvement

3.3.3 Continue a policy of specifying disc brakes for new passenger rolling stock wherever this is consistent with safe and economic performance.

3.4 Ozone-depleting chemicals

Issues

3.4.1 The earth's ozone layer is now believed to suffer damage by the release of certain gases, including Chlorofluorocarbons (CFCs) and halons. These are widely used

throughout industry, including railways. To protect the ozone layer, an international agreement called the Montreal Protocol commits countries to limit the production of ozone-depleting chemicals (except for agreed essential uses). Ozone-depleting chemicals currently used will damage the ozone layer if they escape into the atmosphere. Railway operators should therefore take adequate steps to prevent the release of ozone-depleting chemicals.

3.4.2 Ozone-depleting chemicals are principally used on railways in the following areas:

- halon is used in portable and fixed fire extinguishers for fire protection of trains and buildings;
- some passenger trains have air-conditioning systems which use CFC based refrigerants. Some modern signal boxes and travel centres also use CFC refrigerants for air-conditioning systems;
- 1.1.1 Trichloroethane is used as a solvent degreaser in some engineering workshops.

Current best practice

3.4.3 Halons:

- purchasing and refilling of halon extinguishers has generally been stopped;
- the discharge of halon extinguishers for training or testing purposes is banned;
- BR has initiated a programme to withdraw hand held extinguishers. These are stored at secure sites pending safe disposal through specialist contractors;
- relevant Group Standards are:
 - GH/ZT0102 Disposal and replacement of halons in hand held extinguishers;
 - GH/ZT0103 Disposal and replacement of halons in fixed fire-fighting systems;
- BR Research is working with manufacturers to look at alternatives to fixed halon extinguishers in trains and electrical switch rooms. One possibility is an aqueous film forming foam (AFFF).

3.4.4 CFCs:

- for air conditioned passenger trains, there are maintenance procedures to minimise leaks. These involve written instructions which impose tight controls on the use of CFC refrigerant. The procedures define approved methods of refrigerant removal and handling. Refrigerant use is recorded to highlight problems with particular components or systems for rectification. Similar procedures also apply to air conditioned buildings which use CFC refrigerant;
- in the longer term, air conditioning systems on passenger vehicles will have to employ alternative refrigerants. BR is testing non-CFC refrigerants and undertaking associated development work to enable the change to take place.

3.4.5 1.1.1 Trichloroethane/CFC 113:

- the use of these solvents is being phased out. Engineering workshops and depots are examining alternative methods and chemicals for cleaning components.

Options for improvement

- Keep abreast of research into viable replacements for halon used in fixed fire extinguishing systems which protect certain electrical switch rooms and trains;
- investigate reducing the refrigerant system capacity of air-conditioned trains through technical modifications;
- continue to seek alternative methods for cleaning and degreasing components.

4. WATER POLLUTION

4.1 General

4.1.1 Historically, many of the rivers draining the urban areas of the United Kingdom have been polluted to a greater or lesser extent. The adoption of EC Directives concerning water quality, and the establishment of the National Rivers Authority as the regulatory authority for the privatised water industry in England and Wales, have together generated a major impetus to tackle water pollution. It is therefore essential that railway operators take adequate steps to tackle potential sources of water pollution arising from their activities.

4.1.2 These principal categories of potential pollution are:

- the risk of materials used in servicing and repair of trains escaping at depots, whether to ground water or to water courses;
- spillage which arises during operations, often as the result of mishaps;
- herbicides.

4.2 Track Drainage

Issues

4.2.1 Poisonous or polluting substances deposited on the track bed may contaminate water draining into adjacent watercourses, where they may damage the aquatic environment. In some cases the affected water may be abstracted by water supply companies to provide drinking water.

4.2.2 Contamination of water drainage from the track may result from:

- oil and coolant leaking from trains;
- oil and grease used to lubricate point switches and track curves;
- chemicals spilt as the result of operating mishaps;
- herbicides.

Current best practice

4.2.3 Adoption of BS5750 by Maintenance Depots has improved the quality of train servicing and maintenance. Implementation of a more focused fuel management

system has achieved a much tighter control of filling procedures to eliminate over filling of fuel and coolant tanks to prevent losses on canted tracks.

4.2.4 Explicit instructions for handling the environmental consequences of spillage following a derailment are contained in:

- Group Standard GO/OT0004 Accident Management and Investigation;
- The Working Manual for Rail Staff- Handling and Carriage of Dangerous Goods - BR30054/3.

Options for improvement

- 4.2.5
- Prepare response and clean-up procedures for accidental spillages;
 - ensure there are clear procedures for using herbicides;
 - spray only those areas essential for safety;
 - as far as is practicable, avoid using residual weedkillers in areas where there is a risk of ground water contamination;
 - investigate the effectiveness of alternative weedkillers;
 - consider the use of biodegradable grease for lubrication of point switches and track curves.

4.3 Discharge of effluents to watercourses and sewers

Issues

4.3.1 Train servicing and maintenance processes generate effluents such as oils, antifreeze and cleaning chemicals which can pollute the environment if not carefully controlled. The National Rivers Authority (NRA) (Regional Councils in Scotland) and water companies place limits on the amount of effluent they will accept into rivers and sewers. Railway operators will have to pay for all discharges to sewers and watercourses and the charges will reflect the pollutants present and the quantity of effluent discharged. Waste oils are not normally disposed of into water, but are required to be recycled. Tight controls on effluent disposal mean that railway operators should examine ways of avoiding excessive use of chemicals and water.

Current best practice

- 4.3.2 The introduction of fuel management systems at depots and calibration of fuel meters has tightened fuelling procedures, greatly reducing spillage. This has saved money, reduced the risk of water pollution and improved depot safety.
- 4.3.3 Depot emergency plans reflect the need to contact the NRA when accidents involving chemical or fuel spillage occur.
- 4.3.4 Antifreeze drained from diesel trains during maintenance can be collected so that the strength can be corrected and the trains re-filled when maintenance is complete. In several depots, waste minimisation exercises have produced considerable financial and environmental benefits. These include:
- reduced water consumption and effluent charges;
 - savings in diesel fuel costs by eliminating spillage;
 - less risk of prosecution for polluting watercourses;
 - improved managerial and staff awareness of the problems and opportunities.

Options for improvement

- 4.3.5
- Prepare response and clean-up procedure for accidental spillages;
 - consider tracing drainage and oil interception systems where their precise location is not adequately documented;
 - ensure regular checking and cleaning of interceptors is included in operating procedures;
 - carry out a waste minimisation exercise.

4.4 Herbicides

Issues

- 4.4.1 Track and lineside vegetation must be properly managed to maintain railway safety. This control involves using herbicides to kill weeds. These herbicides may contaminate water drainage from the track and find their way into drinking water supplies, breaching permissible levels. EC legislation is progressively limiting the types of herbicides which can be used.

4.4.2 The NRA and water companies will seek co-operation with railway operators to restrict the type of herbicide applied to sensitive drinking water catchments. All indirect discharges of herbicides to ground waters require authorisation by the NRA (or equivalent for Scotland).

Current best practice

4.4.3 Two weedkilling trains apply herbicide direct to the track and to limited lineside areas annually. Both residual herbicides and "contact killer" herbicides (glyphosates) are used. Trials have been conducted in a selected number of sites where herbicide application has been restricted to glyphosate.

4.4.4 Guidance on off-track weed control is given in Group Standard GC/ZH0001 - "The Management of Lineside Vegetation".

Options for improvement

- 4.4.5
- Consider a positive response to water company requests for railway operators to carry out weedkilling trials with more environmentally acceptable herbicides;
 - consider investigating alternative methods of weed control.

Polychlorinated biphenyls (PCBs)

Issues

4.5.1 PCBs are toxic chemicals which, if allowed to pollute water, may be taken up by aquatic organisms into the animal food chain. PCBs constitute special waste and legislation to control their disposal is contained in the Special Waste Regulations. Railway operators should take steps to identify any PCB filled equipment and prevent or contain leakage.

4.5.2 PCBs may be found in transformer insulating equipment used on the railways:

- as fillers in certain capacitors in electric locomotives and multiple units;
- in some lineside transformers;
- in some signalling equipment.

Current best practice

4.5.3 Investigations have identified railway equipment containing significant quantities of PCBs. Programmes for their removal have been undertaken. A recent survey showed

PCB contamination of insulating oil in transformers and switchgear is generally very small and below legal limits.

Options for improvement

- 4.5.4 Any remaining examples of remaining equipment filled with PCBs should be identified. Their removal before 1999 is likely to be required by impending legislation. In the meantime arrangements should be made to ensure that any leakage from these items is contained in an impervious bund. The cost of decontaminating a PCB-affected area is likely to exceed the replacement cost of the equipment.

5. WASTE AND LITTER

5.1 Waste Management

Issues

5.1.1 Railway operators have a duty to ensure that all wastes produced by their activities are correctly identified and that waste is disposed of correctly in compliance with the law, i.e. entrusted to registered carriers to be disposed of by licensed disposers. They must also ensure that appropriate measures are taken to protect the health of workers as required under the Control of Substances Hazardous to Health Regulations (COSHH) 1988. Such substances are equally likely to be harmful to the environment.

5.1.2 Many different types of waste are produced by railway operators. These mainly arise from train, station or track maintenance processes as residues, scrap materials or from accidental spillages.

5.1.3 Examples of waste produced by railway operators include:

- asbestos products;
- spent ballast;
- batteries;
- biological waste;
- cleaning chemicals;
- empty drums/containers which have contained chemicals;
- waste oils and fuels;
- paints;
- scrap metals;
- sleepers;
- recyclable materials.

5.1.4 Although most waste materials are disposed of by certified contractors, spent ballast is normally disposed of in licensed landfill sites owned by railway operators.

Current best practice

- 5.1.5 BR is producing guidance handbooks to inform managers of their responsibilities.
- 5.1.6 In some cases, specific instructions have been drawn up for a particular waste. For example, Civil Engineers use large numbers of non-rechargeable batteries to illuminate warning boards at the sides of track. Instruction on the correct disposal of these batteries is contained in the BR Civil Engineering Safety Manual, Part G7. Arrangements have been made by BR Procurement to provide a national contract for the removal of scrap batteries including rechargeable lead acid cells.
- 5.1.7 Several railway maintenance depots have undertaken waste minimisation exercises. The experience of BR has shown that reducing waste can make a valuable contribution to financial performance, improve environmental performance and motivate the workforce.

Options for improvement

- 5.1.8 Consider carrying out a waste minimisation exercise.

5.2 Primary and secondary batteries

Issues

- 5.2.1 Primary batteries, *i.e.* those which cannot be recharged, may contain heavy metals such as zinc, mercury and cadmium which are proven to be environmentally harmful. Disposal is strictly controlled. Secondary batteries, *i.e.* those which can be recharged, also contain heavy metals, notably lead and cadmium, but disposal is less of a problem since many suppliers or specialist companies will take back batteries for recycling. A particular issue which operators should bear in mind is the number of small nickel cadmium batteries which are not currently recycled, and the number of secondary batteries which may be built into a piece of equipment and inadvertently thrown away with that equipment.

Current best practice

- 5.2.2 All operators should, as a matter of course, be complying with legislation on disposal of heavy metals, and investigating the scope for using rechargeable batteries wherever possible. (See also section 5.1.)

Options for improvement

5.2.3 While it may be unrealistic to reduce significantly the use of batteries on the railway, there are a number of actions an operator can take to minimise the effects of heavy metal contamination of the environment:

- ensure, as an absolute priority, that primary batteries are disposed of safely,
- consider the scope for using more rechargeable batteries;
- ensure that large batteries are sent to be recycled as a matter of course;
- establish the practicability and economics of sending all spent secondary batteries for recycling.

Longer term measures

5.2.4 Operators should encourage their manufacturers to ensure that all equipment containing a secondary battery is clearly marked, and that such batteries can be easily removed for disposal according to approved procedure.

5.3 Litter

Issues

5.3.1 Litter discarded by customers and the general public on railways and on trains is an eyesore and a safety hazard. Refuse and debris on tracks encourages people to drop more rubbish. Litter may arise from:

- materials such as old rails and sleepers left by the lineside after maintenance. These can be ideal ammunition for vandals;
- customers and staff dropping litter on trains, tracks and in stations;
- fly-tipping of rubble and household rubbish which account for a large proportion of refuse found on the lineside.

5.3.2 Litter may cause a fire hazard. Accumulation of litter creates a poor appearance which can lead to a decline in standards.

5.3.3 The Environmental Protection Act 1990 contains provisions to tackle the problem of litter. These place statutory duties on railway operators which are set out in the Code of Practice. The Code of Practice is based on two key principles:

- designated land is categorised into different types called zones;
- for each zone there is a maximum response time to remove litter which depends on the degree of littering.

5.3.4 Every station was assigned to one of four zones in 1991 in accordance with the importance of the station. Current proposals are likely to require consultation with the local authority if any change to the zone is proposed by a station operator.

Current best practice

5.3.5 BR has issued three handbooks to inform managers of their responsibilities:

- litter and refuse handbook for managers;
- urban lineside littering;
- procedure for dealing with litter complaints and proceedings under the Environmental Protection Act 1990.

5.3.6 Many stations display posters encouraging customers to take their litter home with them. Rubbish is not a problem on manned stations because they are cleared frequently. In some cases mobile cleaning teams regularly visit unstaffed stations to clear litter and empty litter bins.

5.3.7 Many trains have litter bins and on some long-distance journeys on-board staff go through the train removing litter. Cleaners are also provided at many turn-round stations. Current contracts for on-train caterers require them to remove their own litter.

Infrastructure maintenance

5.3.8 Infrastructure maintenance practice is considered to have improved in recent years with the clearance of accumulated debris and a more focused attention to cleaning up materials and waste left after maintenance and renewals work.

5.3.9 In some urban areas fly-tipping on the lineside continues to be a problem. Tracing the culprits is often difficult and in the worst cases preventative fencing is damaged. In some areas partnership initiatives with local authorities and amenity groups has proved successful in tackling this problem.

Options for improvement

- 5.3.10 • Consider publicity/information campaigns to educate customers to discourage leaving litter;
- educate platform staff, including users such as Post Office workers, not to sweep litter on to the track;
 - ensure that station trading outlets clean their own premises;
 - require retail outlets and trolley vendors to remove litter resulting from their activities;
 - consider a team-based approach with local authorities and amenity groups to deal with problems of fly-tipping on the urban lineside, including liaison with the Police and the Waste Regulation Authority to achieve the successful prosecution of offenders.

6. NON-RENEWABLE RESOURCES

6.1 General

Issues

- 6.1.1 Over the last few years, public interest and concern has grown about the depletion of non-renewable resources: conservation and recycling have been thrown into sharp focus. The concerns range from fears on short-term issues such as disposal of heavy metals from batteries (see section 5.2) to longer-term issues such as global warming (see section 3.3).
- 6.1.2 Current best practice on conservation and recycling is evolving and there will often be a difficult balance to be struck between the economic and environmental costs of new materials as against recycling. It is not always clear what the most environmentally friendly solution is. Railway operators will need to keep a close watch on the developing debate and on the emergence of standards and legislation.

6.2 Energy conservation

Issues

- 6.2.1 Emphasis has been placed in recent years on the potential for saving energy. There is no legislation in this area, but the single most important spur for improvement is the cost of electricity and other fuels - particularly tariff structures based on thresholds of use.

Current best practice

- 6.2.2 Current best practice is to monitor energy consumption and increase awareness amongst staff of the potential financial benefit from saving energy, as well as other benefits such as reductions in noise nuisance and atmospheric pollution (see sections 1.2 and 3.1).

Options for improvement

- 6.2.3 Close attention to the detail of operations is likely to do more to save energy than any other single measure. Apart from monitoring energy use, the following may be beneficial:
- monitor equipment, e.g. transformers and insulators to check that leakage levels are not excessive;

- ensure that drivers are aware of energy-friendly driving techniques which can cut down energy consumption;
- encourage staff to seek ways of reducing energy consumption, particularly in buildings.

Longer term measures

6.2.4 For the longer term, operators should consider building in energy conservation to vehicle specifications. Regenerative braking and computer controlled coasting are options which should be considered as part of any business case for new rolling stock. For buildings, improvements in insulation and glazing, as well as technological developments in lighting, may offer scope for increasing energy efficiency as part of refurbishment and new build projects.

7. LINESIDE ECOLOGY

7.1 General

Issues

7.1.1 A diversity of flora and fauna lives along the railway lineside. Within an overriding concern to maintain operational safety it is possible to manage the lineside vegetation in a sympathetic manner. In particular the character of the flora and fauna in some areas is sufficiently distinctive to be of scientific value. This is recognised by designating sites as of Special Scientific Interest (SSSI), which require particular care in their management. Elsewhere trees which make an important contribution to the landscape may be the subject of Tree Preservation Orders (TPO) made by local authorities under their statutory powers. Railway operations and the use of herbicides can impact adversely on lineside ecosystems. (See also section 4.3.)

Current best practice

7.1.2 Several projects have been undertaken in partnership with the local community to experiment with different techniques for lineside management, to find the best compromise between the needs of railway operators and nature conservancy. There is, however, no uniform best practice since this will vary from site to site.

7.1.3 Guidance on the management of lineside vegetation is contained in Group Standard GC/ ZHOOOI - "The Management of Lineside Vegetation".

7.1.4 Information on Tree Preservation Orders (TPOs), Sites of Special Scientific Interest (SSSIs) and Conservation Areas (CAs) on railway land are held on a computer database called Railway Heritage records, owned by Railtrack.

Options for improvement

7.1.5 Operational safety must remain the paramount objective in the management of lineside vegetation, but the wider conservation context should also be borne in mind.

7.1.6 The following measures can be used to help safeguard the more sensitive sites:

- before carrying out work such as lineside tree-felling, check that the area to be cleared does not contain TPOs, or is part of an SSSI or CA;
- ensure that relevant staff are aware of the location of TPOs, SSSIs or CAs;

- consider joint initiatives with local authorities or conservation groups to maintain the diversity of habitats.

Enclosure 1: Extract from Environmental Protection Act 1990

DEFINITIONS

EXTRACT FROM PART I, SECTION I

- 1.(2) The "environment" consists of all, or any, of the following media, namely, the air, water and land; the medium of air includes the air within buildings and the air within other natural or man-made structures above or below ground.
- 1.(3) "Pollution of the environment" means pollution of the environment due to the release (into any environmental medium) from any process of substances which are capable of causing harm to man or any other living organisms supported by the environment.
- 1.(4) "Harm" means harm to the health of living organisms or other interference with the ecological systems of which they form part, and, in the case of man, includes offence caused to any of his senses or harm to his property; and "harmless" has a corresponding meaning.

Enclosure 2: Guidance Documents, Instructions and Technical Standards

Carriage of hazardous cargoes

1. BR MT/219: Requirement for Design Construction, Testing and Use of Tank Wagons running on BR lines.
2. BR 30054/3: Working Manual for Rail Staff - Handling and Carriage of Dangerous Goods
3. Group Standard GO/OT0004: Accident Management and Investigation.
4. Group Standard GO/010717: Dangerous Goods Management Incident and Irregularity Information.

Contact

Railtrack, Safety and Standards Department

Halons

5. Group Standard GH/ZT0102: Disposal and replacement of halons in hand held extinguishers.
6. Group Standard GH/ZT0103: Disposal and replacement of halons in fixed fire-fighting systems.

Railtrack, Standards Manager, Permanent Way

Herbicides

7. Group Standard GC/ZH0001: The Management of Lineside Vegetation.

Railtrack, Technical Standards Manager, Permanent Way

Waste Management

8. BR Civil Engineering Safety Manual, Part G7: Correct disposal of batteries.
9. BR Handbooks: Litter and refuse handbook for managers. Urban Lineside Littering. Procedure for dealing with litter complaints and proceedings under the Environmental Protection Act 1990.

Railtrack, Group Standards.

BR Environmental Policy Group.