

The Building Act 1984

The Building Regulations 2000

Proposals for new safety requirements for electrical installation work in dwellings

A Consultation Package issued by
Building Regulations Division



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Published by the Department for Transport, Local Government and the Regions. Printed in the UK, May 2002 on material containing 75% post-consumer waste and 25% ECF pulp (cover) and 100% post consumer waste (text).

Product code 02BR00015

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21 MAY 2002

Dear Consultee,

The Building Regulations 2000 Proposals to Introduce Electrical Safety Requirements

You are invited to comment on the Government's proposals for amending the Building Regulations to include new technical requirements and publishing a new supporting Approved Document. These together address the safety of fixed electrical installations in dwellings.

The proposals

The aim of the proposals is to advance the safety of householders by improving the design, installation, inspection and testing of electrical installations in dwellings when these installations are being newly built, extended or altered. They can be inspected in detail in the draft Approved Document in Part 2 of this consultation package, but the essence is described below:-

A new requirement would be added to Schedule 1 of the Building Regulations. This would be limited to fixed electrical installations in dwellings to avoid overlapping with, and to complement, other legislation namely the Electricity Supply Regulations 1988¹ and the Electricity at Work Regulations 1989 as amended.

A new Approved Document P would be published giving guidance on ways of complying that are based on the technical rules in BS 7671:2001: "Requirements for Electrical Installations, the IEE Wiring Regulations 16th edition". The guidance in the Approved Document includes:-

- Design, installation, inspection and testing of electrical installations. Work on installing new or altering existing electrical installations is covered by reference to authoritative guidance produced by the Institution of Electrical Engineers (IEE), and popular DIY manuals which give simpler particular applications of the British Standard and the IEE professional guides.

¹ The Electricity Safety, Quality and Continuity Regulations are expected to be laid before Parliament in 2002 to replace the Electricity Supply Regulations.

- Types of electrical work that would not normally need to be notified because, for instance, it is to be undertaken by an approved competent person or it is “minor work” not involving the provision of new circuits. For examples of how competent persons may be approved see SI(2002) No 440 and the Department’s letter dated 13 March 2002. These documents can be seen on the Department’s web site at the following addresses:
<http://www.hmso.gov.uk/si/si2002/20020440.htm>, and
<http://www.safety.dtlr.gov.uk/bregs/brpub/letters/130302.htm>
- **Appendices** that contain illustrations of the sorts of electrical services commonly required in homes, examples of the blank electrical installation and inspection and test certificates needed to confirm safe completion of electrical installation work, and illustrations of what potentially hazardous equipment may be encountered when work is conducted on older electrical installations.

The guidance thus recognises the diverse nature of the market for domestic electrical installation work and the particular hazards that spring from this.

The consultation package

The consultation package comprises the following documents, which are bound together with this letter:

- **Part 1, A draft regulatory impact assessment:** this gives our assessment of the national benefits and costs of the proposals and an indication of the impact of these regulations. It also gives the Government’s aims and some background about how the Building Regulations could help to reduce personal injuries caused by fixed electrical installations in dwellings.
- **Part 2, A proposed draft of a new Approved Document P:** this contains the proposed legal requirements and approved technical guidance as summarised above.
- **A list of those organisations who have been consulted:** if there are any others that you think should receive a copy of this document, please let Andrew Brown know as soon as possible by phone (020 7944 5756) or e-mail (andrew.brown@dtlr.gsi.gov.uk).
- **A response form:** which is commended to consultees as a helpful way of expressing opinions on the proposals. An editable version of the response form may be downloaded from our web site (<http://www.safety.dtlr.gov.uk/bregs/conindex.htm>). The web site also contains this consultation package.
- **A list of criteria** that written consultations should comply with.

Responding with your comments

The invitation to comment extends to every part of the proposals. **To assist the Department’s analysis of responses, consultees are asked to please use the response form provided.** This provides space at the end for any comments you may wish to make that are not related to the questions we have posed.

The Department may wish to publish the responses to this consultation or to deposit them in the Department's library for public inspection. If this is done, all responses received will be published or deposited unless a respondent specifically requests their responses are treated as confidential. Confidential responses will nevertheless be included in any statistical summary of numbers of comments and views expressed.

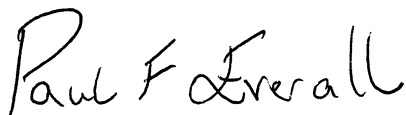
Please return your response to this consultation as soon as possible, and in any event not later than **13/09/02** to Andrew Brown by post to zone 3D2 at the above address, or by fax to 020 7944 5739, or preferably by e-mail to electricalsafety@dtlr.gov.uk.

Code of practice on written consultations

To ensure that written consultations are fully effective, the Government has introduced a code of practice on how they should be carried out. This code includes seven criteria that a consultation should satisfy, and these criteria are listed in Part 3 of this package. In my opinion this consultation satisfies the first five criteria, and the remaining two will be covered at the end of the consultation period.

If you have any complaints or comments about the way this consultation has been conducted please contact Martin Leppert by post to zone 6J10 at the above address.

Yours faithfully

A handwritten signature in black ink that reads "Paul F. Everall". The signature is written in a cursive style with a large initial 'P'.

PAUL F. EVERALL

List of principal organisations consulted

AiC Ltd
AICO Ltd
Airport Operators Association
Alan Wenham-Prosser
Anchor Trust
Approved Inspector Consultants Ltd
Architecture & Surveying Institute
Arup
Associated British Ports – East Coast
Associated British Ports – Ipswich
Associated British Ports – North East
Associated British Ports – Southampton
Associated Offices Technical Committee
Association for Environment Conscious Building
Association of Berkshire Building Control Services
Association of British Insurers
Association of British Theatre Technicians
Association of Builders Hardware Manufacturers
Association of Building Engineers
Association of Consultant Approved Inspectors
Association of Consultant Architects
Association of Consulting Engineers
Association of Manufacturers of Domestic Electrical Appliances
Association of Plumbing & Heating Contractors
Autoclaved Aerated Concrete Products Association
B&Q Warehouses
BAA Building Control Services Ltd
Bathroom Manufacturers Association
Barnado's
BEAB
BICC Cables Ltd
Bingo Association
Blackpool Transport Services Ltd
BM TRADA Certification Ltd

Bournemouth & West Hampshire Water plc
BP Solar
Bracknell Forest Borough Council
BRCS (Building Control) Ltd
BRE Certification Ltd
BRE Housing Centre
Brick Development Association
Bristol Water plc
British Approvals for Fire Equipment
British Bathroom Council
British Board of Agrément
British Cables Association
British Chamber of Commerce
British Council for Offices
British Electrical & Allied Manufacturers Association
British Electrical Systems Association
British Fire Protection System Association
British Home Stores
British Institute of Architectural Technologists
British Non-Ferrous Metals Federation
British Plastics Federation
British Plumbing Fittings Manufacturers Association
British Property Federation
British Safety Council
British Security Industry Association
British Standards Institution
British Telecom
British Waterways
British Youth Council
BSRIA Ltd
Buckley-Lewis Partnership Ltd
Building Magazine
Builders Merchants' Federation
Building Centre Trust
Building Control Research Group
Building Control Wales
Building Research Establishment
Building Services Journal
Building Standards Limited
Butler & Young Ltd

Cabinet Office Better Regulation Unit
Calderdale MBC
Canary Wharf Management Ltd
Carillion Specialist Services Ltd
Carrick District Council (Building Control)
CBI – Building Regulations Working Group
Centre for Housing Management (Wales)
Chartered Institute of Building
Chartered Institute of Environmental Health
Chartered Institution of Building Services Engineers
Chief & Assistant Chief Fire Officers Association
Church Heritage Forum
Churches Main Committee
City & Guilds of London Institute
Civil Engineering Contractors Association
Collins, publishers of *“The Complete DIY Manual”* and *“Wiring and Lighting”*
Combined Heat and Power Association
Committee of Vice Chancellors & Principals of the Universities of England
Confederation of Construction Specialists
Construction Audit Ltd
Construction Confederation
Construction Industry Council
Construction Industry Council (Wales)
Construction Industry Training Board
Construction News
Construction Products Association
Construction Round Table
Consumer Policy Co-ordination Committee
Consumers Association, publishers of *“The Which Book of Wiring and Lighting”*
Copper Development Association
Corporation of Church House
Council for Aluminium in Building
Countryside Properties plc
Cowes Harbour Commission
Crown Estate Commissioners
Defence Research Agency (DERA)
Department for Culture, Media & Sport
Department for Education and Employment – Schools Premises Policy & Support Team
Department of Health

Department of the Environment & Local Government – EIRE
Department of the Environment – Northern Ireland Assembly
Department of Trade & Industry – Electrical Engineering Inspectorate
Department of Trade & Industry – Standards and Technical Regulations Division
Department of Trade & Industry – Small Business Service
Disability Rights Commission
Disability Wales
District Surveyors Association
Domus Ducting (Manufacturing) Ltd
Door & Shutter Manufacturers Association
Drivas Jonas
Durham County Council
EA Technology
Eastern Electricity
East Midlands Electricity
Electrical Contractor
Electrical Contractors' Association
SELECT (Electrical Contractors' Association of Scotland)
Electrical Installation Equipment Manufacturer's Association
Electrical Review
Electrical Wholesalers Federation
Electricity Association
ELM Training Service
Engineering Council
Engineers and Managers Association
English Heritage
English Heritage – Government Historic Buildings Advisory Unit
English Partnerships
Environment Agency
Environmental Audit Committee
ERA Technology Ltd
Essex Building Surveyors Association
ESTA Building Control Group
Euralarm
Eurisol (UK Mineral Wool Association)
European Documentation Centre (University of Aberdeen)
European Intelligent Building Group
Federation of Master Builders
Federation of Small Businesses

Ferguson Bucknall Austin
Fire Brigades Union
Fire Industry Confederation
Fire Service College
Football Licensing Authority
Forestry Commission – Estate Management
Forestry Commission Forest Enterprise
Forum of Private Businesses
Fuel Industry Association
Future Energy Solutions
Gas Consumer Council
Global Energy Associates Ltd
Gloucester Harbour Trustees
Greater Manchester Passenger Transport Executive
Greenalls Group Plc
Guernsey, States of
Guide Dogs for the Blind Association
Guild of Architectural Ironmongers
Guild of Incorporated Surveyors
Guild of Master Craftsmen
Guy Shattock Associates Ltd
Gypsum Products Development Association
Hanover Housing Association
Harwich International Port Ltd
HCD Building Control Ltd
Health and Safety Commission
Health and Safety Executive – Electrical Safety Policy Division.
Health and Safety Executive – Electrical Safety and Controls Division
Health and Safety Executive, Chief Executive
Health and Safety Executive – Inspectorate of Railways
Heating and Ventilating Contractors' Association
Heating, Ventilation and Air Conditioning Manufacturers Association
Heritage Railway Association
Heysham Port Ltd
HM Prison Service
Homebase
Home Office – Buildings & Estate Management Unit
Honourable Society of Gray's Inn
Honourable Society of the Inner Temple

House Builder – magazine
House Builders Federation
House Builders Federation (Wales)
House of Commons Environment Select Committee
Housing Association Property Mutual
Housing Corporation
Incorporated Society of Valuers & Auctioneers
Innogy Holdings
Institute of Clerks of Works of Great Britain Incorporated
Institute of Construction Management
Institute of Domestic Heating & Environmental Engineers
Institute of Healthcare Engineering & Estate Management
Institute of Historic Building Conservation
Institute of Housing
Institute of Leisure & Amenity Management
Institute of Plumbing
Institute of Quality Assurance
Institute of Trading Standards
Institution of Electrical Engineers
Institution of Fire Engineers
Institution of Gas Engineers
Institution of Incorporated Engineers
Institution of Mechanical Engineers
Institution of Structural Engineers
Invensys Building Systems UK
Jersey – Department of Planning & Building Services
JHA Ltd
John Lewis Partnership
Joint Committee on Mobility of Blind & Partially Sighted People
Joseph Rowntree Foundation
King's Lynn Conservancy Board
Kingston Health and Safety Services
Kirklees Metropolitan Council
Kirklees Metropolitan Council – Building Control
LABC Services
Laing Homes – South East Thames
Lambert Smith Hampton
LANTAC
LE Group

Leeds City Council – Building Control
Licensed Victuallers Trade Association
Licensed Victuallers Wales
Lift and Escalator Industry Association
Lighting Association
Lighting Industry Federation
Lloyd's Underwriters' – Non-Marine Association Ltd
Local Government Association
Local Government Technical Advisers Group
London District Surveyors Association
London Transport
Loss Prevention Council
Matalan
Maunsell Associates
McLean Homes, North London Ltd
Metropolitan Police Building Control Section
Metway Connect
Midlands Electricity (GPU Power UK)
Ministry of Defence – Defence Estate Organisation
MLM Building Control Ltd
Modular Wiring Systems Europe Ltd
Modus
Morgan Wolff Ltd
Morgan, Graham
Mountford Pigott Partnership
Mr Self Build Community
NACOSS
Nat West Group
National Air Traffic Services Ltd
National Approval Council for Security Systems
National Assembly for Wales
National Association of Citizens Advice Bureaux
National Association of Estate Agents
National Association of Local Councils
National Association of Plumbing, Heating and Mechanical Services Contractors
National Association of Professional Inspectors and Testers
National Association of Shopfitters
National Electrotechnical Training
National Federation of Builders (Wales)

National Federation of Consumer Groups
National Federation of Residential Landlords
National Fireplace Association
National Home Improvement Council
National House Building Council
National Housing Federation
National Inspection Council for Electrical Installation Contracting
National Power plc
National Prefabricated Building Association Ltd
National Security Inspectorate
National Trust
NHBC Building Control Services Ltd
NHS Trusts – via NHS Estates
Northern Electric
Nottingham Trent University
Novar ED&S
OFGEM
Office of Fair Trading
Oil Firing Technical Association for the Petroleum Industry
Oxford City Council
PACE Central Advice Unit
Passenger Transport Executive Group
Pera Information – Manufacturing Technology Group
Persimmon Plc
Philips Lighting UK
Planning Officers Society
Poole Harbour Commissioners
Prime Construction Consultants Ltd
Purcell Miller Tritton & Partners
Racecourse Association Ltd
Rail Property Ltd
Ramsgate Royal Harbour
RBC Ltd
Reader's Digest, publishers of "*The Complete DIY Manual*"
Rees Bolter Architects
Residential Landlords Association
RIBA Companies Ltd – NBS Services Division
Royal Commission on the Environment and Pollution
Royal Institute of British Architects

Royal Institute of Public Health & Hygiene
Royal Institution of Chartered Surveyors – Building Control Forum
Royal Institution of Chartered Surveyors
Royal Institution of Chartered Surveyors (Wales)
Royal National Institute for the Blind – Housing Service
Royal National Institute for the Blind – Joint Mobility Unit
Royal Society for the Promotion of Health
Royal Society of Architects in Wales
Royal Town Planning Institute
Safety Assessment Federation
Scottish Executive, Development Department
Scottish Executive, Chief Planner
Scottish and Southern Energy
Sea Containers Ports
SEEBOARD plc
Severn Trent Water
Sheffield Hallam University
Shell UK
Shelter
Shop & Display Equipment Association
Shoreham Port Authority
Slough Estates Plc
Small Business Bureau Ltd
Society of Light and Lighting
Society for the Protection of Ancient Buildings
Society of British Gas Industries
Solar Trade Association Ltd
South Western Electricity plc
Steel Construction Institute
Steel Construction Institute, Metal Framed Building Group
STMC (Building Control) Ltd
Suttle, Richard
Sutton Harbour Company
SW+H Services Limited
TACMA
T Dunwoody & Partners
Taywood Homes Ltd
Textile Services Association
Thames Power Services

Thames Water Property
The Council for Registered Gas Installers
The National Grid Company plc
Thomas Morgan & Associates
Thorn Lighting Group
Thorn Security Ltd
Timber Industry Alliance
Timber Research & Development Association
Tolley Construction Law Service
Trades Union Congress – Construction Industry Committee
Transport & General Workers Union
Trinity House Lighthouse Service
TXU Europe
Tyne & Wear PTE
Tyne, Port of Authority
UK CARES
UNISON
United Utilities
Upkeep (Trust for Training & Education in Building Maintenance)
VELUX Ltd
Vent-Axia Ltd
Warrington Fire Research Consultants Ltd
Water Heater Manufacturers Association
Water UK
Waterford Stanley Limited
Wireland Electric Ltd
Welsh Development Agency
Welsh Federation of Housing Associations
Welsh Local Government Association
Western Power Distribution
West Midlands Centre for the Built Environment
Westminster, University of
Whicheloe MacFarlane M.D.P.
Whitecroft Lighting Ltd
Wickes
Workington Port
Yarmouth (I.O.W.) Harbour Commission
Youth Hostels Association
Zurich Building Guarantees

PART 1

Draft Regulatory Impact Assessment

Building Regulations: Proposed New Requirements for Electrical Safety in Dwellings

OUTLINE

1. This draft Regulatory Impact Assessment (RIA) addresses the proposal to introduce into the Building Regulations requirements for the safety of fixed electrical installations in dwellings¹. The Building Regulations do not address this issue at present although the Building Standards (Scotland) Regulations do. The proposals are described in the draft of a new Approved Document P in Part 2 of this consultation document.
2. The RIA deals with:
 - the purpose and intended effect of the proposals,
 - the options that have been considered,
 - the compliance costs for builders, charities and voluntary organisations,
 - consultations with small businesses as litmus tests, and
 - other costs that may accrue.
3. A summary of costs and recommendations on which option to choose is given on page 26.

BACKGROUND

4. These regulatory proposals have been developed in response to the Construction Industry Deregulation Task Force's 1995 report which recommended amongst other things that the Building Regulations should address electrical safety and that the administrative burden on builders should be rationalised. The Government responded to these recommendations by agreeing to review the case for new requirements and how they might best be practically introduced.

¹ The Electricity at Work Regulations 1989 already convey electrical safety requirements for other types of buildings.

5. This initiative has subsequently become closely linked with another more general one addressing the possibilities for enabling competent organisations to self-certify compliance with the Building Regulations. An initial outline of the way self-certification by competent persons could be introduced was published for consultation over the winter 1997/98 and a second consultation document on more developed thinking was published in 1999. The latter can be inspected at www.safety.dtlr.gov.uk/bregs/br05d.htm and led to Statutory Instrument (2002) No 440, and the approval of the FENSA, OFTEC, HETAS and IOP schemes. The electrical industry and consumer safety interests have responded to these moves by developing draft specifications of “competent electrical contractors” and competency registration schemes which they published for consultation in 2000. A scheme is now on trial with the aim of having a system in place to respond to the Government’s initiative and in advance of possible regulations.
6. The current Building Regulations for England & Wales (2000) do not address the safety of fixed electrical systems in buildings. For the purposes of Building Regulations a fixed electrical system means those parts of the wiring and appliances that are fixed to the building fabric². BS 7671³ is the principal British Standard that covers the safe design, installation and testing of such electrical systems and it is the technical standard almost universally adopted in the UK for electrical installation work. It would be the basis for approved technical guidance if electrical requirements were to be introduced into the Building Regulations.

THE ISSUE

7. The hazards posed by unsafe electrical installations are injuries caused by contact with electricity (shocks and burns) and injuries arising from fires in buildings ignited through electrical components overheating or arcing. Concern has been expressed that risks have been increasing in recent years because of:–
 - (a) the increasing prevalence and variety of electrical systems in buildings and the demands being made on them,
 - (b) the privatisation of the electrical supply industry in 1988 which has led to a decline in suppliers’ interventions in consumers’ installations, and
 - (c) the effects of the recession in the early 1990s which has led to rapid growth in the numbers of smaller firms and self-employed electricians who decline to subscribe to the existing voluntary self-regulation schemes⁴.

² Fixed wiring is electrical wiring in conduit, trunking, behind plaster, fixed to walls, etc., normally installed by an electrician (e.g. fixed sockets, fixed wiring, switches, fuse boxes, etc.). Fixed appliances are components and fittings permanently connected to a power supply and normally installed by an electrician (e.g. immersion heaters, cookers/ovens, showers/fittings, light fittings in ceilings, etc).

³ British Standard BS7671 – Requirements for Electrical Installations (IEE Wiring Regulations).

⁴ There are upwards of 60,000 firms trading as electricians but only about 12,000 subscribe to existing voluntary schemes.

8. Installation work in dwellings carried out for trade is covered by the Electricity at Work Regulations but there are concerns that in alteration work in existing dwellings these Regulations are not achieving their aims.
9. The proposed addition to the Regulations would define fixed electrical installations as a controlled service and hence as building work. The proposed requirement identifies two hazards and focuses on design, installation, inspection and testing which Building Regulations can address. Inspection of problem installations has shown that difficulties frequently arise through incompetent extension and alteration work as well as through the use of systems which are defective in failing to comply with BS 7671.

OBJECTIVE

10. Building Regulations apply when building work is undertaken. These proposals would, if implemented, redefine building work to include electrical installation work on certain types of fixed electrical installation in dwellings. The objective of this proposed addition to the Regulations is to ensure that, on average, more fixed electrical installations in more dwellings comply more thoroughly with accepted safety standards. The intended effect is to reinforce existing voluntary controls on the risk of death and injury caused by electric shock, or fires started by electrical faults. The intended effect also includes improving the average level of competence and responsibility of those undertaking electrical work and raising the awareness of builders and householders of the need for care.

PROPOSED ADMINISTRATIVE ACTION

11. In order to meet the objectives it is proposed to amend the Building Regulations. A new requirement would be added to Schedule 1 in the Building Regulations and a new Approved Document would be published. The requirement would be limited to apply only to installations in dwellings. The Approved Document would contain technical guidance on ways of meeting the requirement, based on references to BS 7671 and to authoritative publications produced by the Institution of Electrical Engineers (IEE) and others.

RISK ASSESSMENT

12. The Electricity Supply⁵ and the Electricity at Work Regulations are considered to be operating satisfactorily in controlling the safety of electrical installations in the supply networks up to and including meters or isolating switches in dwellings, and of electrical installations in workplaces.
13. As indicated above, the hazards posed by unsafe electrical installations are electric shock and burns (contact with electricity), and injuries arising from fires in buildings ignited by components overheating or arcing.

⁵ These are likely to be replaced by the Electricity Safety, Quality and Continuity Regulations.

Electric shock

14. The number of electric shock fatalities per million population in England & Wales has been falling over the last thirty years. Despite this, there is evidence of increasing risk of injury from electrical installations. In the period 1990 to 1998 the number of electrical injuries in the home attributable to fixed appliances and, in particular, portable appliances has increased. From 1988 to 1994 the ownership of fixed, non-portable and portable electrical appliances rose by 12%, 7% and 15% respectively⁶. These rises could perhaps explain the increase in non-fatal electric shock accidents in the home in the early 1990s since the population is now exposed to a greater number of electrical appliances and is hence at greater risk. The rapid growth in ownership of electrical appliances has slowed in the 1990s as the number of some appliances reaches saturation point, but there is still predicted to be an increase in ownership over the next 5 to 10 years, particularly of portable appliances. This predicted trend indicates that the level of exposure of the population to electrical appliances will continue to increase albeit at a lower rate.
15. Overall, the latest data shows that for the period 1990 to 1998 there were about 5 fatalities and 576 non-fatal injuries per year in dwellings in England & Wales arising from fixed electrical installations⁷. The equivalent figures for non-portable and portable equipment amount to 14 fatalities and about 1,700 non-fatal injuries.
16. In addition, new hazards are arising as systems become bigger (i.e. serve increasing numbers of lighting and power outlets) and new and sometimes more complex systems are introduced. There is also concern over the rising numbers of smaller firms and self-employed electricians who are under commercial pressure to be selective in complying with the safety standards in BS 7671.
17. For comparison purposes it is useful to note:-
 - that in the workplace there are on average about 19 fatalities and 880 serious non-fatal injuries per year, and that there have been on average about 40 deaths per year in England & Wales in dwellings due to carbon monoxide poisoning, 10 due to explosions and 10 due to collisions with glass. (There are on average about 1900 fatalities per year caused by slips, trips and falls.)
 - the incidence of electrical casualties (both fatal and non-fatal) at work and in the home per million population appears much higher in the UK than in a number of other European countries. The figures need to be treated with caution but they suggest that tighter regulation of electrical safety and/or control of the competence of electrical contractors could be beneficial in the UK⁸.

⁶ Data abstracted from DECADE (Domestic equipment and carbon dioxide emissions) project, Environmental Change Unit, University of Oxford.

⁷ Bromley, K., Hartless, R. & Wright, M. *Building Regulations: proposed new requirements for electrical safety in dwellings*. Publication prepared for DTLR Building Regulations Division, BRE Output 202398, July 2001.

⁸ Bromley, K. & Riley, J. *Electrical accidents and regulations in the UK and other countries*. BRE Report No. 76348 prepared for DETR, August 1999.

Fires

18. Home Office reports on fire statistics are not wholly reliable in relation to fires declared to be of an electrical origin because they are generally biased towards larger fires and do not include fires which extinguish themselves or are brought under control by persons other than the fire brigade. However, analysis of these reports for 1993 to 1997 indicates that on average there are about 25 deaths and 590 non-fatal injuries per year due to all electrical fires in dwellings in England & Wales.
19. For comparison purposes it should be noted that there are on average about 12,500 fires per year reported as having an electrical source of ignition excluding those fires started by equipment such as cookers and electric fires left on unattended either deliberately or accidentally.

ELECTRICAL INSTALLATION MARKET

20. There are about 61,000 electrical contracting firms⁹ in England and Wales employing some 106,000 electricians of various qualification standards. Only about 13,000 of these firms are registered in the existing voluntary schemes. Approximately 45% of firms are one-man operations accounting for 23% of the annual total of around £4,500 million value of work undertaken. About 20% of the total is undertaken in housing (both new build and existing). There are many other firms (e.g. heating engineers) undertaking electrical work as an adjunct of their main activity and there are many people engaged in electrical work who have no qualifications. Each year about 13% of the housing stock in England and Wales is subject to some electrical work: 2.8 million wiring installations are formally undertaken by electrical contractors, and about 1 million are undertaken by DIY workers. Most public sector works contracts require electrical contractors to be registered with NICEIC¹⁰ and/or ECA¹¹.
21. NICEIC and BSRIA¹² believe on the basis of their market intelligence that only about half of all electrical firms fully comply with the recommendations of BS 7671 concerning design, installation, inspection, testing and certification on every job they undertake. BSRIA's information indicates that the extent of compliance depends on the scale of the project and the size of the firm. Although final testing is carried out in nearly all cases the tests do not detect poor quality installation practice and latent defects which can subsequently give rise to the danger of electric shock or fires.
22. Since the privatisation of the electricity supply industry many supply companies have discontinued insisting on testing new consumer installations before making a connection and energising a new supply. Further, they do not usually take an interest when an existing consumer's installation is altered unless the added demand exceeds the capacity of the existing supply. A valuable source of checking has therefore been given up.

⁹ It is estimated that only about a third of these are on the VAT register.

¹⁰ National Inspection Council for Electrical Installation Contracting.

¹¹ Electrical Contractors' Association.

¹² Building Services Research and Information Association.

OPTIONS

23. Three options have been identified:

Option 1 – do nothing;

Option 2 – publicise good practice and seek to encourage enrolment in the existing voluntary schemes; or

Option 3 – introduce a new requirement in the Building Regulations defining electrical installations as proposed in the draft Approved Document P in this consultation package.

ISSUES OF EQUITY AND FAIRNESS

24. Option 3 could impose burdens on electrical contractors as well as the local authority building control departments and private approved inspectors. For example, contractors would be required to carry out inspection and testing during as well as after installation. However the burdens would be alleviated if the electrical contracting industry take advantage of the new provisions that enable approved competent firms to self-certify their work¹³. These provisions allow contractors (whether individuals or firms) who wish to rely on the building control system to continue to do so but at the cost of a fee.
25. The Competent Firms provisions allow scheme members (individuals or firms) to improve competitiveness by avoiding much of the administrative burden. Electrical contracting Competent Persons would be approved on the basis of membership of schemes whose conditions would include complying with BS 7671 and also ensuring those engaged in electrical work have appropriate qualifications. The electrical contracting industry has developed public specifications for the criteria by which such schemes and scheme operators should be judged, and they consulted on their proposals in 2000¹⁴. They have set up pilot schemes and it is expected that the fully working system will be in place this year.
26. To further reduce the burden the proposals are limited so that they do not apply to electrical installations already covered by the Electricity Supply Regulations, and to buildings which are not dwellings, and they make it unnecessary to notify building control bodies concerning minor work.

THE BENEFITS

What they are

27. The main benefit would be to reduce the risks of death or injury and hence effect a control on the increases in casualty statistics that seem likely as explained in paragraph 14 above.

¹³ The Building Act 1984 – Taking forward self-certification under the Building Regulations. A consultation paper issued by Building Regulations Division, DTLR, October 1999, as a result of which SI (2002) No 440 was laid before Parliament on 5 March 2002.

¹⁴ The Electrical Installation Industry Liaison Committee is sponsoring the work and the secretariat is being provided by the Electrical Contractors' Association. The NICEIC, Government Departments and other elements of manufacturing industry and consumer safety interests are also supporting.

28. By-product benefits include:
- raising the average standards of competence in the industry,
 - improving the qualifications of the workforce,
 - contributing to the Government's initiative on swifter conveyancing of dwellings by making electrical installation certificates more likely to be available for inclusion in sellers' packs, and
 - harmonising the scope of the Building Regulations with those in Scotland.
29. Whilst it is not strictly a matter for the Building Regulations, concerned as they are with safety and health, the proposals would also reduce the damage to buildings from electrical fires and the national costs of these accidents.

IMPACTS

30. Option 1 (do nothing) will clearly make no impact. The Building Regulations do not currently contain any requirements relating to the safety of electrical installations in buildings and risks and accident rates would most likely continue to increase.
31. Option 2 (publicise good practice and seek to encourage enrolment in the existing voluntary schemes) is thought unlikely to make significant impact. It may have some effects on firms serving the dwellings sector. However, voluntary scheme operators have been powerless to stop industry fragmentation and to date they have been unsuccessful in persuading more than about 50% of the firms who are on the VAT Register to subscribe. There would be no effect on the large numbers of jobbing electricians or the DIY market.
32. Option 3 (amending the Building Regulations). If the proposed new requirements were to be implemented it is expected that there would be an improvement in the average quality of workmanship and the average degree of safety of electrical installations in dwellings over a fairly short space of time. This improvement would occur in professionally controlled work but would also "trickle down" to work in the grey and black economies. This in turn would lead to a reduction in the rate at which accidents seem to be increasing and hence fewer injuries and deaths than would otherwise occur. The proposals are likely to lead to better understanding of the supplementary protection Residual Current Devices (RCDs) can provide and where they are applicable¹⁵. This itself could significantly reduce the risks of exposure to fatal shocks.
33. Overall, it is felt that a reduction of 20% in electric shock fatalities is a realistic prospect but that the reduction in non-fatal injuries might only be half that. Fire incident report forms filled in by fire officers indicate that around 21% of fires associated with fixed electrical installations could be prevented by the new regulations requiring improvements in the quality of installation work¹⁶. Since it is not always clear from the fire officer's report form whether the incident was amenable to the proposed regulations it is possible that considerably more of these fires could be prevented.

¹⁵ It is proposed that RCDs are installed on a number of circuits, e.g. the downstairs ring, circuits to sheds and garages, pond pump and other outdoor circuits. This will help to reduce the number of electric shock fatalities associated with portable and non-portable electrical equipment.

¹⁶ Report prepared for DTLR Building Regulations by BRE, Output No.76347, February 1999.

34. Using these estimates and the annual fatality and casualty statistics BRE has calculated the reduction in injuries that would arise from the adoption of Option 3. These are given in Tables 1a and 1b below.

Table 1a: Annual average number of electrical incidents in dwellings in E&W (1990 to 1998)					
Electrical installation	Fatalities		Non-fatal injuries		Fire damage to property
	Shock	Fire	Shock	Fire	
Fixed wiring	1.6	1.0	367	80	1,468
Fixed appliance	2.9	4.9	208	101	2,083
Non-portable	4.0	0.3	411	118	1,848
Portable	10.3	18.5	1,326	287	1,288
Total	18.8	24.6	2,313	587	6,688

Table 1b: Calculated annual average number of electrical incidents avoided in dwellings in E&W					
Electrical installation	Fatalities		Non-fatal injuries		Fire damage to property
	Shock	Fire	Shock	Fire	
Fixed wiring	0.3	0.5	37	39	720
Fixed appliance	0.6	2.4	21	50	1,020
Non-portable	0.8	0.1	41	24	370
Portable	2.1	3.7	133	57	258
Total	3.8	6.6	231	170	2,367

VALUING THE BENEFITS

35. The number of lives saved and injuries prevented have been converted into a cash figure using a willingness-to-pay approach as adopted by the former Department of Transport to value a statistical life and injury¹⁷.
36. The savings resulting from a reduction in the damage resulting from electrical fires have been calculated from insurance claims. Values are expressed as a present value discounted over 5 years at the Treasury's 6% discount rate. The results are presented in Table 2 below.

¹⁷ Hopkin, J.M. & Simpson, H.F. *Valuation of road accidents*. Report 163, Transport Research Laboratory, UK, 1995. This approach is also discussed in the Department of Health's document *Policy Appraisal and Health*.

Table 2: Summary of benefits arising from implementation of new requirement for electrical safety in E&W (£ million discounted to present value over 5 years)

Electrical installation	Fatalities		Non-fatal injuries		Total	Fire damage to property
	Shock	Fire	Shock	Fire		
Fixed wiring	£1.2	£2.0	£5.8	£6.2	£15.2	£10.6
Fixed appliance	£2.3	£9.3	£3.3	£7.9	£22.8	£15.1
Non-portable	£3.1	£0.2	£6.5	£3.8	£13.6	£5.5
Portable	£8.0	£14.4	£21.1	£9.1	£52.6	£3.8
Total	£14.6	£25.9	£36.7	£27.0	£104.2	£35.0

37. The total benefit figure shown shaded in Table 2 excludes the benefits that arise from the property and content losses due to electrical fires avoided as a result of the implementation of the proposals. Building Regulations are only concerned with the health and safety of people in and around buildings. Fire damage is an economic loss but as can be seen in the table this is a considerable national burden which would incidentally be alleviated.

BUSINESS SECTORS AFFECTED

38. The proposed new requirement would, if implemented, potentially affect the following:
- (a) 61,000 electrical contracting firms employing some 106,000 electricians (of which about 48,000 electricians are self-employed)¹⁸. This includes:
 - About 2,000 member firms of the Electrical Contractors' Association (ECA) employing some 50,000 people,
 - About 11,000 firms on the roll of the National Inspection Council for Electrical Installation Contracting (NICEIC),
 - (b) 16,300 members of the Federation of Master Builders (FMB),
 - (c) 19,000 members of the Guild of Master Craftsmen,
 - (d) 3,800 subscribers of the Building Employers Confederation (BEC),
 - (e) 800 members of the House Builders Federation (HBF),
 - (f) 36 individual and 13 corporate Approved Inspectors, and
 - (g) perhaps many thousands of firms undertaking electrical work as an adjunct of their main activities, e.g. kitchen and bathroom refurbishment and central heating installation.

¹⁸ These figures were obtained by BSRIA from its market research. They are higher than figures published by DEFRA because a significant number of 1-man firms and a large number of 2 and 3-man firms are not VAT registered.

The above categories are not mutually exclusive and some businesses may belong to more than one trade body: most ECA members are also registered with the NICEIC for instance.

39. It would also affect building control bodies and householders and others contemplating DIY electrical work.

COMPLIANCE COSTS

General

40. The following costs are for Option 3. Option 1 imposes no costs. Option 2 might cost Government and the voluntary scheme operators some tens of thousands of pounds per year in advertising projects. Those firms persuaded to join would incur the subscription costs of membership.

Electrical contracting industry

Non-recurring cost

41. Those who would be affected by implementation of the proposals would have as a non-recurring cost to acquaint themselves with the new provisions and where necessary to invest in recruitment and appropriate professional and technical training.

Recurring costs

42. BSRIA has carried out numerous surveys of the electrical contracting industry in England and Wales. It has investigated the number and type of electrical jobs undertaken by electrical contractors, the cost and duration of these jobs, the current levels of compliance with BS 7671 and the overall size of the electrical contracting market. BSRIA has also established the likely increase in cost per job if the proposed new requirement was to be implemented. Using this information BRE has calculated that if the proposals were implemented they would impose the costs as shown in Table 3 below¹⁹. They are expressed as a present value discounted over 5 years at the Treasury's 6% discount rate.

Table 3: Increase in electrical contracting costs in E&W arising from implementation of new requirement (£ million discounted to present value over 5 years)

Market sector	1-man firms	Other firms	Total
New housing	£0.8	£5.0	£5.8
Existing housing	£25.3	£24.0	£49.3
Total	£26.1	£29.0	£55.0

¹⁹ The proposed requirement will not impact on all electrical jobs since minor works need not be notified. Examples include: additional lighting points on an existing circuit, adding socket outlets to an existing ring or radial circuit, replacement of accessories such as socket-outlets and ceiling roses on a like-for-like basis etc.

43. Table 3 treats “1-man firms” and “Other firms” separately since the former category is perhaps a more “typical” business and is also more likely to be affected by the proposals than larger firms.
44. Under the competent persons provisions, appropriately approved electrical contractors would be able to self-certify that their work meets the requirements of the Building Regulations (see paragraph 25). In this case there would be a need to supply the relevant building control body as well as the person ordering the work with an electrical installation certificate signed by appropriately qualified person(s). The alternative would be to pay a fee and have the work inspected by a local authority building control department or an Approved Inspector or an agent.
45. If the work were to be self-certified then there would be a small administrative cost incurred when receiving and archiving certificates. If the work were to be inspected by a building control body costs could be substantial to cover the costs of new electrical specialist inspecting staff or perhaps more likely the costs of sub-contracting. These costs would be passed on to the contractors seeking Building Regulations approval by this route. Perhaps in practice the more likely result would be non-registered contractors sub-contracting to those who are registered to self-certify. On the basis of expected levels of self-certification and administration and inspection costs (as derived from the BSRIA surveys) the overall recurring building control costs arising from the implementation of the proposed new requirement have been calculated as shown in Table 4. Again, they are expressed as a present value discounted over 5 years at the Treasury’s 6% discount rate.

Table 4: Building control costs in E&W arising from implementation of new requirement (£ million discounted to present value over 5 years)

Market sector	1-man firms	Other firms	Total
New housing	£0.1	£1.7	£1.8
Existing housing	£12.3	£13.8	£26.1
Total	£12.4	£15.5	£27.9

46. As with Table 3, 1-man firms are highlighted separately in the above Table (see paragraph 43).

OVERALL COST

47. The total cost of implementing the proposed new requirement on electrical safety is the sum of the figures in Tables 3 and 4 together with a small training cost for electricians who do not hold relevant qualifications (nationally estimated to be about £1 million per year). This brings the total cost of the proposed new requirement to about £84 million (discounted over 5 years at the Treasury’s 6% discount rate).

EXTENT OF CONSULTATION

48. The proposed amendments to the Building Regulations (Option 3) have already been subject to consultation with the Building Regulations Advisory Committee (BRAC) appointed by the Secretary of State as advisers on matters affecting construction. The proposals are now being subject to wide consultation with interested groups, including organisations representing building owners and occupiers, building developers, designers, contractors and building control.

49. As part of the consultation process a small business litmus test will be undertaken. This will focus in particular on small businesses who are likely to be most affected by the proposals.

SUMMARY AND RECOMMENDATIONS

50. Option 1 imposes no costs, provides no benefits and would allow a worsening trend to continue.
51. Option 2 imposes costs on Government and those operating voluntary schemes. There would also be membership costs to those firms that subscribe to the schemes. In total such costs could amount nationally to £1 million per year. It is anticipated that there would only be marginal benefits which are unlikely to outweigh the costs.
52. Overall, Option 3 is expected to produce a net benefit of about £20 million expressed as a present value discounted over 5 years at the Treasury’s 6% discount rate.
53. The costs and benefits of each option are summarised in Table 5 below.

Table 5: Summary of costs and benefits in E&W arising from implementation of new requirement (£ million discounted to present value over 5 years)						
	Option 1		Option 2		Option 3	
	Costs	Benefits	Costs	Benefits	Costs	Benefits
National totals	0	Negative	1 (approx.)	Marginal benefit	84	104

54. The recommended course of action is to adopt Option 3. This will lead to the following benefits:
- improve the average national competence of electrical installers
 - improve average national installation safety
 - impact on the adverse trend in electrical casualties, and
 - reduce the national economic loss over the first five years due to fires caused by defective electrical installations; discounted to present value this is calculated to be some £35 million.

In addition it will produce a net financial benefit of £19 million expressed as a present value discounted over 5 years at the Treasury’s 6% discount rate.

55. The option is also complementary to other Government policies on health and safety.

ENFORCEMENT, SANCTIONS, MONITORING AND REVIEW

56. Intended work that is subject to the provisions of Part P would (like any other Part of Schedule 1 to the Building Regulations 2000) have to be notified to the local authority. The work would be subject to inspection by the local authority’s building control department, or, at the election of the person carrying out the work, by an approved private sector building inspector.

57. Failure to comply with the requirements of Schedule 1 to the Building Regulations 2000 is a criminal offence. Local authorities also have powers to require the removal or alteration of work that does not comply with the requirements of Schedule 1. The local authority's enforcement powers do not apply in a case where building control is being carried out by an approved inspector. However, if a person carrying out building work fails to comply with instructions from an approved inspector to rectify non-compliant work, the approved inspector must cancel the "initial notice" which brought the project under his supervision. Building control then reverts to the local authority.
58. Local authority Building Control bodies and Approved Inspectors could be asked to carry out checks on electrical work and this could mean local authorities having to engage specialist agents. Alternatively, if competent persons provisions are introduced (similar to those introduced, for instance, in Statutory Instrument (2002) No 440) the Building Control body would be authorised to accept certificates of compliance issued by Competent Firms.
59. If Option 3 were to be implemented in isolation, the current provisions for enforcement and sanctions in relation to the Building Regulations 2000 and the Building (Approved Inspectors etc.) Regulations 2000 would apply. However, it is considered that the proposals would be more practical if implemented in conjunction with regulations prescribing the relevant types of electrical works and the firms which are empowered to self-certify compliance.
60. This RIA will be reviewed in the light of the response to consultation and a revised version would be published should it be decided to proceed with amending the Building Regulations to introduce the proposed new requirements. In the event of implementation of the proposals unchanged or in an amended form, it is the Department's practice to investigate experience after a reasonable time to monitor how the regulations are working in practice.

Contact point

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DTLR, BUILDING REGULATIONS DIVISION
May 2002



The Building Regulations 2000

Electrical safety

APPROVED DOCUMENT

P

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USE OF GUIDANCE

THE APPROVED DOCUMENTS

This document is one of a series that has been approved by the Secretary of State as practical guidance on meeting the requirements of Schedule 1 and Regulation 7 of the Building Regulations 2000 (SI 2000/2531).

At the back of this document is a list of those documents currently published by the Department of Transport, Local Government and the Regions and the Welsh Office which have been approved for the purpose of the Building Regulations 2000 (SI 2000).

Approved Documents are intended to provide guidance for some of the more common building situations. However, there may well be alternative ways of achieving compliance with the requirements. **Thus there is no obligation to adopt any particular solution contained in an Approved Document if you prefer to meet the relevant requirement in some other way.**

Other requirements

The guidance contained in an Approved Document relates only to the particular requirements of the Regulations which that document addresses. The building work will also have to comply with the Requirements of any other relevant paragraphs in Schedule 1 to the Regulations.

There are Approved Documents which give guidance on each of the other requirements in Schedule 1 and on Regulation 7.

LIMITATION ON REQUIREMENTS

In accordance with Regulation 8, the requirements in **Parts A to K, N and P** of Schedule 1 to the Building Regulations do not require anything to be done except for the purpose of securing reasonable standards of health and safety for persons in or about the building.

MATERIALS AND WORKMANSHIP

Any building work which is subject to the requirements imposed by Schedule 1 of the Building Regulations should, in accordance with Regulation 7, be carried out with proper materials and in a workmanlike manner.

You may show that you have complied with Regulation 7 in a number of ways. These include the appropriate use of a product bearing CE marking in accordance with the Construction Products Directive (89/106/EEC)¹, the Low Voltage Directive (73/23/EEC and amendment 93/68/EEC)² and the EMC Directive (89/336/EEC)³, as amended by the

1 As implemented by the Construction Products Regulations 1991 (SI 1991 No 1620)

2 As implemented by the Electrical Equipment (Safety) Regulations 1994 (SI 1994 No 3260)

3 As implemented by the Electromagnetic Compatibility Regulations 1992 (SI 1992 No 2372)

CE Marking Directive (93/68/EEC)⁴, or a product complying with an appropriate technical specification (as defined in those Directives), a British Standard, or an alternative national technical specification of any state which is a contracting party to the European Economic Area which, in use, is equivalent, or a product covered by a national or European certificate issued by a European Technical Approval issuing body, and the conditions of use are in accordance with the terms of the certificate. You will find further guidance in the Approved Document supporting Regulation 7 on materials and workmanship.

INDEPENDENT PRODUCT CERTIFICATION SCHEMES

Such schemes certify compliance with requirements that are considered appropriate to the purpose for which the product is to be used and conveyed in a published specification. Certification through these schemes may be acceptable as a way of showing that the products, when properly incorporated into buildings, meet the requirements of the Building Regulations.

Products which are not so certified may also be shown to comply with the Building Regulations when properly incorporated into buildings, by for example one of the options in the Approved Document supporting Regulation 7.

To provide added assurance of compliance with the published requirements, many independent certification schemes seek accreditation by UKAS (or an equivalent body appointed by another Member State of the EEA). In this Approved Document “independently certified” and similar phrases mean products certified by a body operating one of these accredited independent schemes as compliant with the specification given in the particular case.

Technical specifications

Building Regulations are made for specific purposes: health and safety, energy conservation and the welfare and convenience of disabled people. Standards and technical approvals are relevant guidance to the extent that they relate to these considerations. However, they may also address other aspects of performance such as serviceability, or aspects which although they relate to health and safety are not covered by the Regulations.

When an Approved Document makes reference to a named standard, the relevant version of the standard is the one listed at the end of the publication. However, if this version of the standard has been revised or updated by the issuing standards body, the new version may be used as a source of guidance provided it continues to address the relevant requirements of the Regulations.

The appropriate use of a product which complies with a European Technical Approval as defined in the Construction Products Directive will meet the relevant requirements.

⁴ As implemented by the Construction Products (Amendment) Regulations 1994 (SI 1994 No 3051) and the Electromagnetic Compatibility (Amendment) Regulations 1994 (SI 1994 No 3080).

FIXED ELECTRICAL INSTALLATIONS

The Requirement P

Requirement	Limits on application
Fixed electrical installations in dwellings P. Fixed electrical installations in dwellings shall be suitably designed, installed, inspected and tested so as to provide reasonable protection against their being the source of a fire or a cause of injury to persons.	Requirement P applies only to fixed electrical installations that are intended to operate at low voltage or extra-low voltage which are not controlled by the Electricity Supply Regulations 1988 ⁵ as amended or the Electricity at Work Regulations 1989 as amended.

Notes

- Regulation 2 is amended to explain the Limit on Application in Schedule 1, Part P and to include fixed electrical installations in relation to which Part P imposes a requirement:–
 - The definition of “Controlled service or fitting” in Regulation 2 is changed to:

“Controlled service or fitting means a service or fitting in relation to which Part G, H, J, L or P of Schedule 1 imposes a requirement.”
 - Definitions of “low voltage” and “extra-low voltage” are added.
- Regulation 3 is amended to enable, in the definition of building work, a distinction between work covered by Part P of Schedule 1 (with the possibility that this might need consequential work on existing fixed installations to ensure overall safety) and work on other controlled services:–
 - Regulation 3(1)(b) is amended to exclude a controlled service in relation to which Part P of Schedule 1 imposes a requirement.
 - A new Regulation 3(1)(g) is added to include the provision or extension of a controlled service in relation to which Part P of Schedule 1 imposes a requirement, and (for extensions) any work on the existing fixed electrical installation necessary to ensure the supply and earthing arrangements for the extension(s) comply with the requirements in Part P.
- Regulation 4 is amended to enable, in the requirements applying when building work has been completed, a distinction between work covered by Part P of Schedule 1 (with the possibility that this might need consequential work on existing fixed electrical installations to ensure overall safety) and work on other controlled services:–
 - Regulation 4(2)(c) is amended to exclude a controlled service in relation to which Part P of Schedule 1 imposes a requirement.

⁵ These regulations will be superseded by the Electricity Safety, Quality and Continuity Regulations 2002.

- A new Regulation 4(3) is added to require that building work shall be carried out so that after it has been completed any controlled service in relation to which Part P of Schedule 1 imposes a requirement complies with the requirements in Part P, and (for extensions) any necessary work on the existing fixed electrical installation shall be carried out to ensure the supply and earthing arrangements for the extension(s) comply with the requirements in Part P.
- Regulation 6(1)(a) is amended to include Part P so that, when relevant, work in connection with a material change of use must comply with the technical requirements in Part P.
- Regulation 8 is amended to include Part P so that work covered by Part P only needs to achieve the purpose of securing reasonable standards of health and safety.
- Part B of Schedule 1 to the Building Regulations includes requirements for the fire safety of certain electrical installations and certain elements of others, and the provision of fire and smoke alarm systems.
- The Electricity at Work Regulations 1989 as amended apply to any electrical installation work undertaken by way of trade.
- The Electricity Supply Regulations 1988 as amended⁵ impose requirements on electricity distributors which have an impact on contracts for the supply to consumers of mains electricity.

SECTION 0

Performance Requirement

1. In the Secretary of State’s view, the requirement will be met by adherence to the “Fundamental Principles” for achieving safety given in BS 7671: 2001 Chapter 13 or any other standard approved by a member of the EEA that includes the technical intent of CENELEC Harmonisation Document HD 384.1. To achieve these requirements electrical installations need to be:-
 - 1.1. designed and installed to afford appropriate protection against mechanical and thermal damage, and so that they do not present electric shock and fire hazards;
 - 1.2. suitably inspected and tested to verify that they meet the relevant equipment and installation standards; and
 - 1.3. suitably inspected and tested to verify that they perform functionally as the designers intend.

Definitions

2. In BS 7671 an “electrical installation” is defined as an assembly of associated electrical equipment supplied from a common origin to fulfil a specific purpose and having certain co-ordinated characteristics⁶. For the purposes of Building Regulations a fixed electrical installation means those parts of the assembly that are fixed to the building fabric.
3. Extra-low voltage means voltage normally not exceeding 50 V ac or 120 V ripple-free dc, whether between conductors or to earth⁶.
4. Low voltage means voltage normally exceeding extra-low voltage but not exceeding 1000 V ac or 1500 V dc between conductors, or 600 V ac or 900 V dc between conductors and earth⁶.

Work that need not be notified

5. The requirements apply to electrical installation work. However it is unnecessary to notify electrical installation work to building control bodies in the following circumstances:-
 - 5.1. The proposed installation work is undertaken by a person⁷ of a class or description prescribed in relation to these matters by the Secretary of State. In these cases the person⁷ is responsible for ensuring compliance with the requirements and must certify this at completion of the work by supplying to the relevant local authority a certificate signed by a person or persons competent to do so.
 - 5.2. The proposed electrical installation work is minor work as described in Table 1 and does not include the provision of a new circuit.

⁶ BS 7671: 2001 Part 2.

⁷ “Person” means a legal person and can include firms.

- 5.2.1. When being undertaken for financial gain a way of showing compliance would be to follow BS 7671 and to issue to the person ordering the work a Minor Electrical Installation Works Certificate as or similar to the model in BS 7671⁸ signed by someone competent to endorse the printed declaration. A blank copy of this form is shown in Appendix B.
- 5.2.2. For DIY work in dwellings, a way of showing compliance would be to follow the IEE guidance or the guidance in the DIY manuals listed in paragraph 10, which draw their guidance from BS 7671 and the IEE's publications, including, where prudence and these guides suggest, having the work inspected and tested and given a Minor Works Certificate signed by a person competent to do so.
- 5.2.3. In any event, minor works should be drawn to the attention of the person carrying out subsequent work or periodic inspection tests. A way of doing so would be to supply Minor Electrical Installation Works Certificates covering all alterations made in the preceding period.

Table 1: Minor Electrical Installation Works in dwellings that need not be notified
<ul style="list-style-type: none"> 1. Additional lighting points (light fittings and switching) on an existing circuit.¹ 2. Adding socket-outlets to an existing ring or radial circuit.¹ 3. Replacement of accessories such as socket-outlets, control switches and ceiling roses, but excluding circuit protective devices. 4. Installation and/or upgrading and testing of main equipotential bonding. 5. Upgrading and testing supplementary bonding. 6. Replacement of the cable for a single circuit only, where damaged, eg, by fire, rodent or impact.² 7. Re-fixing and/or repairing the enclosures of existing wiring systems.³ 8. Providing additional mechanical protection to existing equipment.⁴
<p>Notes</p> <ul style="list-style-type: none"> 1 Only if the existing circuit protective device is suitable and provides protection for the modified circuit and other safety provisions are satisfactory. 2 On condition that the replacement cable is identical in manufactured specification, follows the same route and does not serve more than one sub-circuit through a distribution board. 3 On condition the circuit's protective measures are unaffected. 4 On condition the circuit's protective measures and current-carrying capacity of conductors are unaffected.

⁸ BS 7671: 2001 Appendix 6, page 289.

SECTION 1

Design and Installation

General

6. Where electrical installation work is to be carried out for financial gain, compliance is necessary with the Electricity at Work Regulations 1989 as amended.
7. Electrical installations should be designed and installed, suitably enclosed and separated by appropriate distances to provide mechanical and thermal protection, so that:–
 - 7.1. they incorporate measures that afford appropriate protection for persons against the risks of electric shock, burn or fire injuries, and
 - 7.2. they are safe when functioning in their intended manner.
8. The Electricity Safety, Quality and Continuity Regulations 2002 will require the electricity distributor to install the cut-out and meter in a safe location, where they are mechanically protected and can be safely maintained. In compliance with this requirement, the electricity distributor might also take into account the risk of flooding.⁹
9. In accordance with the Electricity Safety, Quality and Continuity Regulations 2002 and the contract for a mains supply, proposals for new installations or significant alterations to existing ones should be cleared with the electricity distributor.¹⁰

New installation work

10. The diagrams in Appendix A give an indication of the sorts of electrical services encountered in dwellings, some of the ways they can be connected and the complexity of the wiring and protective systems necessary to supply them. A way of meeting the requirements when providing for these services would be to follow BS 7671 and guidance given in publications such as:–

⁹ We would welcome comment on when and whether, and how best, to make electrical installations in dwellings more resilient when the predictions are that flooding will become more widespread and frequent.

¹⁰ Again, we would welcome specific comment in the light of the changes effected by these new Regulations.

- 10.1. The IEE On-Site Guide;
- 10.2. The series of IEE Publications: Guidance Notes Nos 1 to 7;
- 10.3. The Which? Book of Wiring and Lighting;
- 10.4. The Reader's Digest Complete DIY Manual;
- 10.5. Collins Complete DIY Manual;
- 10.6. Collins Wiring and Lighting.

Accessibility

- 11. The consumer unit and all switches and socket-outlets should be located so that they are easily reachable where this is necessary to comply with Part M of the Building Regulations. Approved Document M shows ways of complying by, for instance, locating switches at an appropriate height below 1200 mm and socket-outlets at an appropriate height above 450 mm from finished floor level.

Inspection and testing before taking into service

- 12. Electrical installations should be inspected and tested during and at the end of installation before they are taken into service to verify that they are reasonably safe, that is to say that they comply with BS 7671.
- 13. A way of demonstrating this compliance would be to follow the procedures in Chapter 74 of BS 7671, and to supply to the building control body copies of the forms and certificates it calls for signed by a person competent to do so. Such forms should show that the electrical installation work has been:-
 - 13.1. Inspected (this is necessary during erection as well as on completion) to verify that the components are:-
 - 13.1.1. made in compliance with appropriate British Standards or Harmonised European Standards;
 - 13.1.2. selected and installed in accordance with BS 7671 (including consideration of external influences such as the presence of moisture);
 - 13.1.3. not visibly damaged or defective so as to be unsafe.
 - 13.2. Tested to check satisfactory performance in relation to continuity of conductors, insulation resistance, separation of circuits, polarity, earthing arrangements, earth fault loop impedance and functionality of all devices including residual current devices.

Inspections

14. Section 712 in BS 7671 provides a list of all the inspections that may be necessary although in particular cases only some elements may be relevant. A schedule of inspections is given in Appendix 6 of BS 7671: 2001, and a copy is included in this Approved Document at Appendix B.

Tests

15. Section 713 in BS 7671 provides a list of all the tests that may be necessary although in particular cases only some elements may be relevant. A blank schedule of test results is given in Appendix 6 of BS 7671: 2001, and a copy is included in this Approved Document at Appendix B. Tests should be carried out using appropriate instruments under the conditions given in BS 7671, and the results should be recorded on forms like the model in Appendix 6 of BS 7671. The results should be compared with the relevant performance criteria to confirm compliance.

Certification

16. A model electrical installation certificate is given in Appendix 6 of BS 7671: 2001 which enables competent persons to record information about installation work and to certify that the work they are responsible for is in accordance with BS 7671. A copy of this form is included in this Approved Document at Appendix B. Appendix B also gives an example of a single signature version of the form taken from IEE Guidance Note 3: 2002.
17. For inspection and testing of DIY work it may be sufficient to adopt the recommendations in one of the DIY manuals listed in paragraph 10. If the work is not of a minor nature such as that listed in Table 1, it should be inspected and tested by a competent person.

SECTION 2

Material Alterations

18. Where any electrical installation work is classified as a material alteration, the alteration and extension work must include:-
 - 18.1. such works on the existing fixed electrical installation in the building as are necessary to enable the alterations, the circuits which feed them, the protective measures and the relevant earthing systems to meet the requirements; and
 - 18.2. establishing that the mains supply equipment is suitable.
19. A way of complying would be to follow the guidance given above in relation to design and installation and to show that for the altered circumstances:-
 - 19.1. the rating and the condition of the existing equipment belonging to both the consumer and to the electricity distributor:-
 - a) can carry the additional loads being allowed for, or
 - b) are improved so that they can carry the additional loads being allowed for; and
 - 19.2. the correct protective measures are used; and that
 - 19.3. the earthing and equipotential bonding arrangements are satisfactory.
20. Appendix C offers guidance on some of the types of older installations that might be encountered in alteration work.

APPENDIX A TO DRAFT APPROVED DOCUMENT P

Examples of Electrical Installation Diagrams

Diagrams are given as follows which should be read in conjunction with the notes below:–

Diagram 1 indicating the many electrical appliances that can be found in the home and how they might be supplied.

Diagram 2 indicating earthing and bonding arrangements that can be necessary.

Diagram 3 indicating earthing arrangements as might be provided by electricity distributors.

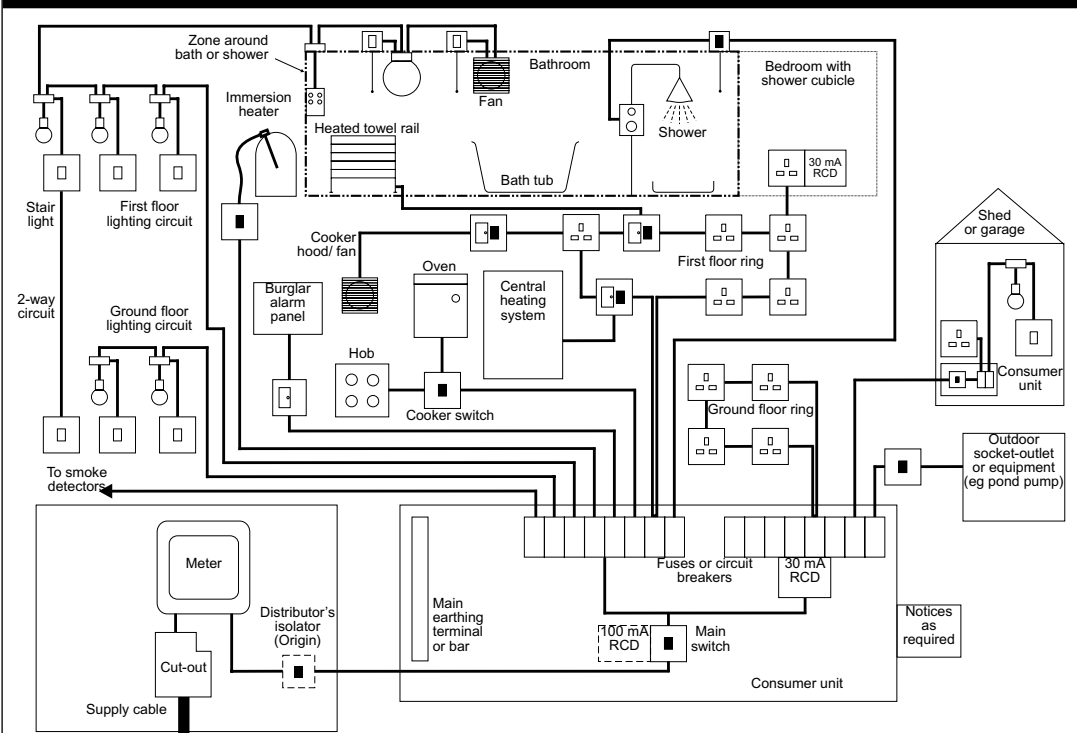
Diagram 4 indicating earthing arrangement as might need to be provided by the consumer.

Notes:

1. Diagrams 1 to 4 do not give all the information needed to achieve compliance with BS 7671, nor do they cover all the electrical services found in dwellings, some of which (eg swimming pools and saunas) are subject to special requirements specified in Part 6 of BS 7671: 2001.
2. The diagrams are simplified examples of what may be encountered. They are not a substitute for the proper consideration of for instance:-
 - a) Cross-sectional areas (csa) of the phase and neutral conductors of circuits. The minimum csa required by BS 7671 depends on a number of variables, including: type of cable, number of cores, type and nominal current of overcurrent protective device, grouping with other circuits, ambient temperature, contact with thermally insulating materials, and circuit length.
 - b) Cross-sectional areas of protective conductors. BS 7671 contains different rules, involving a number of variables, for determining the minimum csa for each type of protective conductor, including the earthing conductor, circuit protective conductors, main equipotential bonding conductors, and supplementary bonding conductors.
 - c) Types and nominal current ratings of fuses or circuit breakers. These particulars depend on the circuit design current and load characteristics, and need to be co-ordinated with the circuit conductors and with the earth fault loop impedance of the circuit.

- d) Types of wiring or wiring system. While PVC insulated and sheathed cables are likely to be suitable for much of the wiring in a typical dwelling, other types of cable may also be necessary. For example, heat-resisting flexible cables are required for the final connections to certain equipment; the cable to the garage or shed, if run underground, is subject to certain requirements; and cables concealed in floors and walls in certain circumstances are required to have an earthed metal covering, be enclosed in steel conduit, or have additional mechanical protection.
- e) Principles of cable routing. BS 7671 contains criteria for the routing and positioning of cables, so as to give protection against electric shock and fire as a result of mechanical damage to a cable. For example, such criteria are given for cables concealed in walls or buried in the ground.
- f) Current ratings of circuits to fixed current-using equipment such as a shower or cooker.

Diagram 1: Illustration of the fixed electrical installation that might be commonly encountered in new or upgraded existing dwellings



Notes:

1. See the general rules in BS 7671: 2001.
2. The RCD component in the main switch is required for TT systems (see Diagram 4). Individual circuit 30 mA RCDs may be required to avoid unnecessary tripping.
3. The notices include advice on periodic testing and regular test operation of the RCDs.
4. The zone shown around the bath or shower corresponds to zone 3 in Section 601 of BS 7671: 2001.
5. The socket-outlet shown in the bedroom with the shower cubicle must be outside zone 3.

Key

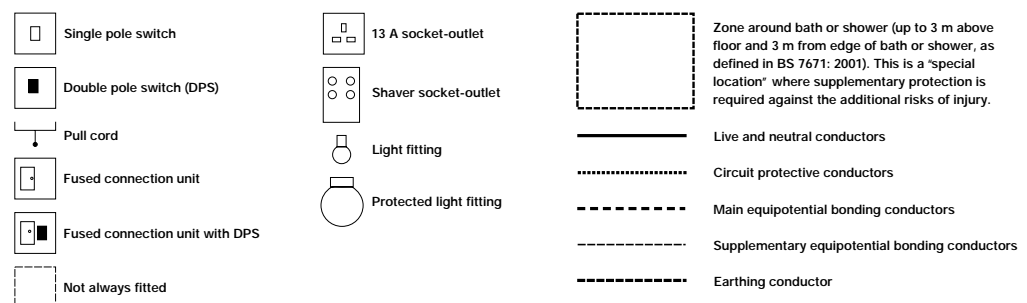
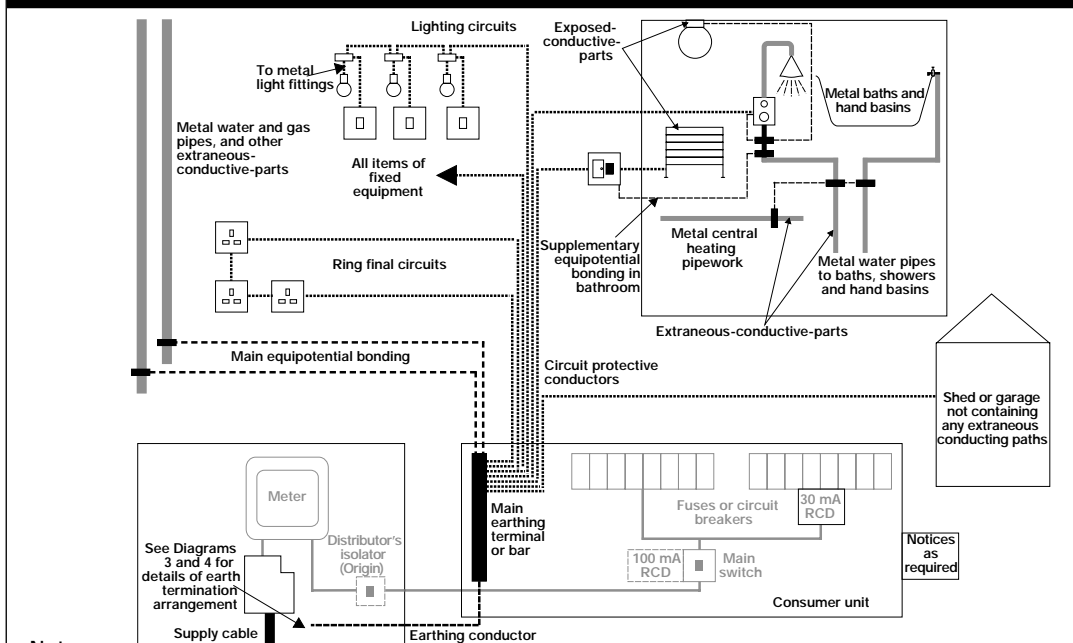


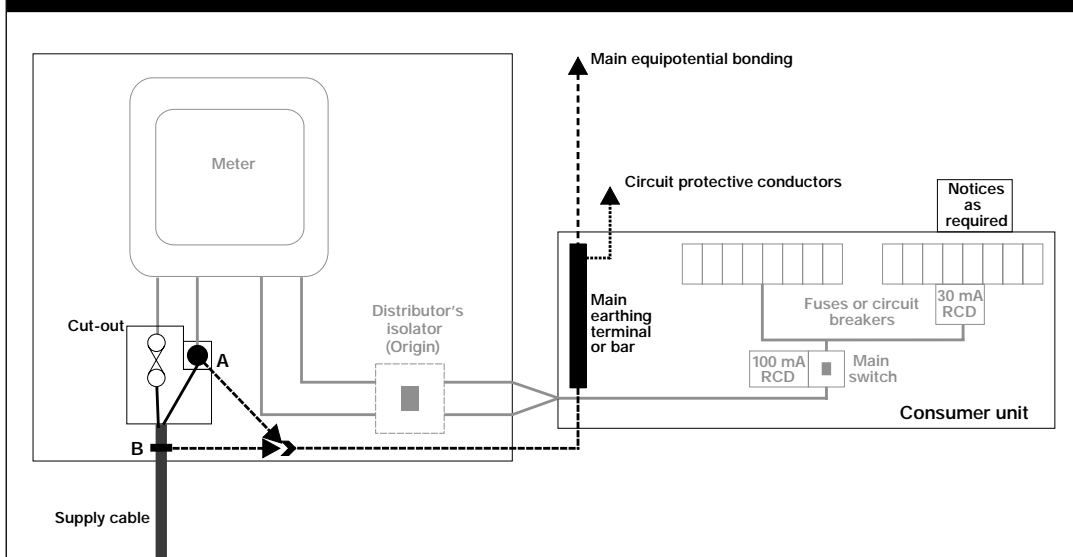
Diagram 2: Illustration of the earthing and bonding conductors that might be part of the electrical installation shown in Diagram 1



Notes:

1. See the general rules in BS 7671:2001.
2. Circuit protective conductors are taken to all items of fixed electrical equipment and local isolation and switching devices which appear in Diagram 1.
3. In the case of a protective multiple earthing (PME) supply (see Diagram 3), consult the electricity distributor.
4. Supplementary bonding is required in bathrooms to an extent dependent upon the presence of metallic fixtures, fittings and pipework: see Section 601 of BS 7671: 2001.
5. The faded items are shown for completeness and to give context.

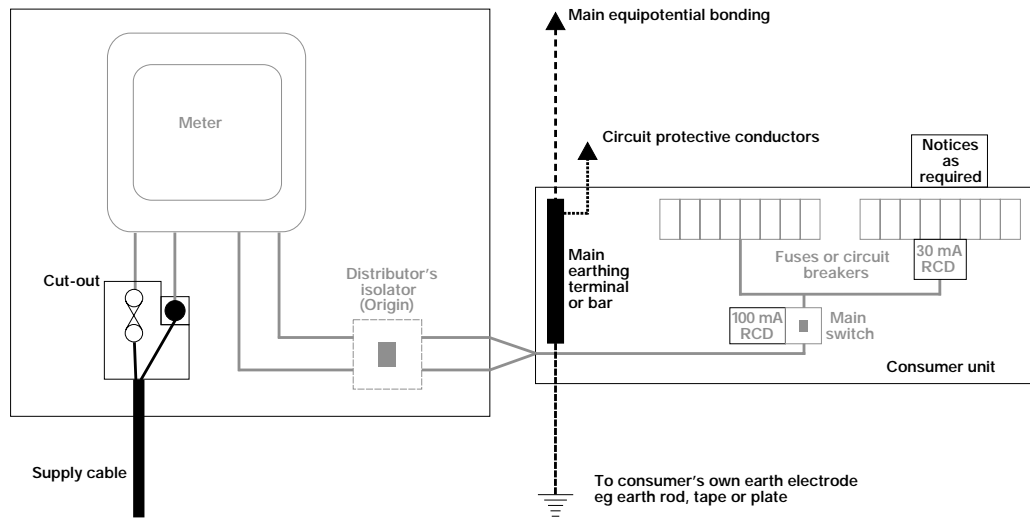
Diagram 3: Example earthing arrangement where the electricity distributor provides the earth connection (the most common system in urban areas)



Notes:

1. Connection A shows the arrangement where an electricity distributor provides a combined protective earthing and neutral conductor as part of a protective multiple earthing system (referred to as TN-C-S). Connection B shows the arrangement where an electricity distributor provides a protective earthing conductor (usually the metallic covering of the supply cable) that is separate from the neutral conductor (as part of a system referred to as TN-S).
2. Connections A or B can only be made by the electricity distributor or its appointed agent.
3. The faded items are shown for completeness and to give context.

Diagram 4: Example earthing arrangement where consumers provide their own earthing arrangement (referred to as a TT system)



Notes:

1. BS 7671: 2001 requires that the part of the installation between the origin and the first RCD shall comply with the requirements for protection by Class II equipment or equivalent insulation. For the arrangement shown, this applies to the consumer unit and the wiring connecting it to the supplier's equipment.
2. The 100 mA RCD component of the main switch should be of the time delayed type.
3. The faded items are shown for completeness and to give context.

APPENDIX B TO DRAFT APPROVED DOCUMENT P

Copies of BS and IEE Blank Forms

1. Introduction from BS 7671:2001 Appendix 6.
2. Example of short form of Electrical Installation Certificate for use when the signatory is responsible for design, construction, inspection and testing from IEE Guidance Note 3, 2002 edition.
3. Electrical Installation Certificate including notes and guidance for recipients from BS 7671:2001 Appendix 6.
4. Minor Electrical Installation Works Certificate including guidance for recipients from BS 7671:2001 Appendix 6.
5. Schedule of Inspections including notes from IEE Guidance Note 3, 2002 edition
6. Schedule of Test Results including notes from IEE Guidance Note 3, 2002 edition

1. INTRODUCTION (FROM BS 7671: 2001, APPENDIX 6)

- (i) The Electrical Installation Certificate required by Part 7 shall be made out and signed or otherwise authenticated by a competent person or persons in respect of the design, construction, inspection and testing of the work.
- (ii) The Minor Works Certificate required by Part 7 shall be made out and signed or otherwise authenticated by a competent person in respect of the inspection and testing of an installation.
- (iii) The Periodic Inspection Report required by Part 7 shall be made out and signed or otherwise authenticated by a competent person in respect of the inspection and testing of an installation.
- (iv) Competent persons will, as appropriate to their function under (i) (ii) and (iii) above, have a sound knowledge and experience relevant to the nature of the work undertaken and to the technical standards set down in this British Standard, be fully versed in the inspection and testing procedures contained in this Standard and employ adequate testing equipment.
- (v) Electrical Installation Certificates will indicate the responsibility for design, construction, inspection and testing, whether in relation to new work or further work on an existing installation.

Where design, construction and inspection and testing is the responsibility of one person a Certificate with a single signature declaration in the form shown below may replace the multiple signatures section of the model form.

FOR DESIGN, CONSTRUCTION, INSPECTION & TESTING.

I being the person responsible for the Design, Construction, Inspection & Testing of the electrical installation (as indicated by my signature below), particulars of which are described above, having exercised reasonable skill and care when carrying out the Design, Construction, Inspection & Testing, hereby CERTIFY that the said work for which I have been responsible is to the best of my knowledge and belief in accordance with BS 7671, amended to(date) except for the departures, if any, detailed as follows.

- (vi) A Minor Works Certificate will indicate the responsibility for design, construction, inspection and testing of the work described in Part 4 of the certificate.
- (vii) A Periodic Inspection Report will indicate the responsibility for the inspection and testing of an installation within the extent and limitations specified on the report.
- (viii) A schedule of inspections and a schedule of test results as required by Part 7 shall be issued with the associated Electrical Installation Certificate or Periodic Inspection Report.
- (ix) When making out and signing a form on behalf of a company or other business entity, individuals shall state for whom they are acting.
- (x) Additional forms may be required as clarification, if needed by non-technical persons, or in expansion, for larger or more complex installations.
- (xi) The IEE Guidance Note 3 provides further information on inspection and testing on completion and for periodic inspections.

2. SHORT FORM ELECTRICAL INSTALLATION CERTIFICATE (from IEE Guidance Note 3: 2002)
 (REQUIREMENTS FOR ELECTRICAL INSTALLATIONS – BS 7671 [IEE WIRING REGULATIONS])

DETAILS OF THE CLIENT			
INSTALLATION ADDRESS			
DESCRIPTION AND EXTENT OF THE INSTALLATION Tick boxes as appropriate Description of installation:		New installation <input type="checkbox"/>	
Extent of installation covered by this Certificate:		Addition to an existing installation <input type="checkbox"/>	
(Use continuation sheet if necessary) see continuation sheet No:		Alteration to an existing installation <input type="checkbox"/>	
FOR DESIGN, CONSTRUCTION, INSPECTION & TESTING I being the person responsible for the Design, Construction, Inspection & Testing of the electrical installation (as indicated by my signature below), particulars of which are described above, having exercised reasonable skill and care when carrying out the Design, Construction, Inspection & Testing, hereby CERTIFY that the said work for which I have been responsible is to the best of my knowledge and belief in accordance with BS 7671:, amended to (date) except for the departures, if any, detailed as follows: <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> Details of departures from BS 7671 (Regulations 120-01-03, 120-02): </div> <p>The extent of liability of the signatory is limited to the work described above as the subject of this Certificate. Name (IN BLOCK LETTERS): Position: Signature: Date: For and on behalf of: Address: Postcode Tel No:</p>			
NEXT INSPECTION I/We the designer(s), recommend that this installation is further inspected and tested after an interval of not more than years/months.			
SUPPLY CHARACTERISTICS AND EARTHING ARRANGEMENTS Tick boxes and enter details, as appropriate			
Earthing arrangements TN-C <input type="checkbox"/> TN-S <input type="checkbox"/> TN-C-S <input type="checkbox"/> TT <input type="checkbox"/> IT <input type="checkbox"/> Alternative source <input type="checkbox"/> of supply (to be detailed on attached schedules)	Number and Type of Live Conductors a.c. <input type="checkbox"/> d.c. <input type="checkbox"/> 1-phase, 2-wire <input type="checkbox"/> 2-pole <input type="checkbox"/> 2-phase, 3-wire <input type="checkbox"/> 3-pole <input type="checkbox"/> 3-phase, 3-wire <input type="checkbox"/> other <input type="checkbox"/> 3-phase, 4-wire <input type="checkbox"/>	Nature of Supply Parameters Nominal voltage, $U/U_0^{(1)}$V Nominal frequency, $f^{(1)}$Hz Prospective fault current, $I_{pf}^{(2)}$kA External loop impedance, $Z_e^{(2)}$ Ω (Note: (1) by enquiry, (2) by enquiry or by measurement)	Supply Protective Device Characteristics Type: Nominal current rating.....A

2. SHORT FORM ELECTRICAL INSTALLATION CERTIFICATE (continued)

PARTICULARS OF INSTALLATION REFERRED TO IN THE CERTIFICATE <small>Tick boxes and enter details, as appropriate</small>								
Means of Earthing Supplier's facility <input type="checkbox"/> Installation earth electrode <input type="checkbox"/>	Maximum Demand Maximum demand (load) Amps							
	Details of Installation Earth Electrode (where applicable) <table border="0"> <tr> <td>Type (e.g. rod(s), tape etc)</td> <td>Location</td> <td>Electrode resistance to earth</td> </tr> <tr> <td>.....</td> <td>.....</td> <td>..... Ω</td> </tr> </table>			Type (e.g. rod(s), tape etc)	Location	Electrode resistance to earth
Type (e.g. rod(s), tape etc)	Location	Electrode resistance to earth						
..... Ω						
Main Protective Conductors Earthing conductor: material csa connection verified <input type="checkbox"/> Main equipotential bonding conductors material csa connection verified <input type="checkbox"/> To incoming water and/or gas service <input type="checkbox"/> To other elements:								
Main Switch or Circuit-breaker BS, Type and No. of poles Current ratingA Voltage ratingV Location Fuse rating or setting.....A Rated residual operating current $I_{\Delta n}$ = mA, and operating time of ms (at $I_{\Delta n}$) <small>(applicable only where an RCD is suitable and is used as a main circuit-breaker)</small>								
COMMENTS ON EXISTING INSTALLATION (in the case of an alteration or additions see Section 743):								
SCHEDULES The attached Schedules are part of this document and this Certificate is valid only when they are attached to it. Inspection Schedules and Test Result Schedules are attached. <small>(Enter quantities of schedules attached).</small>								

GUIDANCE FOR RECIPIENTS

This safety Certificate has been issued to confirm that the electrical installation work to which it relates has been designed, constructed and inspected and tested in accordance with British Standard 7671 (The IEE Wiring Regulations).

You should have received an original Certificate and the contractor should have retained a duplicate Certificate. If you were the person ordering the work, but not the user of the installation, you should pass this Certificate, or a full copy of it including the schedules, immediately to the user.

The “original” Certificate should be retained in a safe place and be shown to any person inspecting or undertaking further work on the electrical installation in the future. If you later vacate the property, this Certificate will demonstrate to the new owner that the electrical installation complied with the requirements of British Standard 7671 at the time the Certificate was issued. The Construction (Design and Management) Regulations require that for a project covered by those Regulations, a copy of this Certificate, together with schedules is included in the project health and safety documentation.

For safety reasons, the electrical installation will need to be inspected at appropriate intervals by a competent person. The maximum time interval recommended before the next inspection is stated on Page 1 under “Next Inspection”.

This Certificate is intended to be issued only for a new electrical installation or for new work associated with an alteration or addition to an existing installation. It should not have been issued for the inspection of an existing electrical installation. A “Periodic Inspection Report” should be issued for such a periodic inspection.

3. ELECTRICAL INSTALLATION CERTIFICATE (continued)

PARTICULARS OF SIGNATORIES TO THE ELECTRICAL INSTALLATION CERTIFICATE									
Designer (No 1)									
Name		Company:							
Address		Postcode:	Tel No:						
Designer (No 2) (if applicable)									
Name		Company:							
Address		Postcode:	Tel No:						
Constructor									
Name		Company:							
Address		Postcode:	Tel No:						
Inspector									
Name		Company:							
Address		Postcode:	Tel No:						
SUPPLY CHARACTERISTICS AND EARTHING ARRANGEMENTS Tick boxes and enter details, as appropriate									
Earthing arrangements TN-C <input type="checkbox"/> TN-S <input type="checkbox"/> TN-C-S <input type="checkbox"/> TT <input type="checkbox"/> IT <input type="checkbox"/> Alternative source <input type="checkbox"/> of supply (to be detailed on attached schedules)	Number and Type of Live Conductors a.c. <input type="checkbox"/> d.c. <input type="checkbox"/> 1-phase, 2-wire <input type="checkbox"/> 2-pole <input type="checkbox"/> 2-phase, 3-wire <input type="checkbox"/> 3-pole <input type="checkbox"/> 3-phase, 3-wire <input type="checkbox"/> other <input type="checkbox"/> 3-phase, 4-wire <input type="checkbox"/>	Nature of Supply Parameters Nominal voltage, $U/U_o^{(1)}$V Nominal frequency, $f^{(1)}$Hz Prospective fault current, $I_{pf}^{(2)}$kA External loop impedance, $Z_e^{(2)}$ Ω <i>(Note: (1) by enquiry, (2) by enquiry or by measurement)</i>	Supply Protective Device Characteristics Type: Nominal current rating.....A						
PARTICULARS OF INSTALLATION REFERRED TO IN THE CERTIFICATE Tick boxes and enter details, as appropriate									
Means of Earthing Supplier's facility <input type="checkbox"/> Installation earth electrode <input type="checkbox"/>	Maximum Demand Maximum demand (load) Amps Details of Installation Earth Electrode (where applicable) <table style="width:100%; border: none;"> <tr> <td style="width: 33%;">Type</td> <td style="width: 33%;">Location</td> <td style="width: 33%;">Electrode resistance to earth</td> </tr> <tr> <td>(e.g. rod(s), tape etc)</td> <td></td> <td>..... Ω</td> </tr> </table>			Type	Location	Electrode resistance to earth	(e.g. rod(s), tape etc)	 Ω
Type	Location	Electrode resistance to earth							
(e.g. rod(s), tape etc)	 Ω							
Main Protective Conductors									
Earthing conductor: material		csa	connection verified <input type="checkbox"/>						
Main equipotential bonding conductors material		csa	connection verified <input type="checkbox"/>						
To incoming water and/or gas service <input type="checkbox"/> To other elements:									
Main Switch or Circuit-breaker									
BS, Type and No. of poles		Current ratingA	Voltage ratingV						
Location		Fuse rating or setting.....A							
Rated residual operating current $I_{\Delta n}$ = mA, and operating time of ms (at $I_{\Delta n}$) <small>(applicable only where an RCD is suitable and is used as a main circuit-breaker)</small>									
COMMENTS ON EXISTING INSTALLATION (in the case of an alteration or additions see Section 743):									
.....									
.....									
.....									
SCHEDULES									
The attached Schedules are part of this document and this Certificate is valid only when they are attached to it. Inspection Schedules and Test Result Schedules are attached. (Enter quantities of schedules attached).									

ELECTRICAL INSTALLATION CERTIFICATE**NOTES:**

1. The Electrical Installation Certificate is to be used only for the initial certification of a new installation or for an alteration or addition to an existing installation where new circuits have been introduced.

It is not to be used for a Periodic Inspection for which a Periodic Inspection Report form should be used. For an alteration or addition which does not extend to the introduction of new circuits, a Minor Electrical Installation Works Certificate may be used.

The original Certificate is to be given to the person ordering the work (Regulation 742-01-03). A duplicate should be retained by the contractor.

2. This Certificate is only valid if accompanied by the Schedule of Inspections and the Schedule(s) of Test Results.
3. The signatures appended are those of the persons authorised by the companies executing the work of design, construction and inspection and testing respectively. A signatory authorised to certify more than one category of work should sign in each of the appropriate places.
4. The time interval recommended before the first periodic inspection must be inserted (see IEE Guidance Note 3 for guidance).
5. The page numbers for each of the Schedules of Test Results should be indicated, together with the total number of sheets involved.
6. The maximum prospective fault current recorded should be the greater of either the short-circuit current or the earth fault current.
7. The proposed date for the next inspection should take into consideration the frequency and quality of maintenance that the installation can reasonably be expected to receive during its intended life, and the period should be agreed between the designer, installer and other relevant parties.

ELECTRICAL INSTALLATION CERTIFICATE**GUIDANCE FOR RECIPIENTS (TO BE APPENDED TO THE CERTIFICATE)**

This safety Certificate has been issued to confirm that the electrical installation work to which it relates has been designed, constructed and inspected and tested in accordance with British Standard 7671 (The IEE Wiring Regulations).

You should have received an original Certificate and the contractor should have retained a duplicate Certificate. If you were the person ordering the work, but not the user of the installation, you should pass this Certificate, or a full copy of it including the schedules, immediately to the user.

The “original” Certificate should be retained in a safe place and be shown to any person inspecting or undertaking further work on the electrical installation in the future. If you later vacate the property, this Certificate will demonstrate to the new owner that the electrical installation complied with the requirements of British Standard 7671 at the time the Certificate was issued. The Construction (Design and Management) Regulations require that for a project covered by those Regulations, a copy of this Certificate, together with schedules is included in the project health and safety documentation.

For safety reasons, the electrical installation will need to be inspected at appropriate intervals by a competent person. The maximum time interval recommended before the next inspection is stated on Page 1 under “Next Inspection”.

This Certificate is intended to be issued only for a new electrical installation or for new work associated with an alteration or addition to an existing installation. It should not have been issued for the inspection of an existing electrical installation. A “Periodic Inspection Report” should be issued for such a periodic inspection.

4. MINOR ELECTRICAL INSTALLATION WORKS CERTIFICATE (from BS 7671: 2001, Appendix 6)
 (REQUIREMENTS FOR ELECTRICAL INSTALLATIONS – BS 7671 [IEE WIRING REGULATIONS])
 To be used only for minor electrical work which does not include the provision of a new circuit

PART 1 : Description of minor works	
1. Description of the minor works 2. Location/Address 3. Date minor works completed 4. Details of departures, if any, from BS 7671	
PART 2 : Installation details	
1. System earthing arrangement TN-C-S <input type="checkbox"/> TN-S <input type="checkbox"/> TT <input type="checkbox"/> 2. Method of protection against indirect contact 3. Protective device for the modified circuit Type Rating A Comments on existing installation, including adequacy of earthing and bonding arrangements: (see Regulation 130-07)	
PART 3 : Essential Tests	
Earth continuity satisfactory <input type="checkbox"/> Insulation resistance: Phase/neutralMΩ Phase/earthMΩ Neutral/earthMΩ Earth fault loop impedanceΩ Polarity satisfactory <input type="checkbox"/> RCD operation (if applicable). Rated residual operating current $I_{\Delta n}$ mA and operating time ofms (at $I_{\Delta n}$)	
PART4 : Declaration	
I/We CERTIFY that the said works do not impair the safety of the existing installation, that the said works have been designed, constructed, inspected and tested in accordance with BS 7671 : (IEE Wiring Regulations), amended to and that the said works, to the best of my/our knowledge and belief, at the time of my/our inspection, complied with BS 7671 except as detailed in Part 1.	
Name: For and on behalf of:..... Address:	Signature:..... Position:..... Date:

MINOR ELECTRICAL INSTALLATION WORKS CERTIFICATE GUIDANCE FOR RECIPIENTS (TO BE APPENDED TO THE CERTIFICATE)

This Certificate has been issued to confirm that the electrical installation work to which it relates has been designed, constructed and inspected and tested in accordance with British Standard 7671 (The IEE Wiring Regulations).

You should have received an original Certificate and the contractor should have retained a duplicate. If you were the person ordering the work, but not the owner of the installation, you should pass this Certificate, or a copy of it, to the owner.

The Minor Works Certificate is only to be used for additions, alterations or replacements to an installation that do not extend to the provision of a new circuit. Examples include the addition of a socket-outlet or lighting point to an existing circuit, or the replacement or relocation of a light switch. A separate Certificate should have been received for each existing circuit on which minor works have been carried out. This Certificate is not valid if you requested the contractor to undertake more extensive installation work. An Electrical Installation Certificate would be required in such circumstances.

The “original” Certificate should be retained in a safe place and be shown to any person inspecting or undertaking further work on the electrical installation in the future. If you later vacate the property, this Certificate will demonstrate to the new owner that the minor electrical installation work carried out complied with the requirements of British Standard 7671 at the time the Certificate was issued.

5. SCHEDULE OF INSPECTIONS (from IEE Guidance Note 3, 2002 edition)

<p><u>Methods of protection against electric shock</u></p> <p>(a) Protection against both direct and indirect contact:</p> <p><input type="checkbox"/> (i) SELV (note 1)</p> <p><input type="checkbox"/> (ii) Limitation of discharge of energy</p> <p>(b) Protection against direct contact: (note 2)</p> <p><input type="checkbox"/> (i) Insulation of live parts</p> <p><input type="checkbox"/> (ii) Barriers or enclosures</p> <p><input type="checkbox"/> (iii) Obstacles (note 3)</p> <p><input type="checkbox"/> (iv) Placing out of reach (note 4)</p> <p><input type="checkbox"/> (v) PELV</p> <p><input type="checkbox"/> (vi) Presence of RCD for supplementary protection</p> <p>(c) Protection against indirect contact:</p> <p style="padding-left: 20px;">(i) EEBADS including:</p> <p><input type="checkbox"/> Presence of earthing conductor</p> <p><input type="checkbox"/> Presence of circuit protective conductors</p> <p><input type="checkbox"/> Presence of main equipotential bonding conductors</p> <p><input type="checkbox"/> Presence of supplementary equipotential bonding conductors</p> <p><input type="checkbox"/> Presence of earthing arrangements for combined protective and functional purposes</p> <p><input type="checkbox"/> Presence of adequate arrangements for alternative source(s), where applicable</p> <p><input type="checkbox"/> Presence of residual current device(s)</p> <p><input type="checkbox"/> (ii) Use of Class II equipment or equivalent insulation (note 5)</p> <p><input type="checkbox"/> (iii) Non-conducting location: (note 6) Absence of protective conductors</p> <p><input type="checkbox"/> (iv) Earth-free equipotential bonding: (note 8) Presence of earth-free equipotential bonding conductors</p> <p><input type="checkbox"/> (v) Electrical separation (note 8)</p> <p>Inspected by.....</p>	<p><u>Prevention of mutual detrimental influence</u></p> <p><input type="checkbox"/> (a) Proximity of non-electrical services and other influences</p> <p><input type="checkbox"/> (b) Segregation of band I and band II circuits or band II insulation used</p> <p><input type="checkbox"/> (c) Segregation of safety circuits</p> <p><u>Identification</u></p> <p><input type="checkbox"/> (a) Presence of diagrams, instructions, circuit charts and similar information</p> <p><input type="checkbox"/> (b) Presence of danger notices and other warning notices</p> <p><input type="checkbox"/> (c) Labelling of protective devices, switches and terminals</p> <p><input type="checkbox"/> (d) Identification of conductors</p> <p><u>Cables and conductors</u></p> <p><input type="checkbox"/> (a) Routing of cables in prescribed zones or within mechanical protection</p> <p><input type="checkbox"/> (b) Connection of conductors</p> <p><input type="checkbox"/> (c) Erection methods</p> <p><input type="checkbox"/> (d) Selection of conductors for current-carrying capacity and voltage drop</p> <p><input type="checkbox"/> (e) Presence of fire barriers, suitable seals and protection against thermal effects</p> <p><u>General</u></p> <p><input type="checkbox"/> (a) Presence and correct location of appropriate devices for isolation and switching</p> <p><input type="checkbox"/> (b) Adequacy of access to switchgear and other equipment</p> <p><input type="checkbox"/> (c) Particular protective measures for special installations and locations</p> <p><input type="checkbox"/> (d) Connection of single-pole devices for protection or switching in phase conductors only</p> <p><input type="checkbox"/> (e) Correct connection of accessories and equipment</p> <p><input type="checkbox"/> (f) Presence of undervoltage protective devices</p> <p><input type="checkbox"/> (g) Choice and setting of protective and monitoring devices for protection against indirect contact and/or overcurrent</p> <p><input type="checkbox"/> (h) Selection of equipment and protective measures appropriate to external influences</p> <p><input type="checkbox"/> (i) Selection of appropriate functional switching devices</p> <p>Date</p>
--	--

For notes see following page.

Notes:

T to indicate an inspection has been carried out and the result is satisfactory

C to indicate an inspection has been carried out and the result was unsatisfactory

N/A to indicate the inspection is not applicable

- | | |
|---|---|
| 1. SELV An extra-low voltage system which is electrically separated from Earth and from other systems. The particular requirements of the Regulations must be checked (see Regulations 411-02 and 471-02) | 5. Use of Class II equipment – infrequently adopted and only when the installation is to be supervised (see Regulations 413-03 and 471-09) |
| 2. Method of protection against direct contact – will include measurement of distances where appropriate | 6. Non-conducting locations – not applicable in domestic premises and requiring special precautions (see Regulations 413-04 and 471-10) |
| 3. Obstacles – only adopted in special circumstances (see Regulations 412-04 and 471-06) | 7. Earth-free local equipotential bonding – not applicable in domestic premises, only used in special circumstances (see Regulations 413-05 and 471-11) |
| 4. Placing out of reach – only adopted in special circumstances (see Regulations 412-05 and 471-07) | 8. Electrical separation (see Regulations 413-06 and 471-12) |

NOTES ON SCHEDULE OF TEST RESULTS

- * **Type of supply** is ascertained from the supply company or by inspection.
- * **Ze at origin.** When the maximum value declared by the electricity supplier is used, the effectiveness of the earth must be confirmed by a test. If measured the main bonding will need to be disconnected for the duration of the test.
- * **Short-circuit capacity** of the device is noted, see Table or 2.7.15 of GN3.
- * **Prospective fault current (PFC).** The value recorded is the greater of either the short-circuit current or the earth fault current. Preferably determined by enquiry of the supplier.

The following tests, where relevant, shall be carried out in the following sequence:

Continuity of protective conductors, including main and supplementary bonding

Every protective conductor, including main and supplementary bonding conductors, should be tested to verify that it is continuous and correctly connected.

- *6 **Continuity**
Where Test Method 1 is used, enter the measured resistance of the phase conductor plus the circuit protective conductor ($R_1 + R_2$).
See 10.3.1 of the On-Site Guide or 2.7.5 of GN3.
During the continuity testing (Test Method 1) the following polarity checks are to be carried out:
(a) every fuse and single-pole control and protective device is connected in the phase conductor only
(b) centre-contact bayonet and Edison screw lampholders have outer contact connected to the neutral conductor
(c) wiring is correctly connected to socket-outlets and similar accessories.
Compliance is to be indicated by a tick in polarity column 11.
- *7 Where Test Method 2 is used, the maximum value of R_2 is recorded in column 7.
Where the alternative method of Regulation 413-02-12 is used for shock protection, the resistance of the circuit protective conductor R_2 is measured and recorded in column 7.
See 10.3.1 of the On-Site Guide or 2.7.5 of GN3.
- *8 **Continuity of ring final circuit conductors**
A test shall be made to verify the continuity of each conductor including the protective conductor of every ring final circuit. See 10.3.2 of the On-Site Guide or 2.7.6 of GN3.
- *9, *10 **Insulation Resistance**
All voltage sensitive devices to be disconnected or test between live conductors (phase and neutral) connected together and earth.
The insulation resistance between live conductors is to be inserted in column 9.
The minimum insulation resistance values are given in Table 10.1 of the On-Site Guide or Table 2.2 of GN3.
See 10.3.3(iv) of the On-Site Guide or 2.7.7 of GN3.

All the preceding tests should be carried out before the installation is energised.
- *11 **Polarity**
A satisfactory polarity test may be indicated by a tick in column 11.
Only in a Schedule of Test Results associated with a Periodic Inspection Report is it acceptable to record incorrect polarity.
- * 12 **Earth fault loop impedance Z_s**
This may be determined either by direct measurement at the furthest point of a live circuit or by adding ($R_1 + R_2$) of column 6 to Z_e . Z_e is determined by measurement at the origin of the installation or preferably the value declared by the supply company used.
 $Z_s = Z_e + (R_1 + R_2)$. Z_s should be less than the values given in Appendix 2 of the On-Site Guide or App 2 of GN3.
- *13 **Functional testing**
The operation of RCDs (including RCBOs) shall be tested by simulating a fault condition, independent of any test facility in the device.
Record operating time in column 13. Effectiveness of the test button must be confirmed.
See Section 11 of the On-Site Guide or 2.7.16 of GN3.
- *14 All switchgear and controlgear assemblies, drives, control and interlocks, etc must be operated to ensure that they are properly mounted, adjusted, and installed.
Satisfactory operation is indicated by a tick in column 14.

Earth electrode resistance
The earth electrode resistance of TT installations must be measured, and normally an RCD is required.
For reliability in service the resistance of any earth electrode should be below 200 Ω . Record the value on Form 1, 2 or 6, as appropriate. See 10.3.5 of the On-Site Guide or 2.7.13 of GN3.

APPENDIX C TO DRAFT APPROVED DOCUMENT P

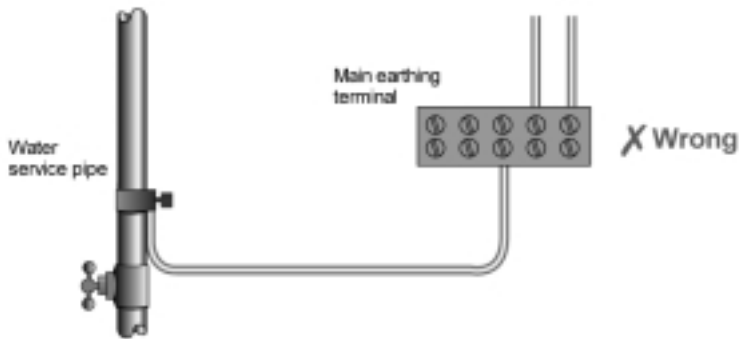
Older Practice that can be Encountered in Alteration Work

When carrying out work on existing, older installations, some features will be encountered which differ from those found in modern installations.

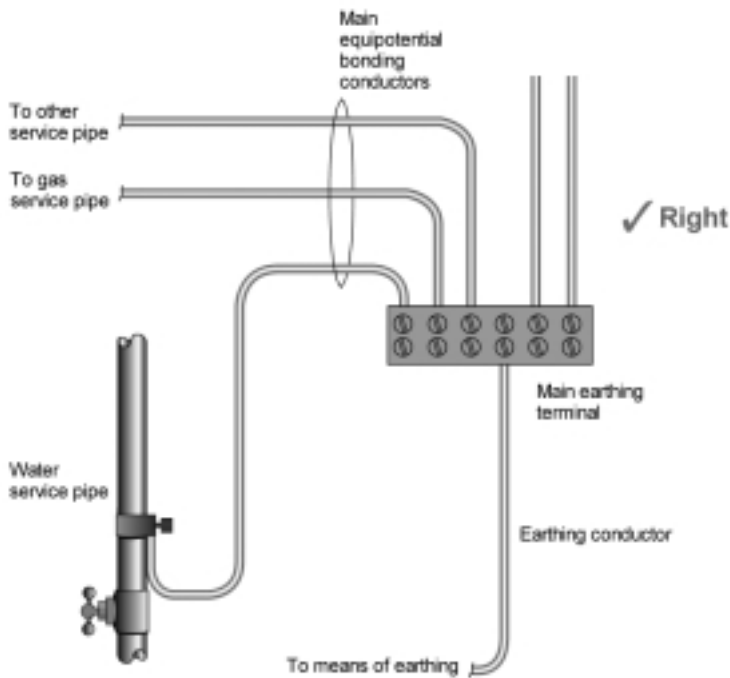
Electrical installations began to be commonplace in domestic dwellings as early as the 1920s, and over the years there have been considerable changes to the types of wiring materials and other equipment being installed, and in the ways that electrical installations are structured. From the electrical safety point of view, these changes have had two main causes: advances in technology, and amendments to the Wiring Regulations published by the Institution of Electrical Engineers (issued as British Standard BS 7671 since 1992).

This appendix presents examples of the types of features just mentioned, which may be unfamiliar to those who find them and a safety hazard. Also included, where applicable, are comments about changes in the Wiring Regulations relevant to the equipment concerned.

Use of a gas, water or other service pipe as an earth (No proper means of earthing for the electrical installation)



It is not permitted to use a gas, water or other metal service pipe as a means of earthing for an electrical installation. (This does not preclude equipotential bonding connections to these pipes.) It never has been permitted for gas pipes, and has not been permitted for other service pipes since 1966.

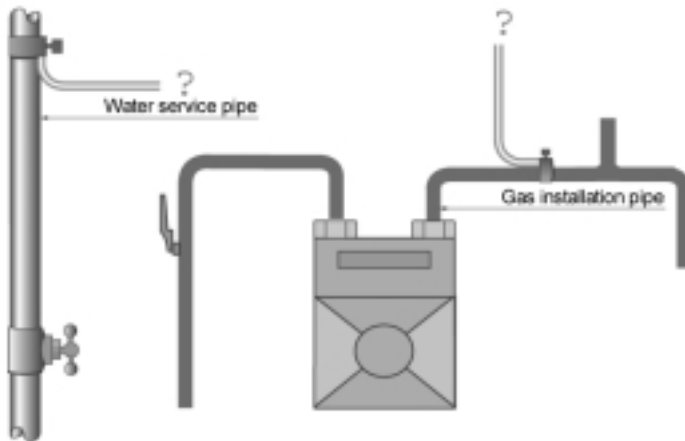


Every electrical installation requires a proper means of earthing. The most usual type is an electricity distributor's earthing terminal, provided for this purpose near the electricity meter.

Absence of, or inadequately sized, main equipotential bonding conductors

Prior to 1966 the Wiring Regulations contained no requirements for main equipotential bonding.

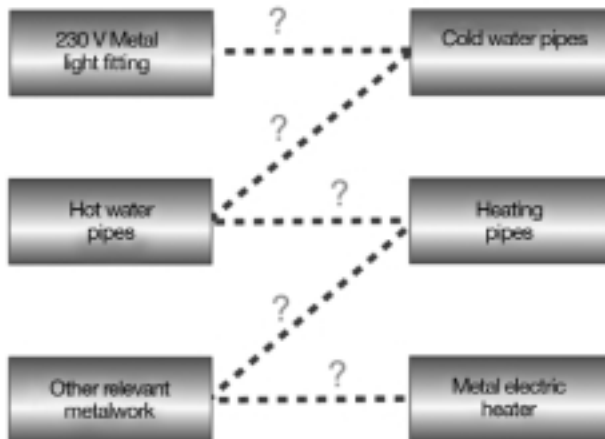
Since then, the installation of main equipotential bonding conductors has been required to water service pipes, gas installation pipes, oil supply pipes, and certain other “earthy” metalwork that may be present on the premises.



During the 1980s new regulations were introduced, requiring the minimum size of main equipotential bonding conductors to be larger than previously called for, particularly where there is a PME (protective multiple earthing) electricity supply. For most dwellings the minimum size now permitted to be installed is 10 mm².

Absence of, or inadequately sized, supplementary equipotential bonding

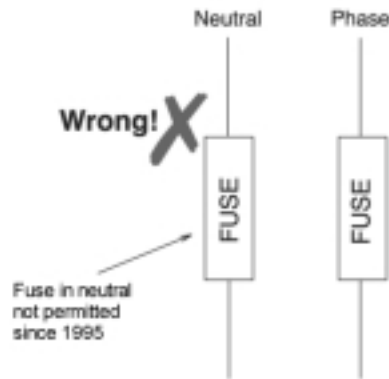
Prior to 1981 there were virtually no requirements in the Wiring Regulations for supplementary equipotential bonding conductors.



Since then, the installation of supplementary equipotential bonding conductors has been required in installations and locations of increased electric shock risk, such as bathrooms and shower rooms.

During the 1980s and 1990s the requirements for the sizing of supplementary equipotential bonding conductors were amended. For most dwellings the minimum size now permitted to be installed without mechanical protection is 4 mm².

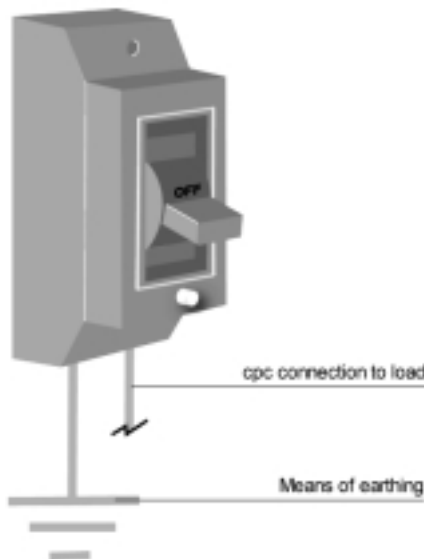
Double-pole fusing



In many installations put in up to the 1950s, the circuits have a fuse in the neutral conductor as well as in the phase conductor. This is a potentially dangerous practice for ac installations, and ceased to be permitted by the Wiring Regulations in about 1955.

In the event of a short-circuit, there is a 50% chance that the fuse in the neutral conductor will operate. When this happens, the phase conductor is not automatically disconnected from the faulty circuit as would now normally be expected, thereby leaving a danger for the unwary.

Voltage-operated earth-leakage circuit-breakers

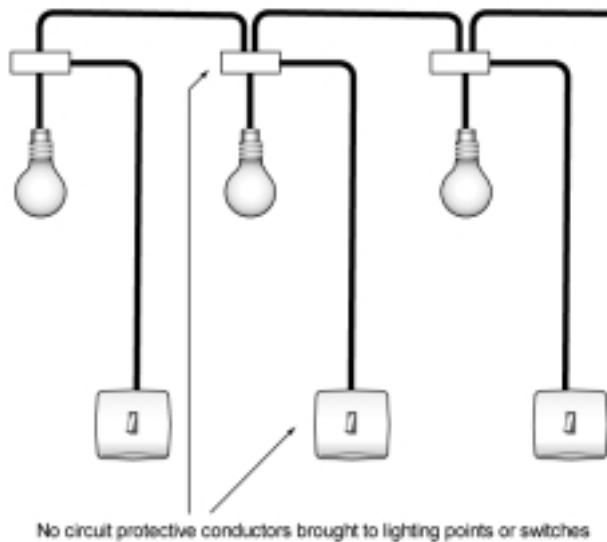


Two basic types of earth-leakage circuit-breaker used to be recognised by the Wiring Regulations: the current-operated type and the voltage-operated type. Today, only the current-operated type is recognised (now called residual current devices or RCDs).

The voltage-operated type ceased to be recognised in 1981. It can be distinguished by its two separate earthing terminals – one for an earthing connection to the load and one for an earthing connection to a means of earthing (often a driven rod). The major drawback with this type of device is that a parallel earth path can render it disabled.

No circuit protective conductors in lighting circuits

Lighting circuits installed before 1966, and not including any metalwork needing to be earthed, often do not include a circuit protective conductor. Consequently, any new or



replacement light fittings, switches or other components must be of a type not requiring earthing, eg non-metallic varieties, unless new circuit protective (earthing) conductors are provided. Otherwise, there will be a potential danger of indirect contact (electric shock).

All lighting circuits installed since 1966 (with the exception of certain extra-low voltage circuits) have been required to include a circuit protective conductor.

Non-13 A socket-outlets



The installation of socket-outlets other than the current standard 13 A square-pinned type was common prior to the early 1950s. These outlets accept non-fused plugs (some with an earth pin and some without), generally having round pins.

These older types of socket-outlet designed for non-fused plugs must not be connected to a ring circuit. Such an arrangement can be dangerous.



In addition, socket-outlets that will accept unearthed (2-pin) plugs must not be used to supply equipment needing to be earthed. It is strongly recommended that such outlets be taken out of service.

**No RCD protection for socket-outlets likely to supply portable equipment
Outdoors** (or an insufficient number of such socket-outlets so protected)

A person receiving an electric shock when using portable electrical equipment outdoors can be at great risk of death or serious injury. The risk is significantly reduced if the socket-outlet supplying the equipment is provided with sensitive RCD protection¹¹ (fitted either at the socket-outlet itself or at the consumer unit).

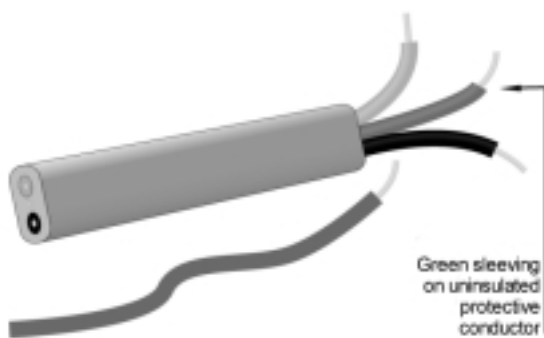


However, prior to 1981 the Wiring Regulations did not require such protection.

Nowadays, sensitive RCD protection¹¹ is required for all socket-outlets which are installed having a rating of 32 A or less, and which may reasonably be expected to supply portable equipment for use outdoors. The initial requirement, in 1981, was for this protection to be provided to at least one such socket-outlet. However, this was found to be inadequate.

Green coloured protective conductors or sleeving instead of green-yellow

The Wiring Regulations used to accept the single colour green for the identification of protective conductors.



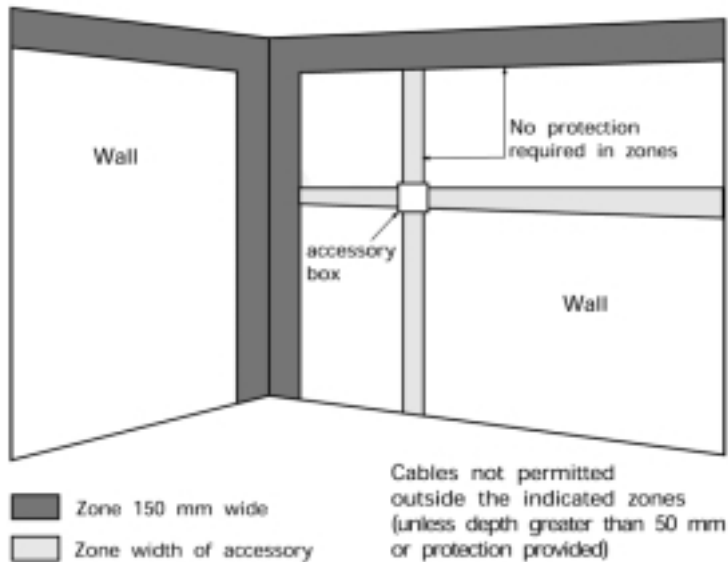
However, since 1977 a green-yellow coding has been required for all protective conductors installed.

The older green sleeving or tape should be replaced with the new green-yellow striped variety whenever connections are re-made.

¹¹ The RCD should have a rated residual operating current of not more than 30mA.

Concealed cables outside of permitted zones in walls

Until the latter part of the 1980s the Wiring Regulations did not contain any specific requirements for the positioning of cables concealed in walls and partitions.



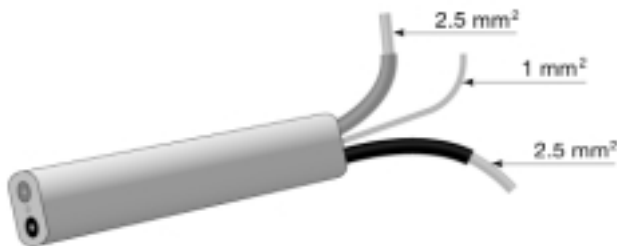
Today's requirements are given in Regulation 522-06-06 in BS 7671, and are illustrated here.

To avoid striking a cable, extreme care should always be taken in any activity that involves penetrating a wall or partition, even when it is known that any concealed cables were installed in recent years. Where the cables were installed prior to 1980 they are particularly likely to be found outside of the zones illustrated opposite. A cable and stud detector should always be used before attempting to drill into walls, floors or ceilings.

2.5 mm² twin-and-earth cables incorporating circuit protective conductor of only 1.0 mm²

For some years, 2.5 mm² twin & earth pvc/pvc cables to BS 6004 were manufactured with a circuit protective conductor (cpc) of only 1 mm², rather than 1.5 mm² as is incorporated today.

The size of the cpc was increased to 1.5 mm² in BS 6004 because in certain circumstances the 1 mm² cpc may not always be properly protected against thermal effects in the event of an earth fault. This is where the cable is used in a ring final circuit protected by a 30 A semi-enclosed (rewirable) fuse. If this is the case, a competent electrician should be consulted about upgrading the cables and/or the consumer unit.



Accessories on wooden mounting blocks

It was commonplace up to the mid 1960s for accessories such as socket-outlets, lighting switches and ceiling roses to be fixed to wooden mounting blocks.



The design of the accessories is often such that the wooden block is used to form part of the enclosure for the unsheathed cores and terminations of cables connecting to the accessory. However, depending on the particular characteristics of the material from which the block is made, it may not satisfy the ignitability requirements of the current Wiring Regulations (BS 7671) for such use.

Cables of imperial (non-metric) sizes

Up until the beginning of the 1970s, cables could still be purchased having imperial, rather than metric, sized conductors. Many such cables are still to be found in older installations.

Their conductors may be single-stranded (as in 1/.044) or may have three, seven or more strands (as in 3/.029, 7/.029 and 19/.044).



To the inexperienced eye these cables may be difficult to recognise, other than perhaps by comparison of their conductors with those of metric cables. The important thing to appreciate, however, is that their current carrying capacity and voltage drop characteristics are likely to be different from those which may at first be expected. It would therefore be prudent to engage a competent electrician to establish whether the performance limits are being exceeded, or would be if a new appliance with a higher rating (eg washing machine, dishwasher, towel rail, appliances rated at more than 2 kW) were to be connected.

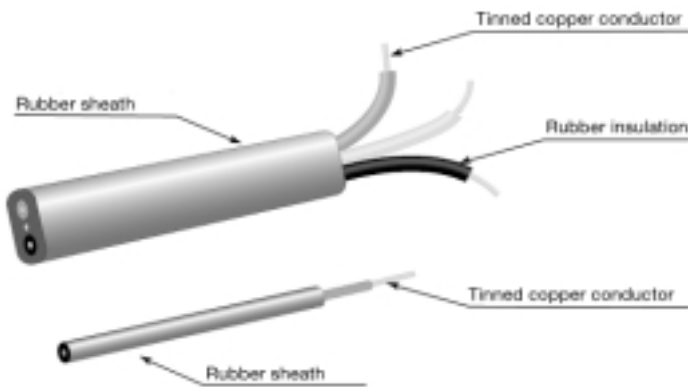
Finally, it should be noted that copper conductors of imperial cables may be of the tinned type, giving them an unfamiliar colour.

Tough rubber sheathed (TRS), vulcanised rubber insulation (VRI) cables

Prior to the use of pvc insulated cables becoming common in the 1960s, most cables installed in domestic dwellings were of the rubber insulated, tough-rubber sheathed (TRS) type. These are easily recognizable by their black exterior.

The extent to which the insulation and sheath deteriorate in service depends very much on whether the cable has been subjected to overloading and/or excessive temperature, or

the rubber has been exposed to direct sunlight. Deterioration results in a loss of insulating properties, with the rubber becoming dry and inflexible – perhaps with a tendency to crumble.

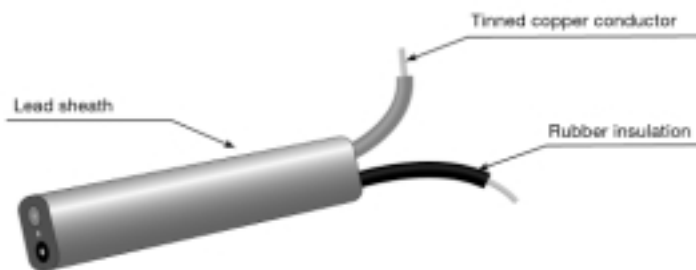


Such wiring installations should be tested by a competent person at the earliest opportunity, but otherwise left undisturbed until replacement, as they are beyond their normally expected safe working life.

Lead-sheathed cables

Lead sheathed cables may be found in some installations dating from before about 1948. These have rubber insulated, tinned copper conductors and an outer sheath of lead.

For reasons of protection against indirect contact (electric shock) it is essential that the lead sheath of every such cable is, and will remain, properly earthed.



The conductor insulation, being made of rubber, is prone to deterioration as described above for TRS cables.

Again, such wiring installations should be tested by a competent person at the earliest opportunity as they are beyond their normally expected safe working life.

REFERENCES

BS 7671: 2001 Requirements for Electrical Installations (IEE Wiring Regulations 16th Edition). The Institution of Electrical Engineers. ISBN 0-85296-988-0, 2001

IEE On-Site Guide (BS 7671, 16th Edition Wiring Regulations). The Institution of Electrical Engineers. ISBN 0-85296-987-2, 2001

IEE Guidance Note 1: Selection and erection of equipment. 4th Edition. The Institution of Electrical Engineers. ISBN 0-85296-989-9, 2001

IEE Guidance Note 2: Isolation and switching: 4th Edition. The Institution of Electrical Engineers. ISBN 0-85296-990-2, 2001

IEE Guidance Note 3: Inspection and testing. 4th Edition. The Institution of Electrical Engineers. ISBN 0-85296-991-0, 2001

IEE Guidance Note 4: Protection against fire. 4th Edition. The Institution of Electrical Engineers. ISBN 0-85296-992-9, 2001

IEE Guidance Note 5: Protection against electric shock. 4th Edition. The Institution of Electrical Engineers. ISBN 0-85296-993-7, 2001

IEE Guidance Note 6: Protection against overcurrent. 4th Edition. The Institution of Electrical Engineers. ISBN 0-85296-994-5, 2001

IEE Guidance Note 7: Special locations. 2nd Edition (incorporating the 1st and 2nd amendments). The Institution of Electrical Engineers. ISBN 0-85296-995-3, 1998

The Which? Book of Wiring and Lighting. Revised Edition 2000, The Consumers' Association. ISBN 0-85202-817-2

The Reader's Digest Complete DIY Manual. Reader's Digest. ISBN 0-276-42354-2, revised 1998

Collins Complete DIY Manual. HarperCollins. ISBN 0-00-414101-6, 2001

Collins Wiring and Lighting. HarperCollins. ISBN 0-00-414067-2, 1999

PART 3

The Consultation Criteria

1. Timing of consultation should be built into the planning process for a policy (including legislation) or service from the start, so that it has the best prospect of improving the proposals concerned, and so that sufficient time is left for it at each stage.
2. It should be clear who is being consulted, about what questions, in what time-scale and for what purpose.
3. A consultation document should be as simple and concise as possible. It should include a summary, in two pages at most, of the main questions it seeks views on. It should make it as easy as possible for readers to respond, make contact or complain.
4. Documents should be made widely available, with the fullest use of electronic means (though not to the exclusion of others), and effectively drawn to the attention of all interested groups and individuals.
5. Sufficient time should be allowed for considered responses from all groups with an interest. Twelve weeks should be the standard minimum period for a consultation.
6. Responses should be carefully and open-mindedly analysed, and the results made widely available, with an account of the views expressed, and reasons for decisions finally taken.
7. Departments should monitor and evaluate consultations, designating a consultation co-ordinator who will ensure the lessons are disseminated.

PART 4

Response form for the consultation on the proposed new
Building Regulations requirements and approved guidance for electrical safety

Respondent Details	Please return by 13 SEPTEMBER 2002 to:
Name: Organisation: Address: Town/City: County/Postcode: Telephone Fax: E-mail:	Andrew M Brown Building Regulations Division DTLR Zone 3/D2 Eland House Bressenden Place London SW1E 5DU 020 7944 5756 020 7944 5739 Andrew.Brown@dtlr.gsi.gov.uk

Organisation type (tick or **X** one box only)

Academic/Research <input type="checkbox"/>	Lobby Group <input type="checkbox"/>
Architect/Architectural Technologist <input type="checkbox"/>	Local Authority – environmental health <input type="checkbox"/>
Building Control Body <input type="checkbox"/>	Local Authority – other <input type="checkbox"/>
Charity <input type="checkbox"/>	Manufacturer <input type="checkbox"/>
Consultant <input type="checkbox"/>	Media <input type="checkbox"/>
Developer – commercial <input type="checkbox"/>	Professional Body <input type="checkbox"/>
Developer – dwellings <input type="checkbox"/>	Property Funder <input type="checkbox"/>
Engineer (civil/ structural/ mechanical) <input type="checkbox"/>	Property Management <input type="checkbox"/>
Government Department/ Agency <input type="checkbox"/>	Test Body/Association <input type="checkbox"/>
Housing Association <input type="checkbox"/>	Trade Association <input type="checkbox"/>
Individual – professional <input type="checkbox"/>	Warranty Provider <input type="checkbox"/>
Individual – member of the public <input type="checkbox"/>	Other <input type="checkbox"/>

Is your response confidential? Yes <input type="checkbox"/> No <input type="checkbox"/>
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Questions on Legislative Proposals

1. The proposed Requirement

- | |
|--|
| <p>1.1 Is the proposed Requirement sufficiently clear on the hazards to be addressed and the means by which the risk of exposure to them can be controlled?</p> |
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2. The proposed Limits on Application of the Requirement

- | |
|--|
| <p>2.1 The aim is to limit application to fixed electrical installations in dwellings. Are these proposed Limits on Application of the Requirement satisfactory?</p> |
|--|

<p>3. Proposed approach</p>
<p>3.1 Making electrical installations a controlled service would mean that all prospective electrical installation work would need to be notified to building control bodies unless it is carried out by prescribed persons or it comprises certain types of minor work (see paragraph 6 below). Do you consider that this approach is likely to prove effective?</p>
<p>3.2 The Department together with BRAC did consider another option which would reduce the administrative burden by limiting application of the Requirement to electrical installation work in connection with building work as currently defined by the Regulations. This option was set aside because it was felt that it would miss a large proportion of the types of electrical installation work in dwellings. Do you consider that this or another approach would be more effective than the one in 3.1?</p> <p>If you have other approaches to suggest, please include them in 'other comments' at box 12.</p>
<p>3.3 The Department considered with HSE and DTI consumer safety Divisions the possibility of defining the prescribed persons mentioned in question 1 by new legislation along the lines of the Gas Safety (Installation and Use) Regulations. These regulations control who may undertake gas installation work by identifying Approved Classes of Persons (the CORGI scheme is the only approved class for gas installation work at present). However after comparing the gas and electrical hazards and the risks of exposure, and taking account of the Electricity at Work Regulations that already cover the workplace, we have taken the view that a less rigorous approach of allowing approved competent persons to self-certify compliance with the Building Regulations is more appropriate for electrical installation work in dwellings. The hazards and risks are covered in the Regulatory Impact Assessment. What are your views on this matter?</p>

4. Application to extension of existing electrical installations
4.1 The proposals include changes to Regulation 4 which mean that, for electrical installation work, existing installations must be altered to the extent necessary to supply extensions safely. Are these new provisions sufficiently clear?

Questions on Section 0

5. Proposed Performance Requirement
5.1 This indicates that the legal requirement would be met by compliance with the fundamental principles given in CENELEC Harmonisation Document HD 384.1, as promulgated in the UK by Chapter 13 of BS 7671: 2001. Is the paragraph a sufficiently clear distillation of the safety requirements and the fundamental principles in Chapter 13?
5.2 The approach in BS 7671 is not to address safety directly but to ensure that installations are built in accordance with technical equipment, installation standards, and methods of inspection and testing that, as a whole, are considered by experts to achieve a satisfactory degree of safety. Would you prefer the performance requirements to be identified more specifically and/ or could they be identified more effectively in another way?

<p>6. Work that need not be notified</p>
<p>6.1 Work self-certified by competent persons. The proposals allow that approved competent persons could self-certify compliance of their electrical installation work with the Building Regulations. Would it be sensible to allow non-approved persons to proceed with electrical installation work without giving prior notice if it is to be certified at completion by someone who is approved?</p>
<p>6.2 Minor work. The proposal to exclude minor work from the requirement to notify stems from considerations of enforceability, and the improvements in safety that could be achieved compared with the administrative effort needed. Are you content in principle that minor work need not be notified? Are you also content that the definition of minor work is sufficiently explicit?</p>
<p>6.3 Certification of minor work. Paragraph 5.2 in the draft AD defines minor work for the purposes of the Building Regulations and gives guidance on the use of the Minor Electrical Installation Works Certificate system. How might the testing and certification requirements for minor work be improved?</p>
<p>6.4 List of minor work. Table 1 is intended to be an exhaustive list of the types of minor work that need not be notified. Are you content with this approach and are there other types of work that you would wish to see listed?</p>

Questions on Section 1

7. Design, installation, inspection and testing

7.1 Technical guidance. Section 1 of the draft Approved Document gives the technical goals established in BS 7671 and makes reference to other publications that give detailed technical guidance on ways in which the goals can be achieved. The diagrams in Appendix A are intended only to indicate the sorts of electrical services encountered in dwellings, some of the ways they can be connected, and the complexity of the wiring and protection systems necessary to supply them. **Are you content that this approach, rather than detailed technical solutions, is satisfactory?**

7.2 Should we make electrical installations in dwellings more resilient against flooding, in what circumstances and how best might this be done (see Section 1 paragraph 8)?

7.3 Will the forthcoming Electricity Safety, Quality and Continuity Regulations 2002 have a bearing on the proposed limits on application in this consultation (see Section 1 paragraph 9)?

7.4 Technical references. The references in the draft Approved Document comprise BS 7671: 2001, the IEE On-site Guide, and a set of IEE Guidance Notes. Bearing in mind that much electrical work is carried out in DIY projects (see the Regulatory Impact Assessment), it has been considered prudent to include DIY manuals in the references. Appendix B contains blank copies of the BS 7671 and IEE certificates that builders and householders might otherwise find difficult to get. **Are you content that the references given, the acceptance of DIY manuals, and the inclusion of blank forms is satisfactory?**

7. Design, installation, inspection and testing (continued)

7.5 Accessibility. The draft Approved Document contains guidance on the accessibility of socket-outlets and protection devices (fuses, circuit breakers and residual current devices). **Is this guidance satisfactory?**

Questions on Section 2

8. Material alterations

- 8.1 **Technical goals.** Paragraph 19 in the draft Approved Document gives guidance on how to comply with the proposed new version of Regulation 4 (see box 4 above). **Are you content that the guidance is sufficient?**

Questions on Appendix A

9. Appendix A: Diagrams and notes

- 9.1 The purpose of these is to give readers who are not qualified in electrical engineering information about the scale and complexity of the electrical installations commonly to be found in dwellings, whether newly built or upgraded to modern standards. They are not intended as substitutes for the detailed technical guidance given in the references listed in paragraph 10 of the draft Approved Document. **Are the diagrams and notes clear and comprehensive enough, and how might they be improved?**

Questions on Appendix C

10. Appendix C: Guidance on older installations

- 10.1 Appendix C offers guidance on the types of older installation that might be encountered in alteration work and what improvements may be needed. **Is there any other information that you believe should be included in Appendix C?**

Questions on the Draft Regulatory Impact Assessment

11. Draft Regulatory Impact Assessment

11.1 Do you have any comments on the benefits and costs identified in the RIA?

11.2 The Department will be carrying out a survey of the impacts these proposals would have on small businesses during the consultation period, as indicated in paragraph 49 of the draft RIA. If your company would be willing to participate in this survey please let Andrew Brown know within the first two weeks of the consultation period. His contact details are in the letter at the front of the consultation document. The aim is to select about five firms for survey, so there can be no guarantee that expressions of interest will be taken up.

Other questions

12. Other comments

12.1 Do you have any other comments?