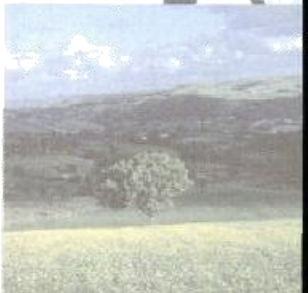
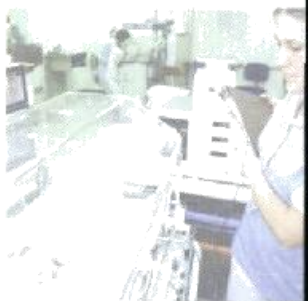




# **Guidelines** for NIE Networks and the Environment



# NIE's Vision for the Future



A premier Northern Ireland Company; a first rate performer in the eyes of its investors, its customers and its staff; externally oriented and at one with its commercial, regulatory and physical environment; and a recognised contributor to the social and economic development of the community in which it operates.

# Managing Director's Statement



NIE recognises that the scale of our activities places distinct responsibilities upon us to safeguard the quality of the environment. Electricity networks play an essential part in the economic life and well being of urban and rural areas. However, we recognise that the intrusion of infrastructures on the environment must be managed to mitigate, as far as practicable, any adverse affects. This means rigorous evaluation of our operations and their likely impact. Our environmental policy and procedures are designed to ensure that we carry out our activities in a caring and

sensitive manner and not only minimise any adverse impacts, but also identify and implement opportunities for environmental gain.

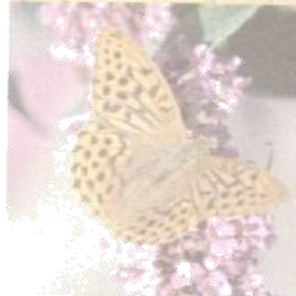
Since we commissioned our first independent Environmental Audit in 1993, and a subsequent Review in 1997, NIE has continued to progress specific areas where we identified opportunities to improve our environmental performance and develop a number of environmental objectives. An Action Plan has been produced to outline our objectives, with targets set with relevant management responsibilities for their achievement.

This Environmental Guidelines document is a further development in our on-going programme of good environmental stewardship. These Guidelines are aimed at providing relevant bodies and the general public with details of our philosophy and policies for managing the environment, our commitment to consultation throughout scheme development and our approach to delivering sustainable developments which are both essential and acceptable to our society.

Managing the environmental impact of activities is an essential part of our business life and we are committed to a programme of environmental improvement. This document, along with its Technical Supplement, provides tangible evidence of this commitment to conserve our unique Northern Ireland environment.

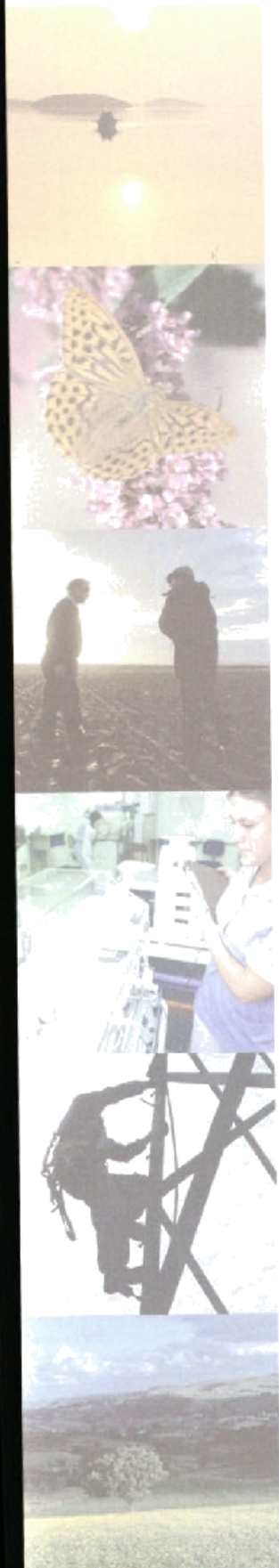
HARRY McCracken

MANAGING DIRECTOR, NIE



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Part One



# Environmental Policy Statement

Northern Ireland Electricity plc is responsible for the transmission, distribution and supply of electricity to customers throughout Northern Ireland.

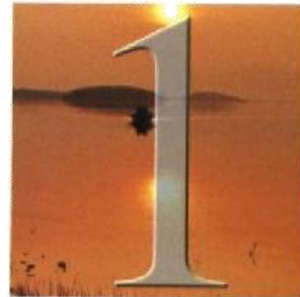
NIE will manage responsibly the impact of its business operations on the environment and, in this respect as in all other aspects of business, the Company aims to be a first rate performer in the eyes of investors, customers and staff. The Company is committed to continual improvement and to being a recognised contributor to the community in which it operates.

NIE's policy on the environment reflects this commitment and aims to protect the environment and to ensure a sound environmental approach in all activities.

Specifically these aims are :

- Not merely to comply with relevant legislation and regulatory requirements relevant to our business, but also to honour the obligations set out in the statement on the preservation of amenity and fisheries. Where practicable and economically viable we must strive to develop corporate standards of practice in excess of such requirements.
- To monitor the environmental impact of our operations and to develop procedures to prevent or abate any forms of pollution resulting from our activities. We will communicate and co-operate with local, national and international regulatory agencies charged with pollution control.
- To assess the potential environmental effects of any new developments and to promote the standards of best practice operating throughout the industry, improving on such standards where practicable and economically viable.
- To encourage an open attitude on all environmental issues and to make available environmental information to all NIE stakeholders. Staff will be trained in appropriate aspects of environmental management and the Company will publish an annual report on its environmental performance.

In particular we will endeavour through all our business activities and operations to conserve the environment of Northern Ireland and to make our community proud of its electricity company and its continuing care for the environment in which we live.

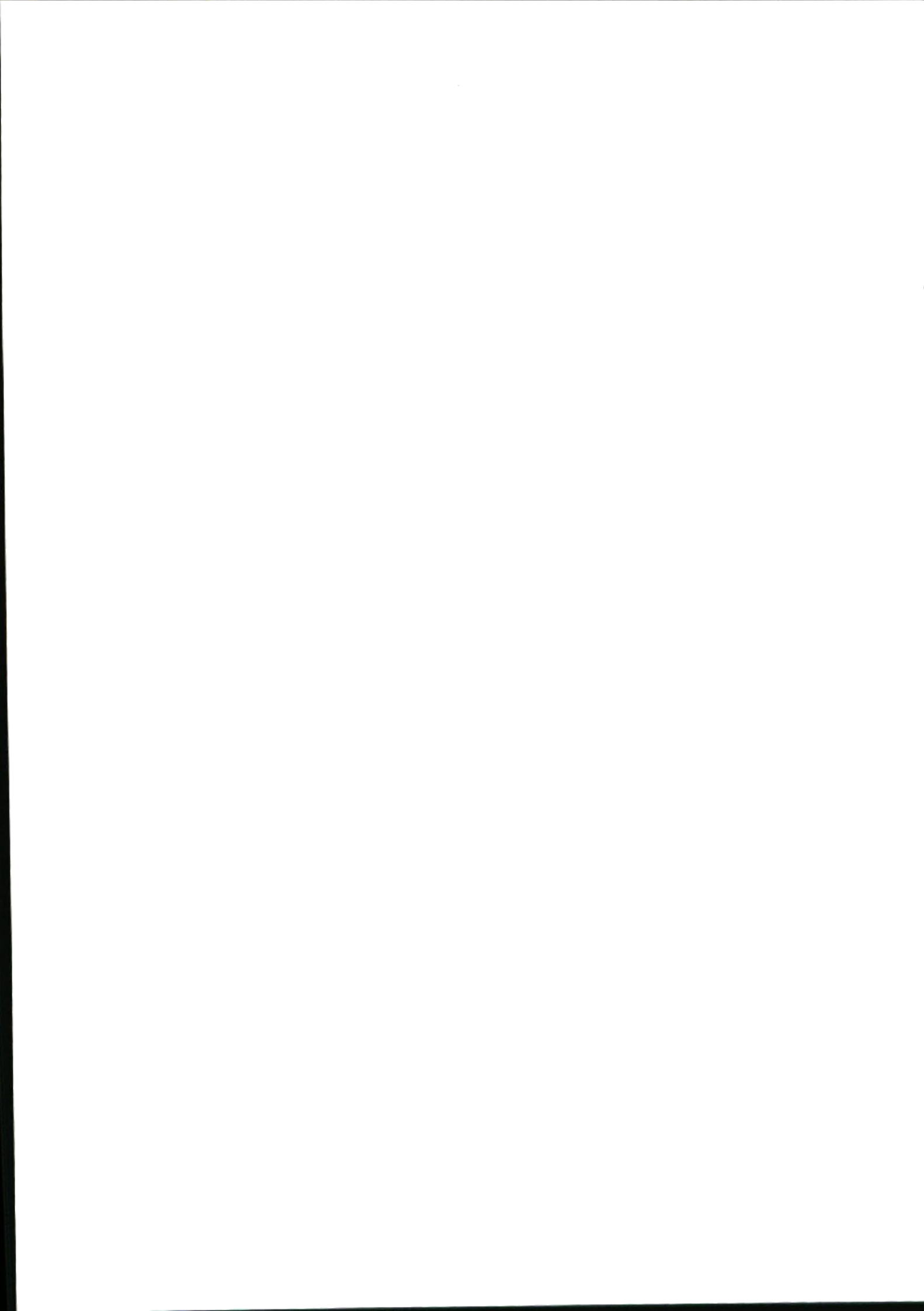








Part Two



# Managing the Environment

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# 1.0 NIE Policy and Philosophy

Following privatisation in 1993, NIE engaged an independent environmental consultant to carry out a preliminary environmental review of its core business activities. This review of the organisation's primary processes, helped to identify the main environmental impacts, assisted in the development of NIE's Environmental Policy Statement and established a benchmark of NIE's environmental performance at that time.

NIE's environmental policy is based on the company's 'Vision for the Future' and is set out in two statements:

- 1) The Statement on the Preservation of Amenity and Fisheries; and
- 2) The Environmental Policy Statement.

The Statement on the Preservation of Amenity and Fisheries is a response to the Schedule 9 requirement of the Electricity (NI) Order 1992 and involved widespread consultation with statutory consultees, environmental consultants and other interested parties (see Appendix 1).

The Environmental Policy Statement detailed in Part 1 commits us to the objectives of responsible management and continual improvement with respect to environmental performance and protection of the environment. From these objectives flow four specific aims. In pursuing these aims and the overall policy, NIE has adopted the philosophy illustrated in Figure 1.1 below.

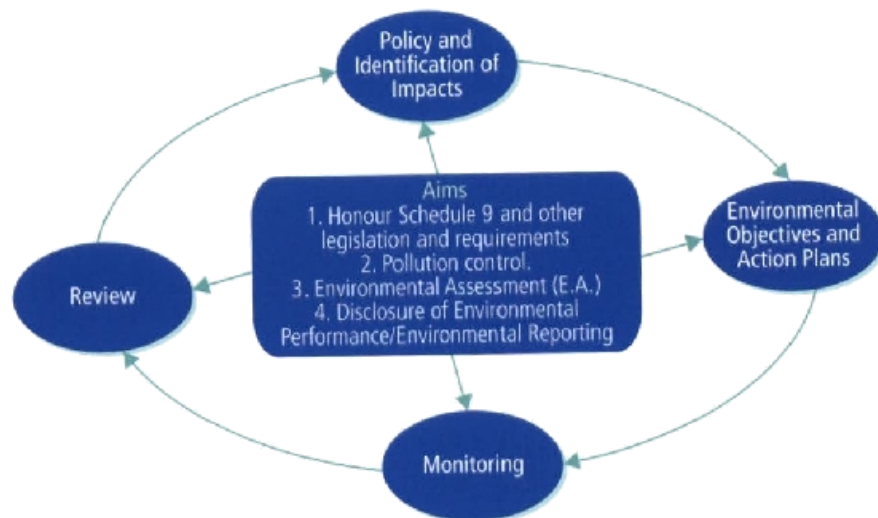


Figure 1.1 - NIE's Philosophy for Managing the Environment

Having put in place an environmental policy and adopted a philosophy based on continual improvement, NIE determined the main impacts of its core business activities on the natural and man-made environment.

The impacts can be summarised under the following categories:

- 1) Landscape and Visual Impact
- 2) Atmospheric Emissions
- 3) Ground and Water Pollution
- 4) Disposal of Waste
- 5) Acoustic Disturbance
- 6) Electric and Magnetic Fields (EMFs)
- 7) Wildlife (inc. bird life)

Our philosophy also requires that environmental objectives are set for each of the identified impacts. Some of these objectives lend themselves to practicable measurement. All of them are realistic taking into account the appropriate environmental, technical and economic considerations.

In support of these objectives, we have developed environmental action plans which will contribute to fulfilling the objectives and the overall environmental policy.

The following sections specify our environmental objectives, detail the associated action plans and explain our monitoring and review procedures. These steps are an integral part of an environmental management process focused on the protection of the environment and the continual improvement in environmental performance.



## 2.0 Environmental Objectives and Action Plans

### 2.1 Landscape and Visual Impact

Landscape intrusion is associated with impacts causing changes in the fabric, character and quality of the landscape as a result of our activities and can be positive or negative. The impacts can be direct upon specific man-made landscape elements (eg. hedges, walls, field boundaries, woods etc) or can be more subtle upon the overall natural pattern of elements that give rise to landscape character and distinctiveness.

Visual intrusion contributes to landscape intrusion but relates solely to changes in the available views of the landscape and the effects such changes have on people.

#### *Objective*

NIE will minimise the impacts of its activities on the natural and man-made landscape, taking into account the relevant environmental, technical and economic considerations.

#### *Action Plan*

We will:

- 1) ensure that, where appropriate, our schemes are developed using a holistic rather than segmented approach.
- 2) seek independent expert advice (eg. environmental and planning consultants and landscape architects) at the earliest opportunity for suitable projects.
- 3) avoid siting a substation in a designated area (eg AONB, ASSI etc.) where reasonably practicable and also consider the impact of the substation development on local flora and fauna (including biodiversity) and also the cultural heritage.
- 4) endeavour to conceal substations within the natural surroundings, taking into consideration the natural ground contours and existing hedgerows and boundaries.





*Fig 2.2: Natural Concealment  
Using Existing Woodland*

- 5) carefully design substations, taking into account amongst other things, the choice of equipment, specified statutory clearances, physical arrangements, design of buildings and the use of lower profile structures.
- 6) improve the aesthetic appearance of selected substations by the use of indigenous plants and shrubs around the substation and by careful landscaping of the site.
- 7) ensure that new overhead lines are routed to achieve a technically and economically viable route with minimum intrusion on the landscape, property, flora, fauna (including biodiversity) and cultural heritage.
- 8) investigate and consider alternative overhead line designs which may mitigate the effect of visual intrusion on specific landscapes.
- 9) ensure, where possible, that existing overhead lines in urban and environmentally sensitive rural areas are removed and/or undergrounded on the basis of sound environmental, technical and economic considerations.
- 10) continue to use underground cables, where it is reasonable and practicable to do so, in accordance with our established policy and guidelines.
- 11) ensure that feedback is sought from statutory consultees and other interested parties before substation sites and overhead line routes are selected.
- 12) continue to ensure that our staff and contractors employed by us on cable projects, observe good practice when working in proximity to trees.



*These actions relating to substations, overhead lines and underground cables will be implemented in accordance with the following documents:*

- (i) NIE Code of Practice on the Provision, Alteration and Removal of NIE Networks;
- (ii) NIE Code of Practice on the Siting of Substations in Rural Areas;
- (iii) NIE Code of Practice on Substation Buildings;
- (iv) NIE Guidance Document on 'Provision of Substations by Northern Ireland Electricity in New Developments'.

These documents are provided in full within the Guidelines for NIE Networks and the Environment - Technical Supplement which is available from us on request.

## 2.2 Atmospheric Emissions

In the course of our business activities, atmospheric emissions may result from:

- a) Electrical plant and equipment containing sulphur hexafluoride (SF<sub>6</sub>);
- b) Sites of potential fire hazard (eg. substations);
- c) Use of hazardous substances;
- d) Use of ozone depleting substances; and
- e) Use of vehicles and mechanical plant and machinery.

Since privatisation in 1992, NIE has been responsible for managing the stack emissions from Northern Ireland's contracted power stations. We have and will continue to manage gaseous emissions to ensure compliance with levels specified by the relevant statutory bodies.

### *Objective*

NIE will not only comply with relevant legislation and regulations relating to atmospheric emissions and substances hazardous to health but will also strive to minimise emissions to the atmosphere, taking into account the relevant environmental, technical and economic considerations.





## *Action Plan*

We will:

- 1) endeavour to continue to reduce the energy losses associated with the transmission, distribution and supply networks, through:
  - (i) appropriate network design and asset specification;
  - (ii) increasing customer awareness about the need and benefits of energy efficiency; and
  - (iii) increasing staff awareness about the need and benefits of energy efficiency.

This continuous effort to improve energy efficiency will make a contribution to the reduction of Northern Ireland's energy requirements and the associated emissions from the local power stations.

- 2) develop and implement guidance on the management and handling of SF6 gas.
- 3) continue to implement the NIE Code of Practice 7/9 'Limiting Fire Risk in Substations' and NIE safety rules on the provision of fire fighting equipment.

We are required to fell or lop trees to maintain safety clearances to overhead lines. Waste resulting from the felling of timber will be reused or recycled where appropriate, or alternatively, disposed of by licensed carriers.

- 4) minimise, through design and specification, the use of hazardous substances eg. herbicides, pesticides, paints, solvent cleaners and resins in accordance with current regulations and NIE's COSHH Management System.
- 5) minimise, through specification, products which utilize ozone depleting substances.
- 6) ensure that our fleet vehicles and mechanical plant and machinery are maintained to ensure compliance with relevant statutory emission levels.



### 2.3 Ground and Water Pollution

NIE constructs, operates and maintains electrical networks, utilizing plant and equipment containing substances which may be hazardous should they leak to ground and/or water courses.

In the course of our business activities, pollution may result from:

- a) Oil filled electrical plant and equipment;
- b) Fluid filled underground cables;
- c) Use of hazardous substances; and
- d) Creosote impregnated poles.

#### *Objective*

NIE will not only comply with relevant legislation regarding pollution and substances hazardous to health, but will also strive to minimise the risk of pollution to ground and water bearing in mind the relevant environmental, technical and economic considerations.

#### *Action Plan*

- 1) Within new transmission and primary distribution substations, transformers will be banded to contain potential oil leaks and spillages.
- 2) Within existing transmission and primary distribution substations, a process of environmental risk assessment will continue to develop a prioritised annual programme for the installation of transformer banding.

*Example of a  
Banded Transformer*



In both of the above instances the bunding design will make provision for the extraction of rain water and also ensure that after a leakage incident, oil can be safely removed from the site.

- 3) We will continue to research and specify equipment and/or substances, where reasonably practicable, for use in electrical plant and underground cables which pose a minimal risk of ground and water pollution due to oil or fluid leaks.
- 4) We will minimise through design and specification, the use of hazardous substances eg. herbicides, pesticides, paints, solvent cleaners and resins in accordance with current regulations and NIE's COSHH Management System.
- 5) Timber poles are treated with creosote to NIE's specification and also relevant national and international standards. As a result the leakage of creosote is infrequent and at a low level. We will continue to implement our policy of avoiding siting poles near to wells and water courses.

#### 2.4 Disposal of Waste

NIE recognises that in the course of its business activities, a significant waste stream is generated. The storage and disposal of this waste can have a potential harmful impact on the environment and in response we recognise our 'duty of care' with respect to the management of this waste.

##### *Objective*

NIE will progressively minimise the volume of generated and disposed waste adopting principles based on minimisation, re-use and recycling.

##### *Action Plan*

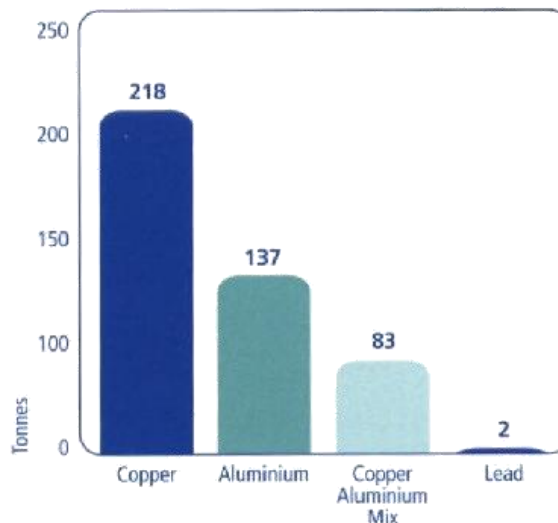
We will:

- 1) continue to re-use and recycle network components where practicable. Items such as scrap transformers and switchgear, scrap conductor and recovered underground cable will continue to be sold off to licensed agents to be recycled. Insulating oil from oil-filled equipment will continue to be reconditioned in-house and re-used.
- 2) ensure that, where waste cannot be re-used or re-cycled, it is disposed of in accordance with relevant regulations relating to waste management.





Fig 2.3: Amount of scrap cable metal which was sold for reuse in 1997



## 2.5 Acoustic Disturbance

Noise can be perceived as an environmental problem and there is a statutory framework which deals with some of its aspects. In the construction, operation and maintenance of its networks, NIE creates a number of potential sources of acoustic disturbance.

- a) Noise from substations (primarily transformer noise);
- b) Noise from overhead lines; and
- c) Noise due to construction/maintenance works.

### *Objective*

NIE will reduce noise levels associated with its activities to acceptable levels specified by statutory bodies. In the absence of specified limits, we will endeavour to ensure that noise levels do not lead to acoustic disturbance.

### *Action Plan*

- 1) We will respond to noise enquiries from the general public in a sensitive and efficient manner, to seek resolution at the earliest opportunity.
- 2) We will endeavour to minimise noise emitted from substations, by the appropriate specification of sound power levels for transformers within relevant NIE technical specifications. These sound power levels will take into account site specific background noise levels where practicable and reflect other relevant environmental, technical and economic considerations.

- 3) Where noise levels exceed current standards and/or statutory limits, we will reduce noise levels to the appropriate level taking into account the relevant environmental, technical and economic considerations.
- 4) We will continue to address acoustic disturbance within the Environmental Assessment of all major projects. As such, acoustic disturbance is and will continue to be, an important factor in the routing of new overhead lines and the selection of substation sites.
- 5) We will continue to address acoustic disturbance in the designs of substations and the layout of plant and equipment within substations. Where practicable, transformers will be strategically sited, so as to reduce sound levels at substation boundaries.

## 2.6 Electric and Magnetic Fields (EMF)

NIE recognises that there is public concern about a possible connection between electric and magnetic fields (EMF) and health. These fields are produced by all electrical installations and equipment such as domestic appliances, overhead lines, underground cables and computers.

Many thousands of scientific papers have been produced on EMF. Time and again authoritative and independent scientific review panels have concluded that it has not been established that mains frequency EMF can cause adverse human health effects. The National Radiological Protection Board (NRPB) is the United Kingdom body with a statutory responsibility for advising on EMF. It has concluded that there is no clear evidence of adverse health effects at the levels of electromagnetic fields to which people are normally exposed.

NIE is committed to the health, safety and welfare of the public, its customers and employees. The commitment of the company is reflected in its 'Policy Statement on Electric and Magnetic Fields and Health', set out in Appendix 2.

### *Objective*

NIE will provide up to date information to the public on the subject of EMF and health concerns. In addition we will continue to comply with NRPB guidelines on EMF.



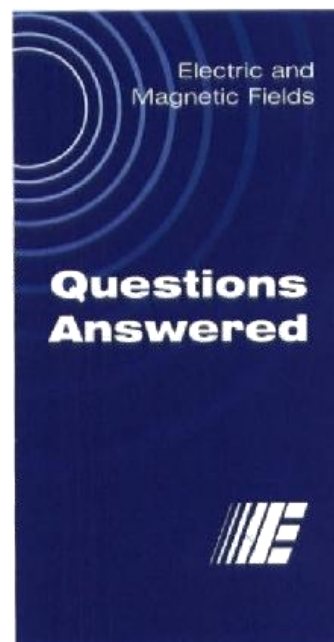
### *Action Plan*

We will:

- 1) continue to monitor closely the latest research into the effects of EMF.
- 2) continue to provide up to date information to the general public as requested.
- 3) maintain and develop our formal procedure (including measurement of field strengths) for addressing the queries and concerns of the general public.



*Electric and Magnetic  
Fields leaflet*



### **2.7 Wildlife**

NIE recognises that the construction, operation and maintenance of its networks can have an impact on wildlife and wildlife habitat, particularly with respect to birds.

#### *Objective*

NIE will not only comply with all relevant legislation dealing with wildlife but will strive to minimise the impacts of its activities on bird and animal life.

### *Action Plan*

- 1) We will continue to address impacts on wildlife and wildlife habitat within the Environmental Assessment of suitable projects. Wildlife impact is and will continue to be an important factor in the routing of new overhead lines and the selection of substation sites.
- 2) We have contributed to research on birds colliding with overhead lines and will continue to monitor future developments and research. We will provide assistance to customers and the general public on request, taking into account the relevant environmental, technical and economic considerations.
- 3) We will continue to monitor developments and research with regard to birds roosting on overhead lines. We will provide assistance to customers and the general public on request, taking into account the relevant environmental, technical and economic considerations.

*Items 2 and 3 of the action plan will be implemented in accordance with the following documents:*

- (i) NIE guidance document for dealing with birds roosting on overhead lines; and
- (ii) NIE guidance document for dealing with birds flying into overhead lines.

These documents are provided in full within the Guidelines for NIE Networks and the Environment - Technical Supplement which is available from us on request.



## 3.0 Monitoring

The responsibility for delivering identified actions is spread across a number of disciplines within NIE. In order to assess progress, the effectiveness of each action should be monitored and evaluated.

There are a number of different systems within NIE which are used to generate the required information to facilitate this monitoring and evaluation process.

- 1) General Ledger Accounting System
- 2) Customer Complaints System
- 3) Asset Management System
- 4) Purchasing and Stock Control System
- 5) Health and Safety Auditing System
- 6) Programme/Capacity Planning System

The co-ordination and assimilation of information obtained from these systems is discussed in the following section.

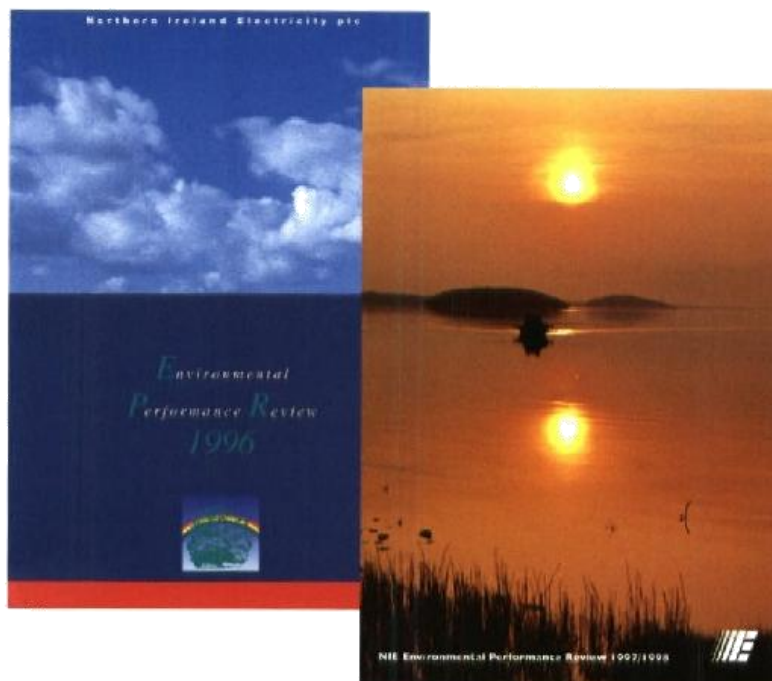




## 4.0 Management Review

NIE has an Environment Manager who audits the environmental performance of the company and issues each year an Environmental Performance Review publication. This review assesses the effectiveness, the continued suitability and the relevance of the environmental objectives and Action Plans. It also seeks to identify inadequacies in the environmental management process and makes suggestions for improvement. The review is publicly available to ensure that the whole environmental management process is transparent and of high integrity.

This review also affords an opportunity to assess the need for changes to policy, environmental objectives and associated Action Plans, in light of changing environmental pressures and/or legislation and the commitment to continual improvement.



# Appendix 1

## Statement on the Preservation of Amenity and Fisheries

Northern Ireland Electricity plc (NIE) acknowledges its obligations under the Electricity (Northern Ireland) Order 1992 to prepare a statement of the manner in which it intends to meet the requirements of Schedule 9 to this Order.

In fulfilment of these requirements NIE will have regard to:

- (a) The conservation of the natural beauty and amenity of the countryside,
- (b) The protection of its flora and fauna,
- (c) The protection of its geological and physiographical features, and
- (d) The protection of sites, buildings and objects of architectural, historical, and archaeological importance.

NIE will take these considerations into account for all relevant developments.

In planning and carrying out these projects NIE will consult where appropriate with all bodies. NIE will involve them at an early stage and will ensure that measures agreed during these consultations are incorporated in the planning, construction, and operation of the projects.

This will particularly include the Department of the Environment, the Department of Agriculture, the Fisheries Conservancy Board for Northern Ireland, and the Foyle Fisheries Commission. NIE will also meet periodically with these bodies to discuss general environmental issues related to its activities and to establish constructive dialogue on major amenity issues.

Where the activities of NIE have any effect on the environment, NIE will do what it reasonably can to mitigate such effects. This will include assessment of potential effects at the planning stage and the production of environmental impact statements where appropriate for major projects. Execution of projects and management of operational sites will be carried out in an environmentally sensitive manner so far as is reasonably practicable.

NIE will ensure that it has access to relevant expertise and will promote awareness of the need to preserve amenity within the Company. Where contractors are employed, they will be required to comply with statutory obligations and with NIE standards.

NIE recognises the importance of environmental matters to Northern Ireland and the need to carry out all its activities in an environmentally responsible way. It has therefore initiated the development of a comprehensive Environmental Policy Statement. This Statement on the Preservation of Amenity and Fisheries will form part of the policy statement and will be reviewed from time to time and if required, amended.

31 March 1993



# Northern Ireland Electricity Policy Statement on Electric and Magnetic Fields and Health

Northern Ireland Electricity recognises that there is concern about a possible connection between electric and magnetic fields (EMF) and health. These fields are produced by all electrical installations and equipment such as domestic appliances, overhead lines, underground cables and motor vehicles.

**NIE is committed to the health, safety and welfare of the public and its employees.**

To date, over 10,000 scientific papers have been produced on EMF and over eighty independent and authoritative scientific review panels have concluded that it has not been established that mains frequency EMF cause adverse human health effects. The National Radiological Protection Board (NRPB), the UK body with a statutory responsibility for advising on EMF, has concluded that "there is no clear evidence of adverse health effects at the levels of electromagnetic fields to which people are normally exposed." NIE carries out its activities in compliance with NRPB guidelines.

We believe that present evidence does not justify any change in the industry's operating practices, or the everyday utilisation of electricity by our customers.

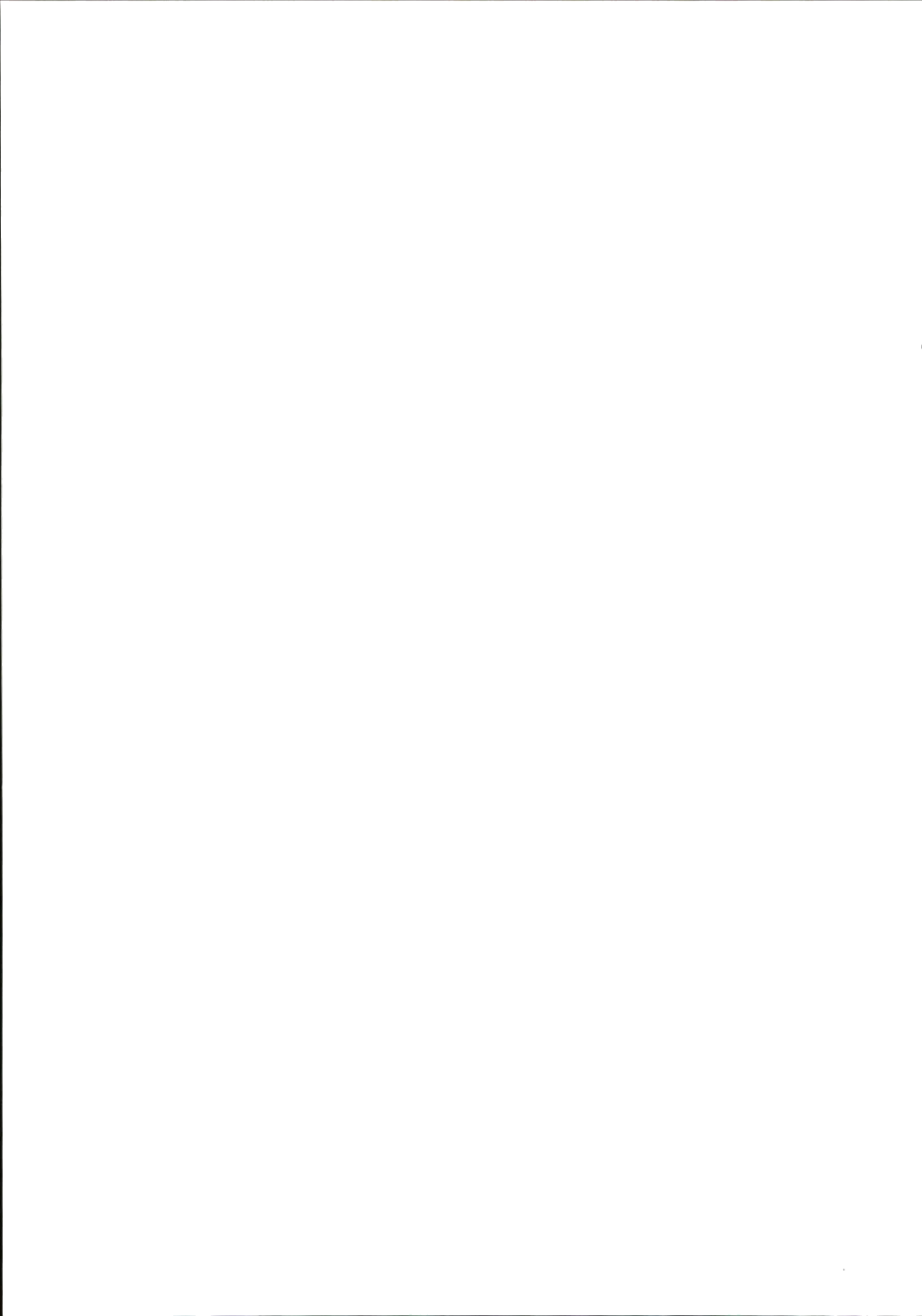
NIE cares about our customers' concerns, and we are committed to providing members of the public, customers, and our employees with full and up to date information about EMF and health. We have therefore adopted the following principles in relation to EMF:

- We will continue to support and contribute to the funding of credible research into EMF. This includes an independent trust which supports biological research.
- We will continue to monitor closely scientific research, overseas developments and major reviews of scientific, medical and engineering research concerned with electric and magnetic fields.
- We will provide full and up to date information about EMF and health to the general public enabling them to make informed judgements on the latest research.
- We will respond to requests from our customers and the general public, regarding the measurement of field strengths in the vicinity of homes and premises.

NIE will also constantly review its approach to ensure that it is consistent with the best available knowledge on this matter at any time.

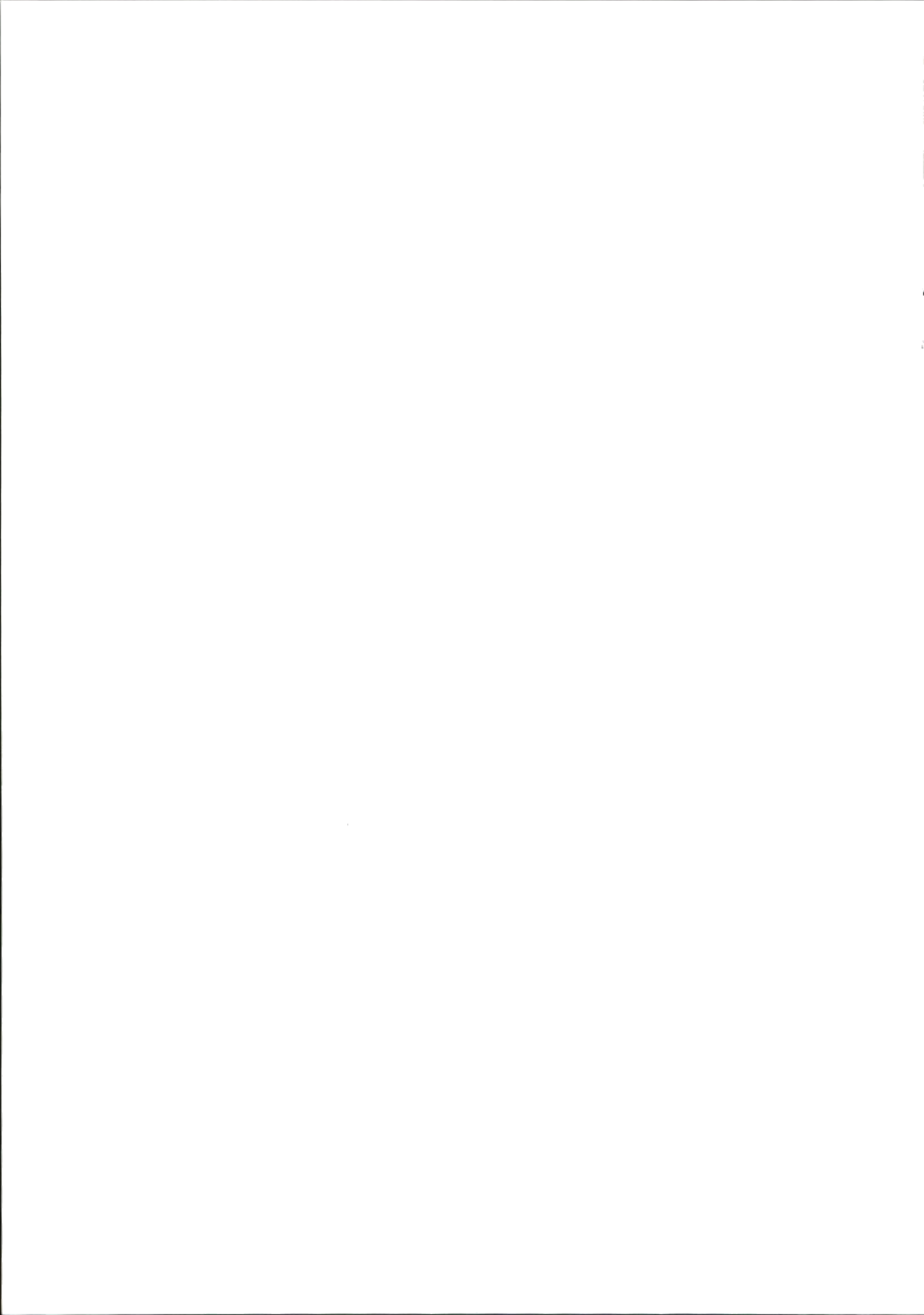
May 1997







### Part Three



# Consultations and Statutory Requirements

The public are entitled to expect consultation throughout the development of a scheme. Appropriate consultation is an essential part of Environmental Assessment and helps to deliver sustainable schemes. The consultation process can have a lasting influence on public perception of both the scheme and NIE.

The process is project specific and dependent upon the nature and extent of the project to be undertaken. Our consultations with decision making authorities, statutory consultees, landowners and the public will enable us to gain valuable advice and help from a wide range of organisations, individuals, local committees and interest groups on a formal and informal basis.

Most development schemes require detailed consultation with landowners to obtain permission/wayleaves to proceed. We aim to establish and maintain good relations with landowners. Consequently we will adopt good practice at all times and will deal with landowner problems/concerns promptly and courteously. Our commitment to landowners is explained in our 'Code of Practice on Landowners' and all works undertaken by us and contractors will meet the requirements set out in this document.

On many of our schemes we are subject to the terms of the planning legislation. Where necessary application is made to the Planning Service to obtain permission to proceed and for schemes that are likely to have a significant effect on the environment we carry out an Environmental Assessment and submit an Environmental Statement along with our planning application. The Planning Service may, for some schemes, cause a local public inquiry to be held where it considers it appropriate.

We are required under the Electricity (Northern Ireland) Order 1992 and the Electricity Supply Regulations (Northern Ireland) 1991 to develop and maintain an efficient, co-ordinated and economical system of supply and transmission which is both electrically and mechanically fit for its intended purpose.

In planning and carrying out our schemes in accordance with our statement on the preservation of amenity and fisheries we will consult with the relevant bodies. These consultations will include the Department of the Environment, the Department of Agriculture, The Fisheries Conservancy Board for Northern Ireland and the Foyle Fisheries Commission. We will also meet periodically with these bodies to discuss general environmental issues relating to our activities and to engage in constructive dialogue on relevant amenity issues. Where we construct overhead lines we seek the



formal consent of the Department of Economic Development, except for those lines supplying a single consumer or lines placed in premises under our control.

Within technical and reasonable economic constraints, we will ensure that all our schemes are carefully developed in order to minimise the impact on the environment. In this regard we fully recognise the need for consultation from initial scheme proposal stage through to scheme completion stage. Consultations with the Planning Service and other statutory and non-statutory consultees provide invaluable sources of information which influence scheme development.

In particular, we will make presentations to local Councils and to the general public so that we can assist public participation and obtain useful feedback. We will also seek to make appropriate efforts to locate and consult with local voluntary conservation and other organisations which may have a direct interest in or be directly affected by one of our schemes.



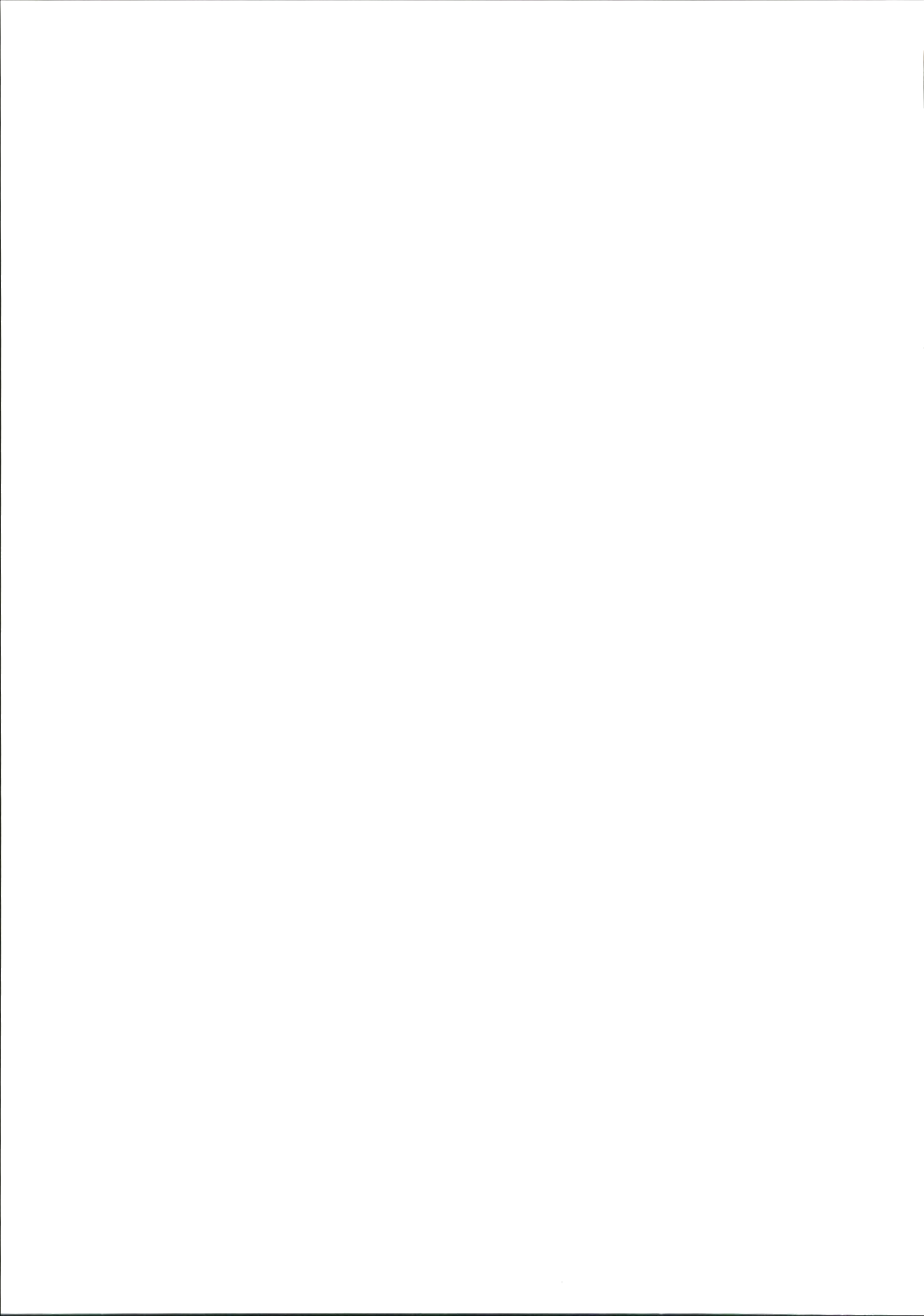
Most of our schemes are dependant upon the understanding and co-operation of landowners and other interested parties. Consultation is a key consideration in order to determine any likely effects during preparation, construction, operation, maintenance and decommissioning of a scheme and to identify measures that can be taken to mitigate any significant adverse effects, where practical. We are committed to making every effort to safeguard the environment and we recognise that a number of our schemes will require independent input and scrutiny in order to produce sustainable developments. Whenever appropriate, we will engage suitable landscape and other experts, so that environmental assessment will be the subject of informed independent scrutiny.

The NIE document entitled 'Code of Practice on Landowners' is provided in full within the Guidelines for NIE Networks and the Environment - Technical Supplement which is available from us on request.





**Part Four**



# The Need to Supply

NIE has an obligation under The Electricity (Northern Ireland) Order 1992 to provide a supply to applicants, irrespective of where they are located within Northern Ireland. As the stock of housing increases and businesses open or relocate, there continues to be a need to increase and develop the network to secure supply to customers.

The document "Transmission and Distribution Security and Planning Standards - August 1992" (available from NIE on payment of a fee) imposes the standard for reliability and quality of supply. We plan our networks to meet these standards. The primary requirements are that the voltage to customers should ordinarily lie within 6% of the declared voltage and that the network design should be such as to retain supplies to large load blocks in the event of planned contingency outages. As the load block increases in size, whether composed of a large individual load or the aggregate load of a large number of customers, the standards require that our networks have increasing capability to cope with an outage.

Commercial applicants for new supply who give rise to a sudden and significant increase in load are usually consulted and advised as to the most appropriate voltage level for their supply. This will be dictated by the size of the load, the proximity to our networks and the quality or reliability standard appropriate to the applicant's contract or tariff.

Underlying load growth at any node comes from a combination of increased per capita consumption and an increased number of customers. Measurements are taken and trends assessed nodally. This enables us to forecast the load on each node of its system.

NIE follows a planning process set out in Figure 4.1. This process is geared towards determining the most sustainable solution. It takes into account strategic and technical issues, environmental impact and economic efficiency and effectiveness and is aimed at ensuring that all reasonable alternatives have been considered.



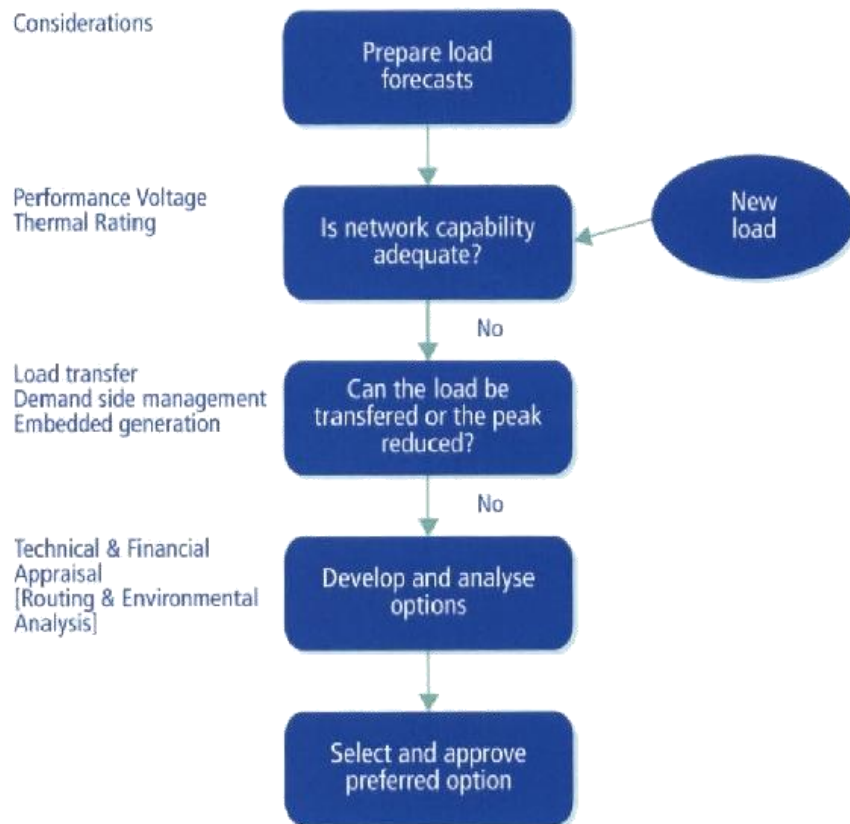
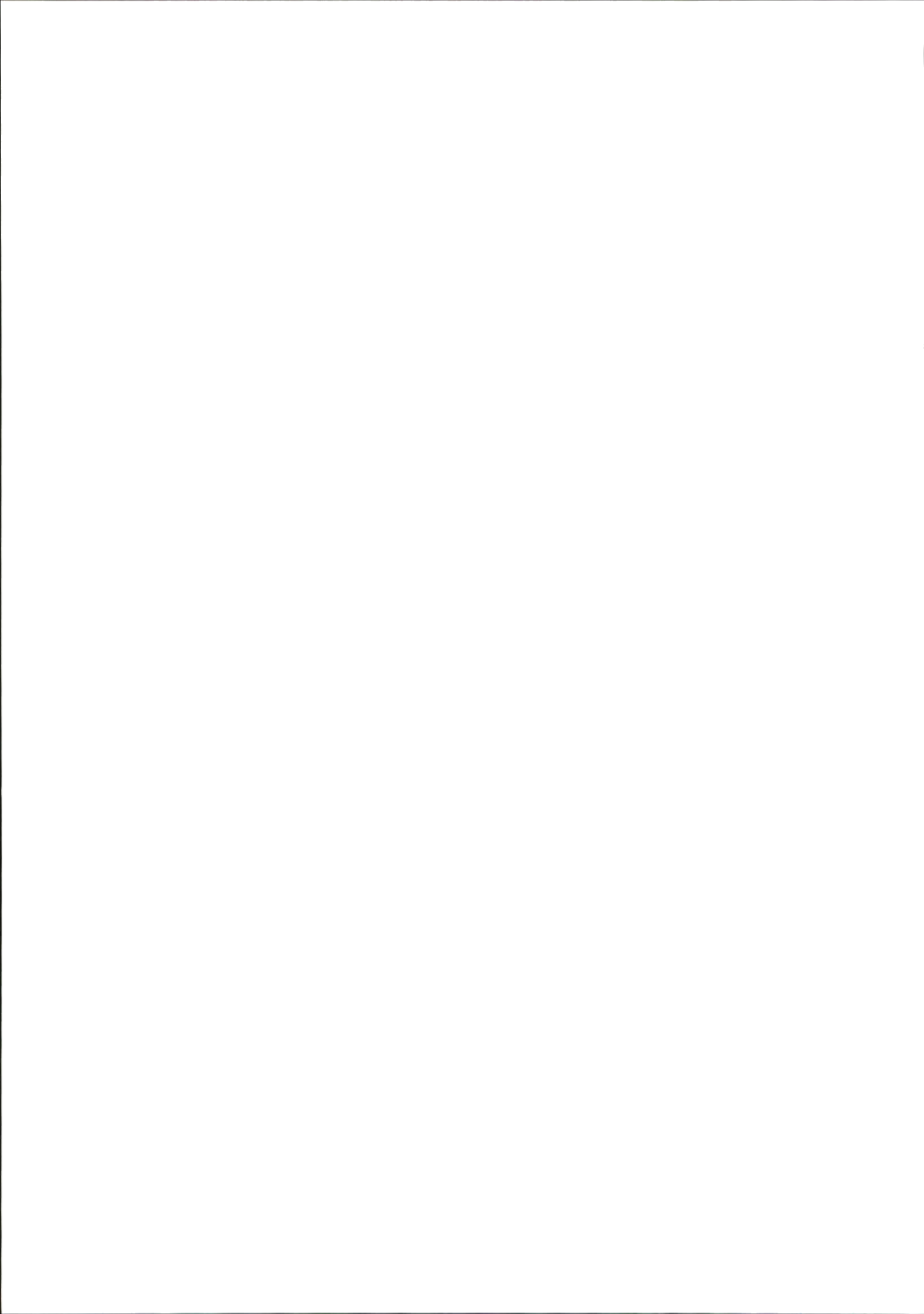


Figure 4.1 - NIE Planning Process





Part Five



# Provision, Alteration and Removal of NIE Networks

## 1.0 New Extensions to the Network

### 1.1 Scheme Development

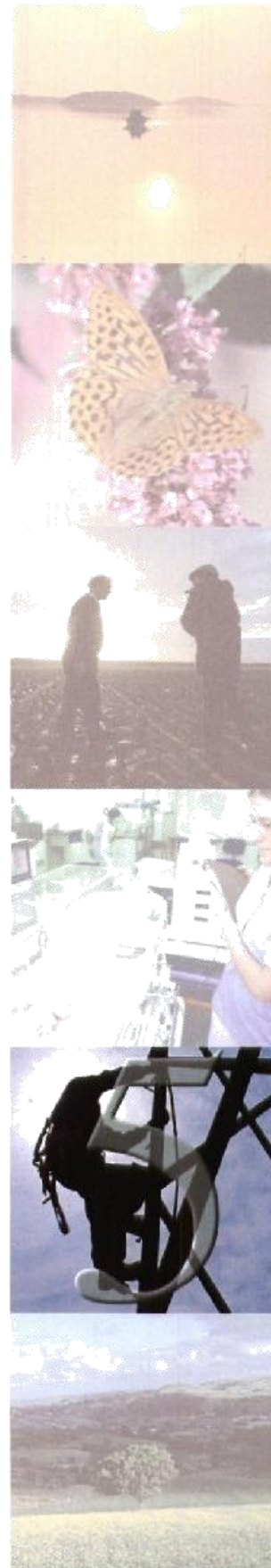
In response to increasing and changing customer demand for electricity, NIE is required to extend its existing networks in accordance with the "Transmission and Distribution Security and Planning Standards - August 1992" (outlined in Part 4). This increase in demand requires us to carry out detailed studies to establish initial scheme options.

Embodied within an initial scheme, requiring the provision of a new substation, is the identification of an area of search for a substation to which either underground cables or overhead lines can be connected. This area of search comprises two zones:-

- (i) A smaller inner zone which provides a scheme fulfilling the reinforcement objectives and embracing the fundamental environmental, technical and economic objectives with minimum operational costs and maximum scheme life.
- (ii) A surrounding larger zone which could provide alternative schemes which may be less efficient in terms of technical and cost considerations but more sustainable in terms of the natural and man-made environment.

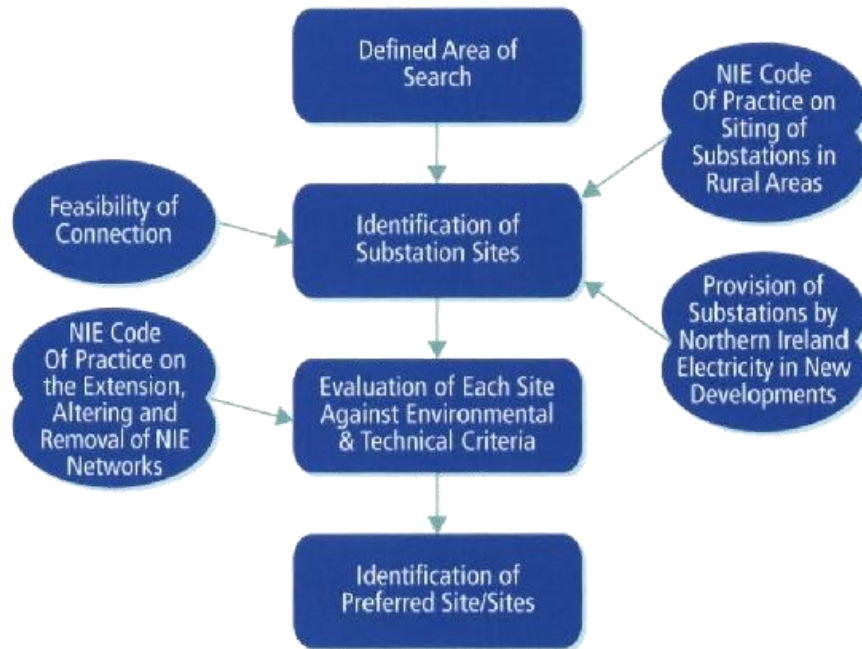
Suitable sources of supply which could be connected to potential substations within the area of search can then be identified (the sources of supply could be existing substations, overhead lines or underground cables). The connections between the sources of supply and the potential substations, in common with general world practice, are made utilising overhead lines where it is reasonable and practical to do so.

*Having identified the area of search for potential substation sites and established potential sources of supply, a thorough exploration of alternatives needs to be carried out. It is essential that the process adopts an holistic rather than segmented approach to scheme development. This holistic process is developed through various stages before a preferred scheme which is sustainable in terms of environmental, technical and economic considerations can be established.*



*Stage (a) Identification of Suitable Substation Sites (Figure 5.1)*

The area of search is studied in detail and potential substation sites with sympathetic environmental features are identified. These individual sites are then studied in greater detail to determine the preferred site/sites using relevant criteria.



*Figure 5.1 - Identification of Suitable Substation sites*





**Stage (b) Identification of Suitable Overhead Line Routes (Figure 5.2)**

Alternative overhead line connections from the sources of supply to the preferred site/sites are identified. The process involves a constraints gathering exercise and an evaluation of the existing landscape and its future potential. It is essential to seek consultations with local Councils, landowners and the public before identifying preliminary route options. The route options and potential line design types are evaluated and developed.

After further consultation, the preferred route/routes and associated line designs can be determined.

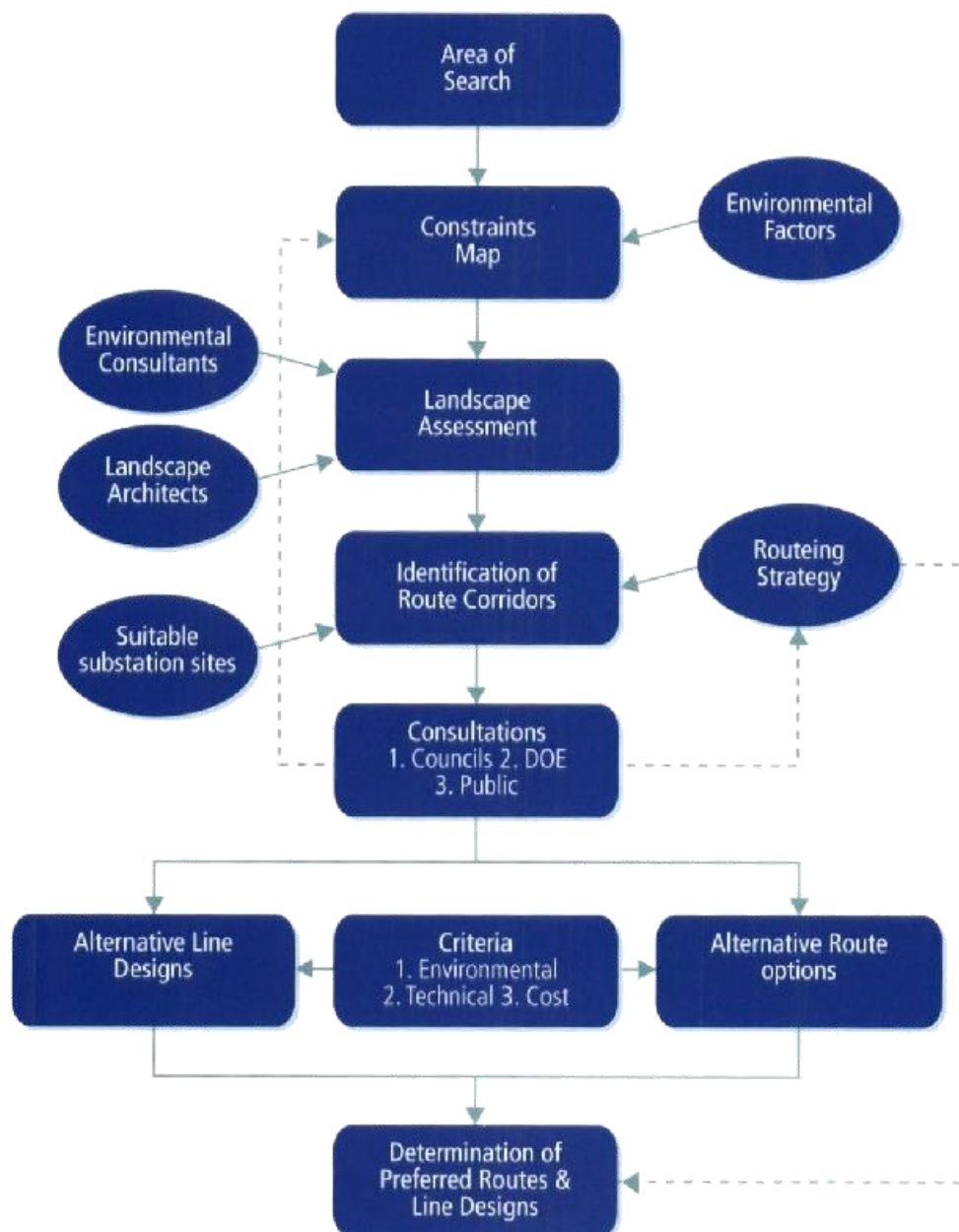


Figure 5.2 - Identification of Suitable Overhead Line Routes



*Stage (c) Development of Preferred Scheme (Figure 5.3)*

An evaluation of the preferred substation site/sites and line route/routes is carried out to determine the scheme which is most sustainable in terms of environmental, technical and economic considerations. The scheme is presented to local Councils, affected landowners and the public for feedback prior to a formal submission to DOE Planning Service for approval.

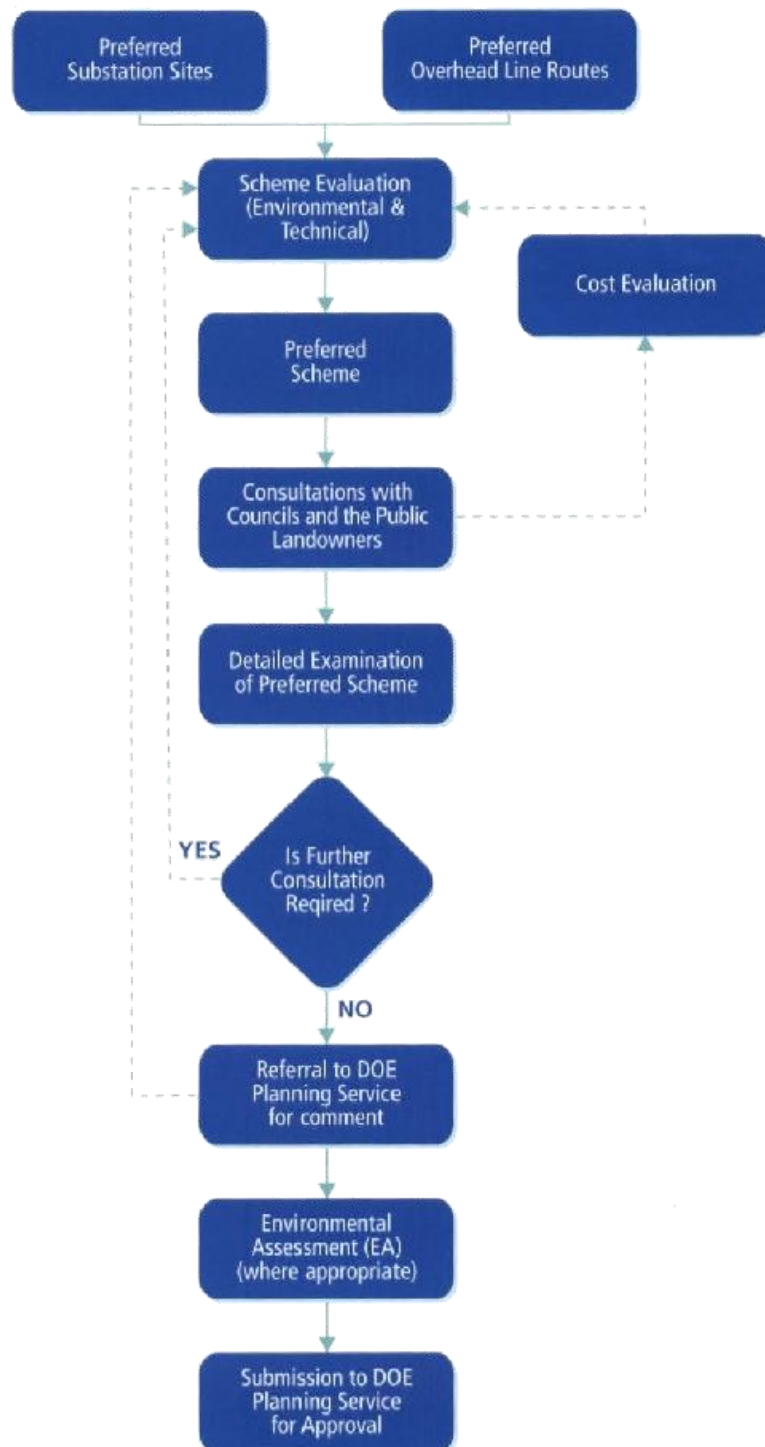


Figure 5.3 - Development Of Preferred Scheme



## 2.0 Alteration to Existing Lines

NIE seeks to liaise with developers and planning authorities to reduce the need for altering overhead lines to facilitate development.

In circumstances where distribution wood pole lines (33kV, 11kV, 6.6kV & LV) and underground conductor need to be altered, we will carry out, free-of-charge the minimum alteration necessary to maintain statutory and recommended safety clearances.

It is only in exceptional circumstances that we will alter 275kV and 110kV transmission lines (including 33kV tower lines) and costs for these alterations are negotiable.



## 3.0 Removal of Existing Lines for Undergrounding

Distribution overhead lines (33kV, 11kV, 6.6kV & LV) which pass over established exceptionally constrained areas will be selected for undergrounding. The work will proceed on a prioritised basis against annual financial limits set by NIE and agreed with the Regulator.

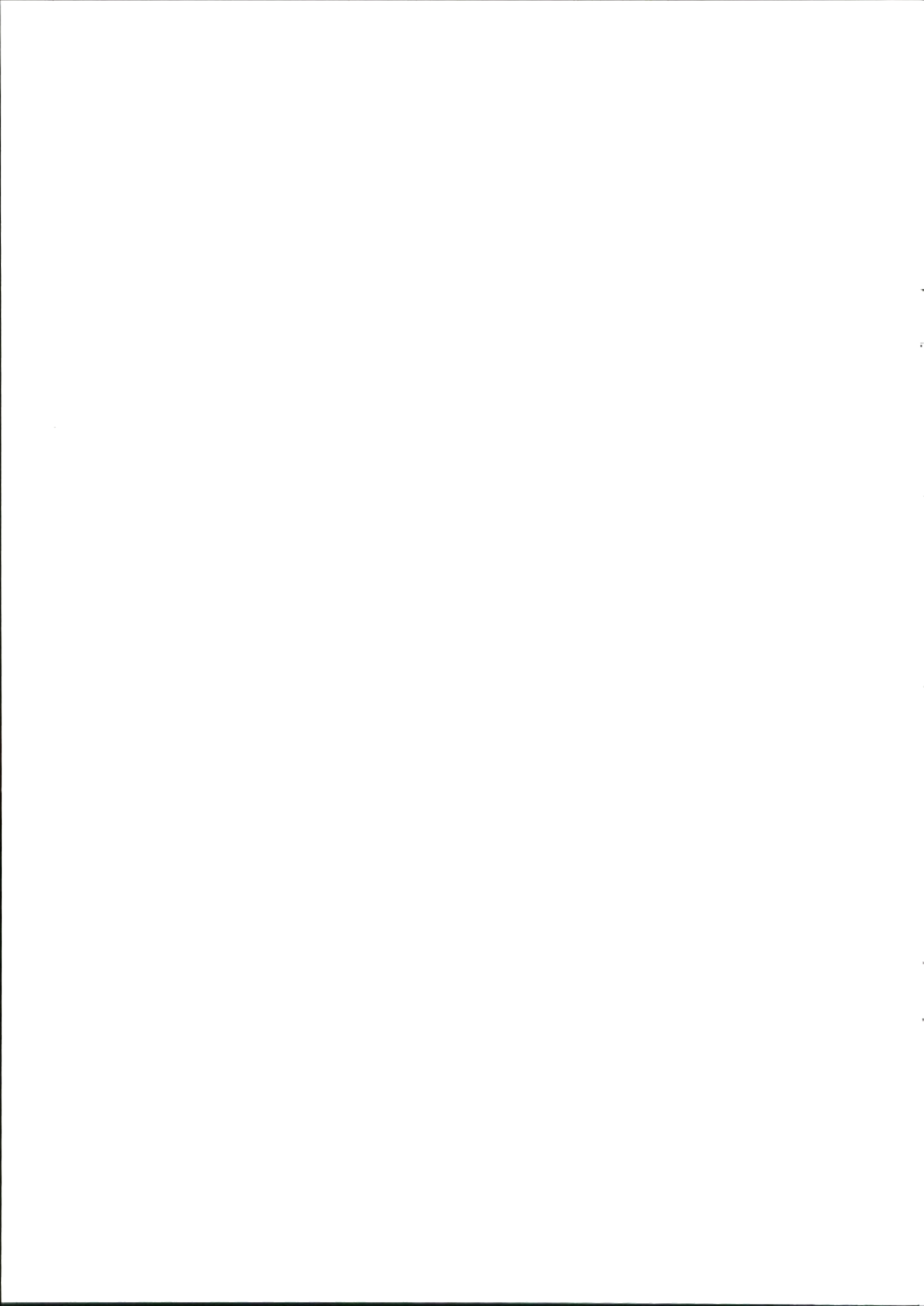
275kV and 110kV transmission overhead lines (including 33kV tower lines) are not undergrounded due to the excessive costs involved.

*A complete explanation of the scheme development process is detailed in the NIE Code of Practice for the Extension, Alteration and Removal of NIE Networks. This document is provided in full within the Guidelines for NIE Networks and the Environment - Technical Supplement which is available from NIE on request.*





Part Six



# Need for Environmental Assessment

An Environmental Statement (ES) is a document made available to statutory bodies and to the general public. The main purpose of this document is to describe the impacts which a project is likely to have on the environment, and any mitigation measures which can be taken to reduce any potential impacts. These impacts, identified through an Environmental Assessment (EA) process, are normally covered under the following headings:

- 1) Flora and Fauna;
- 2) Visual Impact;
- 3) Noise; and
- 4) Electromagnetic Fields (EMF).

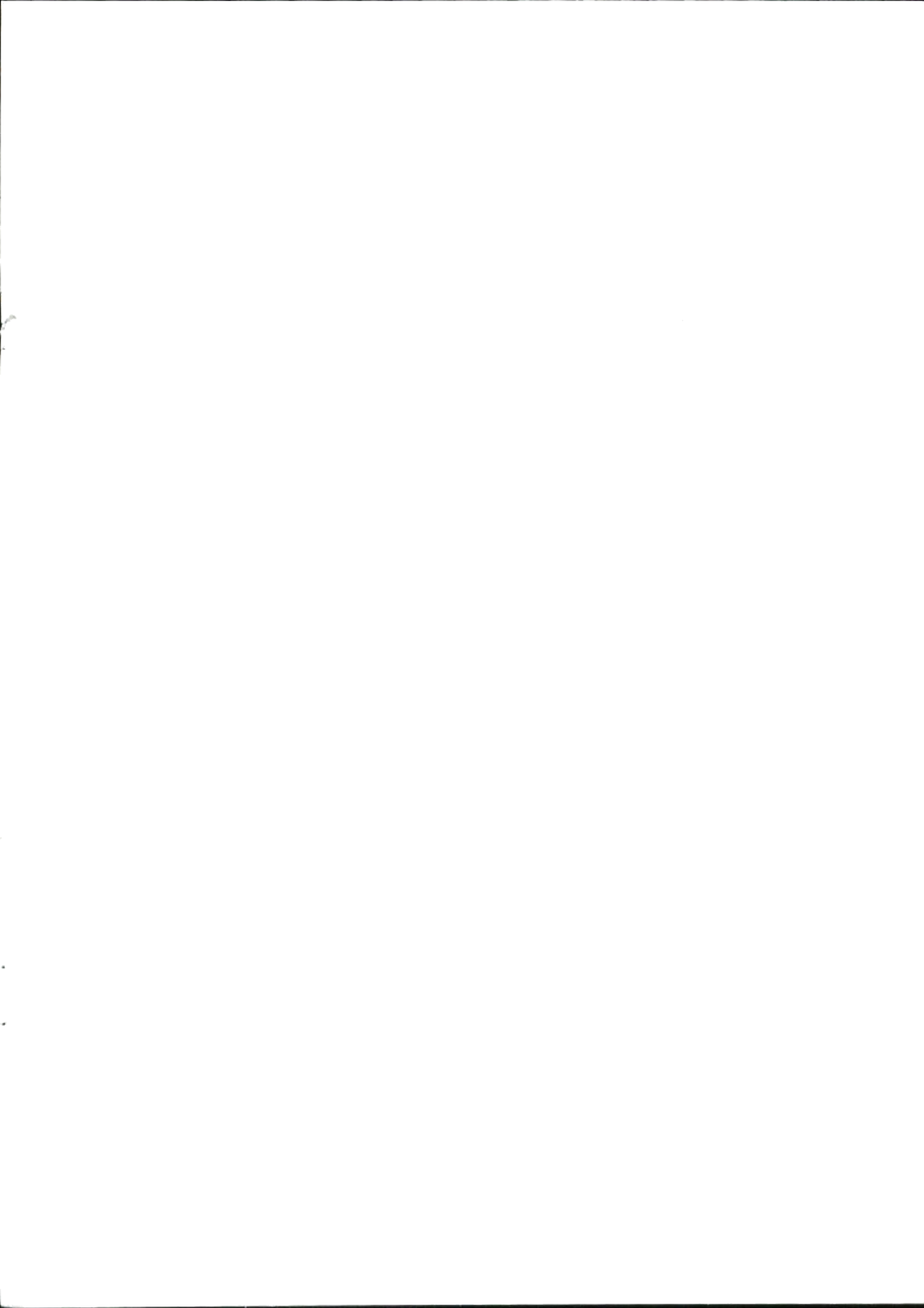
The ES will generally go further in that it will also discuss the need for the project, the alternatives which were considered, and the reasoning behind the preferred method of implementation. It may also detail construction methods, potential land damage and appropriate procedures for resolving compensation claims and wayleave issues.

For some projects, generally at the transmission voltages of 275kV and 110kV, the Planning Service under the appropriate regulations might request such an Environmental Statement. Quite apart from the statutory requirements, NIE will in suitable projects volunteer an ES as part of the consultation process. By doing so, the company believes that it will make a substantial contribution to the quality and efficiency of the consultation process.











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