



Building regulations in Europe

Part I

A comparison of the systems of building
control in eight European countries

F.M. Meijer
H.J. Visscher
L. Sheridan

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1 Introduction

1.1 Background and aim of the research project

The protection of safety and health of their citizens is a major reason for governments to draw up laws, rules and regulations for the built environment. In the course of time other points of departure, such as utility, energy economy, sustainability and economic motives have come to play a part. For these subjects technical requirements are formulated and the regulations procedures have been laid down in laws for checking building plans against the requirements and issuing the building permits. The procedures usually continue through the construction period until the building is completed, inspections in the building phase ensuring the building for which the building permit has been issued is also really being built according to the plan.

This report is the result of an international research project into the systems of building regulations, implementation and control and the systems of technical requirements in the following eight European countries: the Netherlands, England, France, Germany, Sweden, Norway, Belgium and Denmark. The research project was focused on the technical requirements for dwellings and systems that ensure that these requirements are met.

The project was initiated and financed by the Dutch ministry of Housing, Physical Planning and Environment. The first motive to commission the project was to generate ideas and arguments that could contribute to the discussion within the Discussion platform Building Regulations (*OverlegPlatform Bouwregelgeving*) concerning the future development of the Dutch system of building regulations. This discussion platform consists of representatives of organisations in the building sector (including local authority building control) and has been established by the secretary of state of the ministry of Housing, Physical Planning and Environment. The main function of the platform is to advise the secretary of state of Housing about changes in the building regulations to ensure that they are broadly accepted in the building sector.

1.2 Research questions

The general aim of the project was further specified by the research group, in consultation with the Ministry of Housing Physical Planning and Environment and the Discussion platform Building Regulations to the following research questions:

- *How do the Dutch building regulations relate to the regulatory systems of other European countries?*
-

The following assessment criteria are used to compare the regulatory systems:

- the scope of government responsibility (quality aspects, control procedures, control tasks);
- the effectiveness of the regulatory systems (to what level are the goals of the regulatory system realised);
- the efficiency of the regulatory systems (which is the administrative and financial burden for citizens, companies and governments).
- *Are the systems of building control in the European countries converging or diverging?*
- *What are the interesting elements of the regulatory systems of the different countries that contribute to effective and efficient building control and could be the ingredients for a uniform system of building control in Europe in the future?*

These questions gave direction to the whole project and are explicitly worked out in the final chapters of this report, where the conclusions are formulated.

1.3 Subjects

1.3.1 Two parts

The content of the comparative study was further determined by a selection of subjects of the building regulations. A first distinction has been made between the comparison of the regulatory systems on one hand, and the comparison of the content and level of technical requirements for some selected subjects. We have split these two major subjects into two books:

- Building regulations in Europe. Part I, A comparison of the systems of building control in eight European countries (this book – HUPS 23).
- Building regulations in Europe. Part II, A comparison of technical requirements in eight European countries (HUPS 24).

1.3.2 Subjects in part I: Systems of building control

The focus in the project lies on the technical requirements for houses and the systems for implementation of the requirements. A central instrument to assure implementation is the building permit procedure, which in all the countries is carried out by local authorities. The permit procedures are the starting point for the analysis of the systems of building control. For which categories of buildings does a permit have to be obtained and what kind of checks does who carry out? For most building projects some form of planning control also has to be carried out. The report sometimes refers to planning control, to give it a place in the procedures for building, but this is not worked out in detail.

The systems of building control in the eight European countries were analysed and described according to the following structure:

- Regulatory framework
- Permit procedures
 - Categories of buildings
 - Description of the procedures
 - Planning issues (zoning, aesthetics, etc.)
 - Sanctions for non-compliance
- Building control
 - Roles and responsibilities
 - Municipal departments
 - Private building control organisations
 - Fees
- Technical requirements
 - Regulatory framework
 - Formulation
 - Subjects
 - References, guidance and EC Directives
 - Certification

The systems of building control in the eight countries are described according to the above structure.

1.3.3 Subjects in part II: Technical requirements

The subjects of the technical requirements to be compared were selected because of policy discussions in the Netherlands about the necessity and the level of the requirements. The approach in that part of the study is further explained in Part II. The selected subjects are the following:

- Stairways and ramps
 - Bridging changes of levels
 - Staircase
 - Ramp
- Fire resistance and escape
 - Strength of structure in case of fire
 - Limitation of fire development
 - Limitation of spread of fire
 - Further limitation of spread of fire
 - Limitation of development of smoke
 - Limitation of spread of smoke
 - Escape inside smoke compartment
 - Escape routes
 - Design of escape routes

- Prevention of burglary
 - Entrance of a building (lock)
 - Prevention of burglary
- Sound insulation between rooms and between dwellings in residential buildings
 - Protection against noise from installations
 - Sound insulation between spaces within one building unit
 - Sound insulation between spaces of different units in one building
- Limitation of the use of noxious materials and penetration of dangerous substances from the soil
 - Limitation of the use of noxious materials
 - Limitation of the penetration of noxious substances or radiation from the soil
- Daylight
- Accessibility
 - Accessibility sector
 - Free passage
 - Accessibility
- Dimensions of rooms
 - Staying area
 - Staying room.

1.4 Research method

A lot of background information and documentation had already been collected in previous research projects. In the first place the material we gathered was restructured and updated. Specific topics were further investigated. The various country monographs were sent to our contacts to update the data. We would like to thank the contact persons in the eight countries for providing us with the necessary information.

In 1999 the Department of the Environment, Transport and the Regions of the United Kingdom conducted research in to both statutory regulations and financial incentives for housing quality in eight European countries are described. This study was published in 2001 in two parts in the OTB series Housing and Urban Policy Studies (nos. 15 and 16): *The control and promotion of housing quality in Europe (part I: Country monographs and part II: Comparative analyses)*. The comparative DETR study of the control and promotion of quality in housing in Europe has served as a reference for the comparison of the subjects and levels of technical requirements of this project.

A considerable part of the research activities in this part of the research was

contracted out to the University of Liverpool. Linda Sheridan (Senior Tutor at the School of Architecture and Building Engineering) has been involved in the writing of the DETR-report that was the starting point of this part of the research. This applies especially to part II of the report (comparison of the technical requirements). The OTB Research Institute for Housing, Urban and Mobility Studies has taken the lead in part I of the research report. The research project has been carried out between mid 2000 and spring 2002.

1.5 Structure of this book

The chapters 2 through 9 describe the systems of building control of Belgium, Denmark, England and Wales, France, Germany, the Netherlands, Norway and Sweden. In these chapters the topics listed in section 1.3.2 are described. In chapter 10 the comparison of the main subjects are made. The conclusions are drawn in chapter 11 by answering the research questions.

2 Belgium

2.1 Introduction

Belgium consists of three independent administrative regions: Brussels, Flanders and Wallonia. There is currently no elaborate system of building regulations for either the country as a whole or the various provinces. This chapter is, as far as regional legal competence is concerned, mainly based on the experiences and policies in the Flemish region.

The Belgian system of building regulations and control differs widely from those in other European countries. The legal basis of the regulating system being quite similar to that in France, the basis of both systems being the *Code Civil* which stems from the Napoleonic era and establishes the liability of the building industry and architects. An important element of the system is the responsibility of the private parties in the building sector to comply with quality standards and the execution of technical control. Government parties play only a limited role when it comes to building control.

There are however some significant differences between Belgium and France (see also chapter 5). In France there have been some drastic changes in the liability system, for example building assurance and elaborate technical control by private bureaus is now compulsory. Furthermore the French have a detailed system of technical requirements at a national level. In Belgium there are only a few national Acts and regulations and these are particularly related to fire safety. Local municipalities are also able to issue regulations and some of the larger municipalities such as Brussels and Antwerp, have done so. These local regulations relate more specifically to planning and environmental matters.

National draft building regulations were drawn up some twenty years ago but, as a federal state is now being established, each region will eventually issue its own regulations. Proposals relating to the implementation of the Construction Products Directive (CPD) regarding building control are being drawn up and will be concerned only with the CE-marking of products. Extension of the so-called basic standards for fire to all of the six essential requirements has been included in the law transposing the CPD and is now under examination.

In May 2000 a new Decree came into effect concerning the organisation of Environmental/Spatial planning in Flanders. It also influences the organisation of the building permit procedure as a new category of exempt buildings was introduced, the role of the local municipalities became more important and the term 'building permit' was replaced by the term 'urbanistic permit' (*'stedenbouwkundige vergunning'*). The name urbanistic was chosen because it could also concern permits for deforestation or changing the relief of the soil. The category of exempt construction works was enlarged and for some works the municipalities can decide whether to grant a permit or not, where previously it was necessary to get advice from an authorised urban civil servant.

With these adaptations the permit procedures should be speeded up and in the near future the municipalities should become the authorities that grant most permits.

Local municipalities get a transitional period of five years to implement the new rules. Before a municipality can grant the permits several conditions have to be met. For instance a permit register and a municipal master plan has to be set up which for example indicates where building may or may not take place. The old and new legislation will coexist until a municipality has adapted to the new rules. The Flemish government has started an elaborate information campaign.

This chapter is based on the contents of this new Environmental Planning Decree.

2.2 Regulatory framework

There are many laws that relate to building construction in Belgium but there are no national building regulations as such.

Building work is generally controlled through the Napoleonic Civil Code which laid down 150 years ago the responsibilities of those engaged in building and construction work. It states that the architect and the contractor are both liable for a period of ten years for essential construction aspects.

Article 1792 states: "If a building built for a lump sum price fails wholly or in part through a de-fect in construction, even through a defect in the ground, the architect and contractor shall be liable for ten years."

Article 2270 states: "After ten years, the architect and contractor are discharged from providing a warranty for major structures which they built or supervised."

The purpose of the laws generally is to ensure health, solidity and aesthetic of structures, installations, their environment and their safety, and in particular, protection against fire and flood. A fundamental transformation of the Unitarian country to a federal state has taken place in recent years and the government authorities which issued guidance on building construction have been split up into federal authorities (general basic rules) and regional authorities (specific rules). Local authorities can issue regulations and some of the larger authorities (cities), notably Brussels, have done so. These relate more specifically to planning and environmental matters. At a technical level there are no comprehensive building regulations as such in existence on the technical level.

Regulations concerning the technical requirements have been issued by various governmental bodies especially on a federal level and by departments, mainly concerning safety and health.

For example, the Ministry of Employment and Labour has issued general regulations for the protection of workers and these may affect the design and construction of buildings. Other Ministries have issued regulations for such matters as water supply, drainage, electrical installations, basic standards for fire and explosion matters and there are standard specifications for other building construction products. These basic standards have nothing to do with the standards in the common ISO/CEN sense but are royal decrees fixing general legally binding levels to be met by anyone who builds or regulates buildings.

The Scientific and Technical Centre for Construction (*Centre Scientifique et Technique de la Construction: CSTC*) conducts research into products and components used in building and is an organisation established by law and financed by building contractors and public funds. Many research reports and technical recommendations have been issued.

Projects have to be prepared by registered architects and a permit to construct is required. The permit is issued by the authorities but they do not carry out checks on stability or compliance with construction details and do not inspect the works in progress.

It is said that the supervision of building work is a system of permanent self-inspection. Architects are responsible for the design and the contractor is responsible for building in accordance with the law. Some works, particularly larger projects, are supervised by assurance-control organisations. These are private companies, such as the Technical control bureau for the Safety of Constructions (*Bureau de controle technique pour la Sécurité de la Construction; bureau SECO*), which employ suitably qualified staff to carry out inspections on behalf of the insurers, contractors and builders. Mandatory rules have been laid down in some regions – for example noise protection in Flanders and Brussels and for energy conservation in Wallonia, Flanders and Brussels. There are also general rules relating to access and facilities for disabled people.

2.3 Permit procedures

2.3.1 Categories of buildings

To ensure planned construction works matched the local demands of proper construction the permit system was reorganised in Belgium in 1962. Since then, without a foregoing written permit from the local authorities (mayor and aldermen) it is forbidden in Belgium to put ground in to use, or to build, rebuild, refurbish, demolish, etc. constructions. The building permit was (and still is) transferable and is not bound to a person. As from May 2000 the name building permit has been replaced by the term ‘urbanistic permit’ in the Flemish region.

The new Decree aims to be an important contribution to the further simplification and acceleration of the procedure. For a large number of routine applications it is no longer necessary to obtain advice from the authorised (regional or provincial) inspector (press release of the Flemish government *Nieuwe regelingen voor stedenbouwkundige vergunningen*, 18-2-2000). Considering the current procedure times by the provincial departments of the Physical Planning Administration this could mean a sustainable gaining of time. The advice of the inspector is no longer necessary for building applications when there is a positive urbanistic attest granted, which states that a construction with a certain function may be built on a lot; for constructing, reconstructing or rebuilding one single family dwelling situated in a residential area or residential park with a volume that does not exceed 1,000 m³; for constructing separate annexes to a dwelling in a residential area with a surface area not exceeding 75 m². This decision means that municipalities have the ability to grant permits for dwellings not exceeding 1,000 m³. Besides speeding up procedures this also aims to prevent the former situation in which many malpractices were glossed over by the municipalities (www.bouwwereld.be, 2000a).

Because of the greater responsibility of the municipalities and provinces they are obliged to establish an advisory committee for spatial planning, although small municipalities can be exempted from this rule.

Exemptions

The new Decree has made exceptions for a number of small constructions. These constructions must not contravene current regulations like zoning or urban plans or parcellation regulations, spatial development plans and other rules that are in effect (Civil Code). The list mentioned below of the exempt constructions is restricted to private buildings. There are also constructions in the public sector that do not need a permit (Flemish Government, 2000).

List of permits free construction works:

- temporary constructions, acts and changes which are needed to construct works that already are permitted: cranes, temporary storage of ground, temporary paving, etc.;
- sanitary, electric, heating, insulation and ventilation facilities within a building (insofar as they do not bring about a change of function or a change in the number of accommodations);
- internal works (in so far as they are not related to constructional problems and do not bring about a change of function or a change in the number of accommodations);
- placing of publicity structures or billboards: one not-illuminated or non-luminous billboard, a billboard with government information, or a sign-board 'for sale or hire' (maximum surface 1 m²);
- skylights, dormer windows or photovoltaic solar panels to a maximum of

20 percent of the surface of the roof (this condition does not apply to flat roofs);

- paving (garden paths and terraces) at ground level, within 30 m of the boundaries of the dwelling and not situated in the front garden, at least 1 m from the lateral and back boundaries of the lot and not exceeding 50 m²;
- subterranean reservoirs for rainwater, septic tanks, subterranean wastewater installations, infiltration beds, and/or a subterranean fuel tanks (only for domestic use and at least 1 m from the lateral and back boundaries of the lot);
- the complete demolition of detached buildings or constructions, if they have no historical, monumental or aesthetic value, do not belong to the national or local inheritance, do not have a 'signal function' (fountains, crosses, etc.) and do not exceed a floor area of 100 m²;
- light barriers made from wooden or synthetic posts with barbed or steel wire;
- barriers that do not exceed a height of 2 m, made from concrete or metal posts, consisting of one concrete slab with a maximum height of 40 cm and wire netting set up to isolate an asset;
- front garden walls made of masonry not exceeding a height of 50 cm;
- wrought-iron gates situated between two built columns not exceeding a height of 2 m;
- wooden summer-houses, animal shelters or dovecotes (built either against an existing (permitted) wall, or at least 1 m from the boundary of the lot); the surface shall not exceed 6 m² and it must not be built in the front garden. The height of the cornice should not exceed 2.5 m, the height of the ridge should not exceed 3 m;
- aviaries or conservatories (same conditions as above, but surface area should not exceed 10 m²;
- ponds with accessories (surface should not exceed 30 m²);
- rock gardens and pergolas (open lathing without a closed roof);
- garden walls (not being barriers), height should not exceed 1.2 m;
- barbecues, play equipment (swing, climbing frames, etc.), garden ornaments, letterboxes;
- beehives (not in a residential area);
- cutting down standard trees (not situated in a forest, but in an industrial or residential area, not bordering the public domain and within 15 m of the building);
- storage (in the immediate surroundings of a dwelling) of all sorts of materials that 'accompany' the dwelling: firewood, garbage containers, dustbins, piles of compost, etc., the volume should not exceed 10 m³ and storage should not be visible from the public road;
- caravans, trailers or tents;
- demolition or removal of the above mentioned works;

- conservation and maintenance works insofar as they do not concern the constructive elements of the construction (for instance: replacement of windows, plasterwork, repairing the paving, etc is allowed; replacement of trusses or bearing roof beams is not allowed).

Urbanistic permit

As a general rule the building of a construction needs an urbanistic permit. This is not only limited to building but also when ground is brought into use for fixed structures and in the case of demolition, rebuilding or renovation (inside or outside a building). Building is defined as the construction of a building or the construction of a structure that because of reasons of stability rests on the ground and is destined to stay there on the spot. Even if the construction is built with non-durable materials, it could be taken apart or is movable, a permit is necessary. Paving, the installation of a billboard, subterranean construction etc all require a permit. So, the Belgian concept of building is quite broad (www.ondernemen.vlaanderen.be, 2000).

Besides 'building' an urbanistic permit has to be obtained in case of:

- deforestation;
- cutting down a standard tree (a tree which has a trunk 1 m above ground level with a width of more than 1 m);
- considerable changes in relief (every addition, elevation, excavation or deepening that changes the character or function of the terrain);
- using, building or equipping ground for:
 - the storage of used or dumped vehicles, material or waste;
 - the parking of vehicles, cars or trailers ;
 - the placing of mobile structures that can be used for habitation (caravans, campers, tents, etc.);
 - the placing of mobile structures or 'rolling material' that can be used for publicity aims.
- changing the use of the main function of an immovable property (for instance the use of a farm in an agricultural area as a house for a non-farmer or the permanent habitation of a building in a recreational area);
- changing the number of accommodations allocated to the housing of a family or a single person irrespective of the nature of the dwelling (single family house, apartment residential building, un/furnished room, etc.);
- placing or changing publicity structures or billboards;
- constructing or changing recreation parks (including a golf course, football pitch, tennis court and swimming pool).

Simple and extensive application files

A distinction can be made between works for which an extensive file has to be submitted and a number of small works for which a simple file is sufficient. For the following works a simple file is enough:

- alterations within a building (only when the utilisation, the number of accommodations and the architectural character is not changed);
- works concerning the external surfaces of a building (for instance creating, changing or closing window and door openings, attaching facing bricks, dormer windows, skylights and roof extensions that shall not exceed 10% of the roof surface (the conditions mentioned above apply);
- small annexes: animal shelters, summer houses, storage rooms, garages, carports, verandas, conservatories and covered terraces (surface shall not exceed 21 m², height of cornice shall not exceed 2.5 m, height of ridge shall not exceed 3 m);
- ‘accessories’ of a dwelling (antenna of max 4 m above the roof, paving);
- tennis courts, swimming pools (surface shall not exceed 150 m²);
- barriers (a dividing wall made of bricks or concrete slabs, with a maximum height of 2.6 m between two properties).

2.3.2 Description of the procedures

Consultation prior to application

Given the complexity of the local situation and the legal requirements, it is recommended that information is requested on the applicable rules for each selling of property and for each intention to build or renovate, at the levels concerned (region, province, local municipality). All these authorities have information officers for that purpose.

Documents

As stated before, a distinction is made in Belgium (Flanders) between works for which an extensive file has to be submitted and a number of small works for which a simple file is sufficient (Flemish Government, 1998). The simple application file must consist (in quadruplicate) of the articles portrayed below. The municipality may ask for more than four specimens, if there is a good reason:

- a completed and signed application form (with date);
- the plans or drawings with date and signature and legend, folded to A4-format and consisting of at least:
 - a situation plan;
 - an ‘imprint plan’ (*een inplantingsplan*) on a scale of 1/1000 or more with at least: the scale, north, road and street names, the terrain itself, a ground-plan with dimensions and the distance to the boundaries of the lot;
 - the drawings of the works on a scale of 1/100 or more (with the scale, dimensions, heights (including adjacent buildings) and the character and colour of the external material that will be used.
- at least three different, numbered, photo’s of the planned construction site.

- if necessary a statistics questionnaire must be filled in. In most cases this will not be necessary. With the questionnaire the municipality can actualise the monthly statistic of the permits as well as the list of started and completed buildings (Order in Council of December, 1962);
- if the application must be submitted to a public inquiry the so called yellow poster must be filled in. In most cases a public inquiry is not necessary. With the yellow poster the construction plans are made public.

Besides the articles already mentioned in the case of the simple file, an extensive file must furthermore consist of:

- a descriptive note, signed by the architect and applicant which describes:
 - the aim of the application;
 - the spatial context of the works and zonal information (*zoneringsgegevens*);
 - conformity and consistence of the application with the legal and spatial context;
 - integration of the planned works or actions with the surroundings.
- the plans and drawings must be more elaborate than for a simple file;
- if the application is for the rebuilding or building of a dwelling a form has to be added which demonstrates that the planned construction meets the minimum demands concerning the thermal insulation of dwellings (as stated in a Decree of the Flemish government of 18-9-1991). The form must be filled in according to the indications given and must be signed by applicant and architect.

The building calculations must be added only when an exceptional building method is used or when the construction building exceeds a height of twenty meters.

Approval/acceptance

The building permit procedure consists of two phases. In the first phase the urban development requirements are inventoried. It is possible to apply for an 'urban development attest', which contains a description of the purpose of the lot, and which gives the allowable building line and building mass of a possible construction. This attest is based on the zoning plan (in Belgium on a regional level it is a matter of district plans and on a local/municipal level general and specific building plans). On request it is possible to change these plans, but that takes on average eight to twelve months to come into effect. In the second phase of the procedure the building permit is applied for.

The local authority (mayor and aldermen) assesses the application with the assistance of a civil servant from the provincial administration if there is no municipal building plan.

The local authorities do not usually check structural or other calculations or general technical compliance unless hazardous or unhealthy installations are

proposed. Local authorities have rules concerning the height of buildings, sewers and in some instances, fire, but not any which are relative to stability or durability. The check on the technical quality of the construction is limited to the structural and fire safety. The local (or regional) fire brigade is involved in the fire safety check. With regard to energy conservation the three regions have issued regulations with minimum requirements and methods of verification (calculations). Control has to be done by the local authorities that in general are understaffed. Some particular regulations concerning other environmental issues such as recycled construction products exist in all regions and control of these has been delegated to special bodies.

An aesthetic check of the building plan does not take place in Belgium. The application is made public and users/owners of the neighbouring plots are informed about the intended building plan.

As stated before there is an elaborate list of documents (with a distinction between simple and extensive files) that have to be submitted. In principle a receipt is given when the file is submitted. This makes it impossible to control precisely whether all the documents have actually been submitted. Only the most essential and formal demands can be controlled. So the delivery of a receipt does not imply automatically that the file is complete. When at a later stage it is established (for instance by the provincial/ regional official) that the file is not complete, the municipality and the applicant will be informed that the receipt should be considered as not-written and the procedure starts all over again.

Inspection/completion

The local authority hardly ever inspects work under construction, so the supervision of building work is, to a large extent, one of permanent self-inspection. Permits to occupy are to be delivered by local authorities for special occupancies such as hotels, hospitals, housing for aged people, theatres, shopping centres. The architect and the constructor are responsible for technical control during the construction. Small building projects are mostly supervised by the architect him or herself but most bigger projects bring in a specialised control bureau such as SECO. A control bureau can also be brought in by the insurance company involved or by the principal. Technical control is carried out on some buildings as an insurance requirement although quite often technical control is asked for irrespective of insurance.

Liability: inspection and end control

Self-control is a very important part of building practice as the local authorities do not check construction or other calculations. The principal (client, architect, and contractor) must be aware of and comply with the relevant laws and regulations and can be asked to prove that the construction is built according to the rules. This applies especially to fire safety. Liability laws in

particular exert considerable influence on the system of building control, articles 1.792 and 2.270 of the Civil Code determining the liability of the architect and the building contractor. In Belgium insurance is available for the liability of the building constructor. This liability could result in enormous financial claims when grave building errors occur. Insurance companies are covered against this risk. The design and realisation of a construction can be controlled by private control bureaus (like SECO) which must employ qualified technical staff.

These bureaus have technical control of a given construction, which mainly affects stability, durability and water tightness. In most cases attention is also paid to the secondary works in a building, such as floors, wall tiles, ceilings, windows etc. and items such as heating and ventilation, lifts, etc. These secondary works are not necessarily included in the ten-year liability period. There is now a tendency in the courts to use the concept of "unfit for use" to justify liability in this field. The insurers therefore offer the possibility to complete the liability insurance on the main fabric (*gross oeuvre*) with a damage insurance on the secondary works, and even on the usual technical equipment of the building, also for ten years.

Fire safety is governed by a series of extensive federal basic standards established by the Federal Home office and enforced by royal decree. Local or regional fire prevention officers enforce the regulations under the responsibility of the mayor of the municipality.

Regional governments lay down additional specific rules, for example for hospitals, hotels, homes for elderly people, etc. They have to follow at least the federal basic standards, but may add more requirements or more severe requirement levels

The local authorities do not generally issue any final certification or a permit to occupy.

Procedure times

For large projects it usually takes some two to three months from application until approval. Since the new Environmental planning Decree (May 2000) has come into force building (urbanistic) permits must be granted within a maximum period of 75 days. The aim is to complete the procedure within six to eight weeks.

When a decision is not made within these 75 days, then this is treated as equivalent to a refusal of the permit. When a decision however fails to be made, or the application is refused, the applicant can appeal. The appeal must be made within 20 days by a provincial committee. At the same time the applicant must send a copy of the appeal to the municipality. The committee's decision is also made within 75 days. If this decision is not made within this time the applicant has to send a letter of recall. When a decision

is not made within a further 30 days then this is equated to a silent approval of the permit.

2.3.3 Planning issues

The consideration of planning issues is important in Belgium and is administered by the local and provincial/regional authorities.

2.3.4 Sanctions for non-compliance

Building without a permit or building not according to the issued permit can lead to criminal and administrative sanctions (up to returning the construction to its original state).

2.4 Building control

2.4.1 Roles and responsibilities

We can make a distinction between the following parties involved: owners, architects, building contractors, local authorities and insurance companies. The responsibilities of these parties are as follows.

The owner must be aware of the laws and comply with them. Proof can be required that work is being carried out in accordance with the legislation. This applies particularly to fire resistance.

The architect is responsible for the design but he may use the services of a structural or other consulting engineer. An architect cannot be a contractor and if he prepares plans, these must be supervised by another architect. An architect's role is that of general direction rather than permanent supervision. State and subsidised work is usually only given to those contractors who are known to be suitable for the task required. In principle an architect must be hired for the design of every construction and to control the execution of works that need a permit. However, for small works, for works that have a 'non-building character' (like cutting trees or constructing a tennis court) and construction of industrial or civil engineering projects an architect is not necessary. This is also the case for the works that need a simple application file (see above; www.bouwwereld.be, 2000d).

In the case of renovation or rebuilding works or works on the facade/front of a building that affects or changes the stability, the architectural character or the shape or form of the building, an architect has to be hired. This applies also to all rebuilding works that lead to an extension of the volume of a construction. In these cases all government and private clients must resort to an architect for the preparation of plans and supervision of the performance of

work for which prior authorisation for construction (a permit) is required. Only architects registered by the Order of Architects (NROA) can draw up and sign the documents and drawings that have to be submitted to obtain the building permit.

However, an architect must not play a role within a building contractor company. If an architect designs a construction and is also involved in the construction phase, another architect must supervise the construction. In that sense the architect is more a general director than a permanent supervisor.

To be recognised as an architect, a Belgian diploma of architecture or engineering-architecture is needed, the architect must be independent and must have performed two year's training with a registered architect. Furthermore the architect must be registered by the National Council of the Order of Architects (NROA).

Because of the exceptional position of architects in the Belgian building process, a professional code has been drawn up, to which the architects are bound. Architects are responsible for building control and any errors, which he or she should reasonably have noticed. In theory an architect could also be liable for the structural work of a building. In practice this responsibility has been shifted to the constructor. An architect is obliged to guarantee for a period of ten years all the activities that are executed. Since 1987 architects have been obliged to take out an insurance policy for this guarantee.

The building contractor must also be aware of the laws, etc. and must, if asked, prove that he is complying with the regulations. The liability of the architect and contractor relates to stability, durability and water tightness but does not relate to the secondary works such as ceilings, windows and doors, etc. The liability could however result in heavy financial loss, should major defects occur, and insurance companies will now cover this risk.

Public authorities play a role on five levels (Ministry of the Flemish Community, 1999).

The federal level deals with:

- all general basic standards not specific to a given use and concerning one or more essential requirements
- all issues which are essential for the Belgian Economic Union
- general EU and international affairs
- standards, Benor-certification, ATG technical approvals and certification
- implementation of the CPD, CE-marking, etc.
- qualification of contractor enterprises
- all issues which have not been transferred explicitly by law to the regions.

On a regional level there are three kinds of civil servants: (urban) inspectors and urban and planning officials. The number and geographical working area of these regional functionaries is determined by the Flemish government. The government also describes the qualifications they have to comply with. Every

three months the functionaries have to give an account of their activities to the Flemish government. The planning officials check for instance whether the municipal plans are corresponding with regional spatial structure plans. The inspectors assist municipalities in, amongst other things, drawing up the permit register and they play an important role when it comes to permits as they have the possibility to appeal against decisions made on a municipal level. The urban officials deal with the permit applications of bodies such as a municipality and for construction works of public interest. The number of provincial urban officials is determined by the provincial council. The Flemish government describes the qualifications these officials have to comply with, such as education, experience and other demands regarding urban and physical planning. The provincial urban officials prepare the decisions against which an appeal is made and contribute to the development of provincial structure plans.

The number of municipal urban officials is determined by the municipal council. Every municipality shall have at least one inspector. Municipalities with less than 10,000 inhabitants may request the Flemish government to appoint a part-time inspector who also works part-time in another municipality in the area. The Flemish government describes the qualifications these officials inspectors have to comply with (education, experience and other demands regarding urban and physical planning, these demands can vary according to the number of inhabitants.) Within the margins of the budget, the Flemish government can support the small municipalities in training and salaries for an municipal urban official. The municipal urban official writes a two-part report for every permit application, providing: an overview of the local regulations and proposing a decision. So he/she prepares the decisions concerning permit applications, keeps the permit register up to date and assists in the development of municipal plans. Specific issues have been delegated by the regional government to special bodies, such as environmental protection, drinking water, waste management, waste water management. social housing, public transport, etc.

2.4.2 Municipal departments

Until recently municipalities have not played a dominant role in building control, their involvement being mostly limited to urbanistic issues (aesthetics, location, etc.). The provinces however did and do meet problems. In early 2000 the backlog in advising about building permits was of such an order that in early 2000 the Flemish government decided to immediately recruit 15 temporary fulltime personnel for the provincial departments of urbanistic permits, with the intention of clearing the backlog by the end the summer of 2000. However, as these new personnel had to be instructed, additional measures were taken and personnel already in office were given the opportunity

to voluntarily work overtime to a fixed amount per file (www.bouwwereld.be, 2000b en c). According to one of our sources, the main problem left is the absence of general building codes concerning the essential requirements. Federal and regional politicians are still not yet aware of this fact and this is an unique situation in Europe which will cause major problems when the European market becomes more effective.

2.4.3 Private building control organisations

See paragraph 2.2.

2.4.4 Fees

On the delivery of a permit a stamp tax (*zegelrecht*) has to be paid. Besides that a tax on construction, rebuilding or renovation is imposed. It is not known exactly how much the amounts are. Information from a local municipality shows that the tax on construction for the year 2000 amounts to 10 Bf (0,25 EUR) per m³ for new constructions and rebuilding and 5 Bf (0,12 EUR) per m³ for renovation (www.overijse.be, 2000).

2.5 Technical requirements

2.5.1 Regulatory framework

As stated before, there is not one all-embracing statutory system in Belgium that guarantees building quality (see for instance Franssens, 2000). In the first place there is a extensive system of responsibility of building partners in the building industry; which is based on the Civil Code, which is basic rules of building practice, the ten-year responsibility terms of contractors and architects and age-old jurisprudence. Furthermore, there are rules regarding the practice professional jobs within the building sector. In a law of 1939, architects have to undertake all design work and supervision. As stated before the contractor who takes on the responsibility to build the designed construction, has to point out to the architect if he has any doubts about the design. Jurisprudence shows that, if something goes wrong, both architect and contractor are often blamed and made responsible (a united responsibility). special rules apply for some jobs within the building sector, for instance welders and fitters of fire-doors. Thirdly there are, due to liability questions, technical controls by insurance companies which is still voluntary (unlike in France). Besides the well-known SECO, recently more and more bureaus have been established which carry out these controls.

A last statutory pillar for building quality in Belgium is the fact that since 1947 contractor firms have to be recognised/registered by the ministry of Communications and Infrastructure before they can carry out any public work and private works which are subsidised by more than 25%. About 9,000 (of a total 70,000) companies are registered at the moment, but these firms realise the greater bulk of the public and private works in Belgium. The criteria to get a registration are based on capacity and quality. Registration lasts for five years, after which a new check has to take place.

The regulations that apply to the technical requirements of constructions have been and are issued by various authorities.

- The Ministry of Public Works was responsible for the construction of government and public buildings. It has published standard specifications for public building construction projects that contain technical specifications applied to its own projects but which also may be used in private construction. Nowadays, the Federal Ministry of Communication and Infrastructure continues the activities of the previous Ministry of Public Works and of the National Housing Institute in as far as they remained a Federal competence. A co-operation agreement with the regions ensures the development of the technical normative frame in consultation, in order to meet European standards.
 - Various Ministries issue general regulations that affect building and construction: e.g. concerning the protection of workers, concerning drinking water, refuse, waste water and sanitary law, atmospheric pollution and noise control.
 - In 1981 the Ministry of Economic Affairs issued the General regulations for electrical installations. In 1994 the Ministry of the Interior issued the Basic standards for fire and explosion precautions that new buildings have to meet.
 - The Scientific and Technical Centre for Construction is an organisation established by law and financed by building contractors and public research funds which conducts research into building construction and the components used in building. It has published the General specifications for private construction projects (*Cahier general des charges pour travaux de construction privé*) and also issues various research reports and technical recommendations.
 - The National Housing Institute conducted research into housing and published specifications under the title 'STS' and these were, and are, widely accepted for use by the building industry. The activities of STS are followed now by the Construction Quality Office which is part of the Federal Ministry for Communication and Infrastructure (MCI). They are at present enlarged by 'Registered Master Specifications', the list of which is published by MCI.
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Although the regulations mentioned above generally relate to the whole country, as mentioned above, Belgium has been transformed to a federal state of three regions, Brussels, Flanders and Wallonia. The regions are able to legislate on all issues that were transferred to them by law in 1980/1988. The consequence is that national/ministerial authorities for these issues have been replaced by regional bodies. The national regulations will stay in force until they are replaced on a regional level. Decrees regarding thermal insulation have been issued by the relevant ministries for the regions of Flanders (in 1991) and Wallonia (in 1984). Many other regional regulations have followed, especially on the environment.

In the case of fire regulations a distinction is made in the technical requirements with regard to building type or 'user functions' (for instance: dwellings, factories, hospitals, etc.).

According to our sources building practice meets the technical requirements quite well, but the international opening of the European market endangers the effectiveness of liability and qualification.

Requirements for existing dwellings

There is not a separate set of technical requirements that consider the quality of existing buildings in the Building Regulations.

2.5.2 Formulation

The general goal of the laws with regard to construction is to guarantee the structural and fire safety and the aesthetic value of the constructions, the installations and the surroundings and to guarantee the safety and health of the users. In Belgium there has not been the development that has taken place in most other European countries, where building regulations have been re-written the last few decades to take the form of performance requirements. Unlike other countries Belgium does not have one set of national or regional uniform technical requirements.

2.5.3 Subjects

Although there is no document that contains the complete set of technical requirements in Belgium, the MCI-STC 100.3 Registered Master Specifications (published at the end of 2000) and the catalogue of NBN-standards give an overview of the subjects the Belgium technical requirements refer to.

On the basis of the contents of the EC Construction Products Directive we describe below the position of the Belgian technical regulations (Review of European Building Regulations and Technical Provisions, Institute of Building Control, 1997):

- Mechanical resistance and stability. Applies to any building, except small

ones and individual houses. Private building control is executed on design and construction. Inspection is carried out by private organisations such as SECO.

- Safety in case of fire. Applies to any building, except buildings for less than 10 occupants and individual houses. Inspection is voluntary: private control with final certification by authorities relying on private control inspections.
- Hygiene, health and the environment. Some municipalities have issued regulations but any inspections made in this respect are less frequent than for fire matters.
- Safety in use. Electrical systems, heating systems and lifts are inspected by recognised private control bodies. certification is required for electrical installations and lifts for places of work. Inspection: private control.
- Protection against noise. Mandatory rules exist both in Flanders and Brussels.
- Energy economy and heat retention. There are mandatory rules in Flanders (18 September, 1991) and in Wallonia (23 February, 1984). In Flanders a structural revision is foreseen in 2004 with the introduction of energy performance regulations.
- Access and facilities for disabled people. Regulations in connection with access and facilities for disabled people are for example contained in the Regional Planning Act of Brussels (June 1999).

2.5.4 References, guidances and EC directives

The system of normalisation, approval and certification have been and continue to be developed by public and private bodies: this is the case for the Belgian Technical Standards (NBN), BENOR certification, Technical Approvals ('ATG: Agrément Technique') and the so-called 'Master specifications'. In the case of fire safety the essential demands on building have been extended by the basic standards. The testing, inspection and certification of these standards are registered by the government. There are many codes, standards and norms, some of which contain extensive guidance on building materials and construction. They are not mandatory and are usually specifically referred to in construction contract documents. When mentioned in government *arrêtes*, however, they become obligatory. There are some 3,000 Belgian standards (NBN) contained in the current catalogue. They are coded to indicate their status, but do not all relate to building work. For example, in connection with steelwork, there are four basic standards together with 150 standards relating to tests etc. In the construction section there are 6 standards on loading, 11 on tests and measurement, 53 on sands and gravels, 48 on cement, 8 on lime, 25 on mortar, 58 on concrete, 40 on timber, 56 on concrete products, 17 on doors and windows and a further 110 on various building materials. Furthermore there are sections dealing with heating, ventilation and air conditioning

and some 100 or so standards relating to fire.

Products for which standards already exists, are provided on request and after control, with the Belgian quality mark Benor (issued under the auspices of the Belgian Institute for Standardisation, IBN, by a dozen of specialised bodies designated by the IBN). The former Ministry of Public Works issues technical specifications, now the Ministry of Communications and Infrastructure, or other federal or regional authorities. For certain products the SECO has issued quality marks.

For all products and systems not governed by NBN standards and the Benor-label, or deviating from them, the MCI-Construction Quality Office can give ATG Technical Approval.

Guidance to interpretation

As a consequence of the absence of codes and the existence of liability provisions, to know the 'rules of the art of building' one has to consult case law of the Courts of Justice since 1830. The NBN-standards, MCI-registered Master Specifications and ATG-Approvals are mainly considered as rules of the art of building.

EC Directive on Building Products and Eurocodes

Over the last decades Belgium has turned towards international co-operation and recognition though bilateral and multilateral agreements, participation in international committees, etc.

In the near future Belgium will work on a rapid and broad introduction of the EC Directive on Building Products. With reference to the technical requirements, which follow, it may be helpful to state how far the control of building work in Belgium relates to the six essential requirements of the EC Construction Products Directive.

2.5.5 Certification

Belgium has started to integrate the total package of AQC-procedures (procedures to guarantee the general building quality; not to be confused with the specific Quality System approach only) by completing normalisation of all the existing specification-types via registration by the Ministry of Communications and Infrastructure (MCI). For that purpose certification of products is organised by this ministry in the common context of Benor/ATG.

The accreditation of testing, inspection or certification bodies was introduced by law in 1990.

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Contactpersons

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- Ir. M. Franssens, Adviseur-generaal, Ministerie van Verkeer en Infrastructuur (dienst Kwaliteit Bouw).

3 Denmark

3.1 Introduction

Building regulations in Denmark are divided into those for small buildings and those for other buildings. The requirements, which are national, have a functional formulation and where possible give quantitative performance figures. Local authorities grant building permits, check designs and the construction of buildings for compliance with the building regulations.

There are no forms of private building control. Product approval and certification are important in Denmark, but they have no direct and formal connection with the building regulations and the building permit procedure. The system in Denmark is comparable with the systems used in countries such as the United Kingdom and the Netherlands.

3.2 Regulatory framework

Danish building legislation consists of a Building Act and two sets of building regulations, one published in 1998 applying to single-family dwellings and weekend cottages, 'Building Regulations for Small Dwellings' and the other set of regulations, 'Building Regulations of 1 April 1995'. The purpose of building legislation is to ensure sufficiently high standards of safety and health in constructions. This is achieved through statutory provisions for how buildings must be constructed and arranged.

Basically, the statutory provisions are intended to ensure:

- that buildings are satisfactory in terms of fire protection, safety and health;
- that the developer prevents unnecessary consumption of energy and raw materials in the building;
- that certain neighbouring property interests are accommodated in the form of rules applying to boundaries to neighbouring properties, height requirements, the size of the building in relation to the grounds are observed.

The local authorities will not grant a building permit until it has ascertained that the building work does not infringe on the provisions of a large number of other legislation. The Acts that form this 'other' legislation are listed in table 3.1.

3.3 Permit procedures

3.3.1 Categories of buildings

Building regulations apply to both public and private buildings. Structural work for defence purposes or of a secret nature can be carried out without

permission from the local authorities, but only if the work does not involve connections to roads or drainage systems.

Constructions that do not require a building permit

The following building works may be carried out without a building permit or notification:

- building works in the case of small buildings with an area of not more than 10 m;
- drying installations for grain, seed and other crops;
- LPG tanks of up to 1,000 kg (2,400 kg 1 tank capacity) belonging to stationary LPG installations and LPG tank stations;
- satellite dishes with a diameter of not more than 1.0 m and type-approved roof antennas (Notification is required for large satellite dishes).

It is not necessary to notify the local authority of completion of the building works and demolition may be carried out without notification.

The building works must comply with the Building Regulations which apply to the works in question. If this cannot be achieved, application for dispensation must be made to the local authority, and the building works must not commence until dispensation has been granted.

The Building Regulations do not apply to:

- bridges, tunnels and other traffic installations built or approved by road, railway or other authorities or companies with statutory responsibility;
- pylons and masts for power supply and electronic installations and masts for the catenary systems for electric railways;
- street telephone cabinets and telephone boxes;
- bus shelters and similar;
- substations and cable boxes for the transmission of electricity, metering and pressure-regulating stations for the transmission of gas, pump stations and pressure boosters for water and drainage systems, and radio and signal huts for public transport purposes with a max. area of 30 m² and a max. height of 3.0 m;
- siren units for early warning systems installed or approved by the Emergency Services;
- boundary walls with a height of not more than 1.8 m between properties and along roads and paths.

The installations mentioned may be built and demolished without permis-

Table 3.1 Legislation relating to building permits

- Planning Act
- Act on Protection of Nature
- Act on Preservation of Ancient Buildings
- Act on Forests
- Act on Environmental Protection
- Act on Waste Depositories
- Working Environment Act
- Act on Public Roads
- Act on Private Party Roads
- Act on Slum Clearance
- Act on Urban Renewal
- Heat Supply Act
- Act on Temporary Regulation of Housing Conditions
- Emergency Services Act
- Act on Museums
- Act on Compensation for Flood Damage

Source: Danish Ministry of Housing, 1995,
Building Regulations 1995

sion or notification. The regulations contain no special requirements concerning these installations.

Constructions that require notification

The notification system covers isolated alterations in an individual domestic, industrial or commercial unit. A building permit is still required for alterations to a whole building. For example, an entire block of flats cannot be altered simply by submitting separate notifications for each flat. The notification system applies, for example, in the case of isolated alterations of bathrooms or kitchens, installation of open fireplaces, wood-burning stoves, furnaces, etc. A building permit is required if alteration works and similar will result in an increase in the area i.e. there will be an increase in the plot ratio. It should be noted that under the Act on the Preservation of Ancient Buildings, permission is required for works on listed buildings that go beyond normal interior and exterior maintenance. In the case of buildings worthy of preservation which are covered by a town planning preservation by-law, local preservation plan or registered preservation declaration, the provisions given therein concerning alterations, changes, etc. still apply.

The following building works may be carried out after notification to the local authority:

- garages, carports, outhouses, greenhouses, roofed terraces and similar buildings with a max. area of 50 m²;
- extensions to garages, carports, outhouses, greenhouses, roofed terraces and similar buildings, provided the area is not more than 50 m² after the extension;
- wind turbines;
- Isolated alterations and other changes in buildings that concern only a single domestic unit or a single industrial or commercial unit with an area of not more than 150 m³;
- the isolated alteration or change must not result in an enlargement of the area;
- satellite dishes with a diameter of more than 1.0 m;
- farm buildings and similar on agricultural, forestry and horticultural properties that may be built without a greenbelt permit or that only require permission under section 36(2) of the Planning Act;
- demolition of buildings.

The two sets of Building Regulations (Building regulations, 1995 and Building Regulations for Small Dwellings, 1998) contain the technical requirements but also set the rules for the building permit procedures for both categories.

Small dwellings

The building regulations for small dwellings encompass:

- single-family houses for permanent habitation, either as detached houses or as completely or partially joined houses (semi-detached, terraced, linked and cluster houses and similar, i.e. where the dwellings are separated by vertical party walls);
- weekend cottages and summer houses in designated areas and allotment huts;
- cabins, garages and carports;
- outhouses, greenhouses and similar small buildings erected in connection with detached or joined single-family houses or weekend cottages/summer houses;
- the building regulations for small dwellings also apply in cases where part of the house is used for such forms of business that can normally only be carried out in connection with dwellings (these businesses include, for example, hairdressing, property agency, law, accountancy and architectural practices and child-minding);
- farmhouses on agricultural properties;
- detached houses or completely or partially joined houses built as homes for the elderly or for disabled people who can live independently (all other forms of homes for the elderly are subject to the 1995 Building Regulations).

Two-family houses, in which two dwellings are separated by a storey division (a separating floor between flats), are not subject to the regulations for small building.

Other buildings

The Building Regulations 1995 apply to all buildings that are not encompassed by the building regulations for small dwellings.

The Building Regulations apply to:

- multi-storey domestic buildings
- two-family houses, i.e. houses containing two flats
- industrial buildings
- commercial buildings
- institutional buildings
- car parks
- garages
- outhouses and other secondary buildings erected in connection with multi-storey domestic, industrial and commercial buildings.

Section 2 of the Building Act details the type of building works subject to these regulations, which includes construction of new buildings, extensions to buildings, conversion of and other alterations to buildings and any changes in the use of buildings that are significant in relation to the provisions of the

Building Act or building regulations, together with the demolition of buildings. The Building Act also encompasses mines and similar installations to which the public has access.

3.3.2 Description of the procedures

Consultation prior to application

Unlike neighbouring countries like Norway and Sweden a pre-consultation phase is not incorporated as part of the permit procedure, although, it is always possible to get informal advice and consultation from the local authorities prior to application.

Documents

An application for a building permit has to indicate clearly the work that will be executed. The applications have to be in writing and in duplicate. The application must include a clear description of the work to be performed and must include the following information:

- Necessary information for identification of the property or unit (title number and postcode or Register of Buildings and Dwellings code (BBR), property number, building number, floor, side/door number and owner-occupied flat number).
- Information on any provisions in the Building Act, the Building Regulations, easements and other building regulations with which the project might conflict. The application must include a request, with reasons, for the necessary dispensations or permits.
- Information on the intended use of the building and, in the case of alteration and changed use, information on the former use.
- Information on whether the building work has been designed on the basis of the less restrictive provisions concerning alteration works. The application must include a report on the existing building structures and other technical factors of importance for consideration of the application.
- An application for permission for public admission to a mine and similar installations must contain a report on expert investigations of the strength and stability of the subsoil, together with the name(s) of the person(s) who performed the investigations.

The application must be accompanied by three copies of relevant drawings, including scales, and must contain all information needed for consideration of the application. Depending on the nature of the building works, the following information may, for example, be of importance:

- drawings showing the size of the plot
 - the location of existing and planned buildings
 - the layout of the grounds
-

- the location of buildings on adjacent or surrounding properties
- the present and future elevations of the plot and the elevations on adjacent or surrounding plots
- calculation of the plot ratio
- information for evaluation of heat and power consumption
- structural analyses
- information on materials and structures
- dimensioning of ventilation installations
- design and arrangement factors, including accessibility for disabled people
- information on water and drainage conditions, etc.

The application has to be dated and signed by the owner of the property except where the applicant can provide other satisfactory evidence that he is authorised to execute the work in question.

The local authorities may stipulate that calculations concerning the load-bearing structures are certified by an approved structural engineer¹.

In applications to the building authorities the structural analysis and accompanying drawings must be signed personally by the approved engineer by which he guarantees that analyses and drawings have been carried out in accordance with the existing regulations.

If deemed necessary in individual cases, the local authority may stipulate that information concerning the size of the plot or setting-out of the building be certified by a surveyor, in the City of Copenhagen by the City Surveyor, and in Frederiksberg Municipality by the Municipal Surveyor. The local authority may also demand any information and drawings it may need in order to grant a building permit.

Approval/acceptance

It is not necessary to employ an architect to prepare a plan, but detailed plans and in some cases calculations are required for anything other than small buildings. It is usual for a professional person to be employed by the person commissioning the work. Applications are submitted to the local

¹ The society of Danish engineers (IDA) has drawn up the rules for approval of graduate engineers practising in the field of load-bearing structures for housing, institutional and industrial buildings. The board of approval consists of nine persons, five appointed by the IDA (of which one is recommended by the National Association of local Authorities) and four are representatives of the technical university and the colleges of engineering in Denmark. The board examines a project, which has been carried out by the applicant. The applicant must hand over at least two declarations of colleagues who are themselves approved graduate engineers. Furthermore the applicant must have had at least three years experience of processing applications with the building authorities and at least three years experience of structural analysis, at least one of which was independent work. The engineer must also be insured for professional liability in the fields in which he works.

authorities (*Kommune*), who carry out a technical examination, mainly looking at the structural stability.

Before the local authority issues a building permit or a permit to use the building, it has to be ascertained that the work for which application is made can be approved in accordance with the regulations concerned.

Before issuing the permit, the local authority will ensure that other relevant legislation will be observed. Normally the building control officer will check the building plans for fire safety as the requirements on fire safety are part of building regulations, although most local building authorities also co-operate with the fire brigade officer. Otherwise local authorities do not make use of any secondary (private) advisers to check specialist items.

The permit lapses if work is not commenced within one year of the date of issue. Where a project involving several buildings cannot be completed within two years of commencement, the permit can be limited to a portion of the project.

In the building permit the local authority may require measurements to be taken in the finished building to demonstrate compliance with the requirements on airborne and impact sound. Sound measurements must be carried out in accordance with the guidelines in the building regulations. The local authority may also require security to be furnished for the performance of the site development work before the building is used.

If the local authority has not reacted within four weeks of receiving the notification, the building work may commence. However, in the case of small buildings (farm buildings and similar and wind turbines) the time limit is two weeks. The time limit must be calculated from the day on which the notification is received by the local authority and in the same way, the local authority must simply have dispatched a response within two or four weeks. The work must thus not commence until two or four weeks plus normal delivery time have elapsed.

Before commencement of building work for which a building permit has been granted, due notice has to be given to the local authority. Notification has to state who is responsible for and who is executing the work. In the event that work is suspended for a period exceeding twelve months, an application has to be submitted for a new building permit.

The local authority may stipulate that it be notified when different stages of the building work are carried out. This provision ensures the local authority the possibility of such inspection, as it deems fit during the building works. However, the local authority does not have to be notified of completion of the building works.

The local authority may grant dispensation from the physical provisions in

the Building Act and the building regulations. It may not grant dispensation from the formal rules such as the regulations on the types of project for which a building permit is required, informing neighbours prior to dispensation, the rules on appeals, and similar issues. The local authority may only grant dispensation when this is compatible with the intentions of the provision from which dispensation is sought. Permission to deviate from the Building Act and the building regulations may only be granted provided the dispensation or permission is expressly mentioned in the building permit or has been otherwise communicated in writing and the local authority may stipulate that an application be signed by the owner personally.

Appeals

Appeals may be made against decisions concerning the provisions of the building regulations. Appeals against local authority decisions may be made to the County Building Department or, in the case of the City of Copenhagen and Frederiksberg Municipality, to the National Building and Housing Agency. Appeals are only allowed concerning points of law. The time limit for an appeal is four weeks from the date of notification of the decision.

Inspection

Where the site development work of the Building Act has not been carried out at the time building work commences, a guarantee can be demanded in connection with the building permit that such development work will be executed before the building is used. Similarly, a guarantee can be demanded when a district plan contains provisions to the effect that screening shall be provided before a building is brought into use.

There is a variable degree of inspection on site by the enforcing authority. Specialist inspectors from the local authority do not carry out a full inspection, but they may make sample checks.

A permit can also require that for semi-detached single-family houses measurements are made of the completed building to prove compliance with the acoustic requirements. There are no further performance measurements by the authorities.

Completion

Following building work, the local authority must give consent before the building can be used. Where they think it is necessary, the local authority, before issuing a permit to use a building, can demand that a certificate is submitted showing that the building is lawfully erected on the site. A building can also not be brought into use until the site development work has been completed.

A permit for use is not necessary for a building to which the building regulations for small buildings apply.

Procedure times

For normal buildings there are no limitations on the time the plan checking may take; only for small buildings is this time limited to two weeks. The average time used for the building permit procedure, the time between the plan being submitted and the permit being granted, is usually about one month.

In general local authorities make use of internal computer systems to check the progress of the building permit procedure. In 1985 a program was introduced that can be used to consult the building regulations and report the various phases of control of plans. However, not very many municipalities use this system.

3.3.3 Planning issues

Before granting planning permission and in the case of notification, the local authorities must investigate whether the building work contravenes any other legislation (for instance: the Planning Act, the Protection of Nature Act, the Preservation of Ancient Buildings Act, the Forest Act, the Environmental Protection Act, the Public Roads Act, etc.). The local municipalities must mention in the planning permission if it includes requirements from other Regulations. Rules in townplanning by-laws and local plans concerning the siting and design of buildings apply, even in cases in which building permission is not required for the building works.

3.3.4 Sanctions for non-compliance

The Building Act states that the penalty of a fine shall be imposed on any person who:

- commences building works, starts using a building or otherwise initiates measures without obtaining permission as prescribed by the Act or the regulations drawn up in pursuance thereof, or who carries out building works or other measures for which prior permission is required in a manner other than that permitted by the authority in question;
- disregards conditions laid down in the permit in accordance with the Act or of the regulations drawn up in pursuance thereof;
- fails to comply with an injunction or prohibition issued in accordance with the Act or of the regulations drawn up in pursuance thereof;
- fails to carry out maintenance works that are needed to avoid danger to a building's occupants or others.

There is no obligatory insurance in relation to the building permit. Liability for defects in construction usually rests with the designer and the contractor, and recently a 'five-year liability for all' concept was introduced for all projects that are state subsidised.

The person who has had the work done is only liable if he cannot name another person who can be held liable or if he has participated in the violation knowingly or with a definite presumption of unlawfulness. In such a case, depending on the circumstances, the other persons involved in the work are not held liable. Failure to put right any unauthorised situation will render that person liable to a court order to rectify the matter and fines may be imposed. The local authority can do the work in default at the owner's expense. In addition, a penalty fine is imposed on any person who makes or sells, for use in the building works, building materials which may not lawfully be used under the current building regulations.

3.4 Building control

3.4.1 Roles and responsibilities

The owner of the building is responsible for everything in relation to the building process and the compliance with the Building Act. He can transfer elements of the building process to the contractor, to the architect and to others but he cannot renounce his responsibility.

The Ministry of Housing, National Building and Housing Agency is the central building authority with the administrative responsibility for the Building Act and the Building Regulations. This takes the form of legislative work, building regulations, guidance information etc. The National Building and Housing Agency is also the board of appeal for Copenhagen and Frederiksberg Municipality.

The counties are the boards of appeal in matters covered by the building regulations.

As the supervising authority, the city or district council has the duty of ensuring that building legislation is observed. The council is therefore entitled to request whatever information it deems necessary to determine the lawfulness of a building project. If a council becomes aware of conditions that are in breach of the law and the Building Regulations, it is required to request that the developer do whatever necessary to remedy such conditions.

In both new building works and major conversions of existing buildings the developer is required to submit an application in writing to the city or district council for permission to carry out the intended building project. It is the responsibility of the developer to ensure that the intended building conforms to the requirements of the law.

3.4.2 Municipal departments

The municipal authorities outside the two old metropolitan areas of Copenhagen and Frederiksberg consist of 14 county councils ('*amtskommuner*') and 275 municipalities which are governed by city or district councils ('*primærkommuner*').

The local building control authorities provide specific functions like 'plan checker', structure controller and building technologist. According to the available information, outside inspection (construction inspector) is not a specialisation on its own. This work is probably done by what is called the plan checker.

3.4.3 Private building control organisations

There is no direct private building control, nor are there any developments in this direction. The local authorities can however demand that the structural calculations are certified by an approved structural engineer. The society of Danish engineers (IDA) has developed an approval scheme for graduate engineers.

3.4.4 Fees

The local authority may decide that a fee should be charged for building permits, temporary permits and notifications in accordance with these building regulations. The local authority may also decide that fees should be charged for dispensations in connection with building works for which a building permit or notification is not required. Fees may not be charged for notifications or dispensations in connection with farm buildings and similar. The local authority shall decide the method of calculating fees and the size of fees. Special rules apply to the fixing of fees. Only costs which directly, indirectly or complementarily concern the area may be included in the calculation.

The fee is payable as soon as the building permit or dispensation has been granted. If the fee is calculated as a building cost fee, it must be paid as soon as it can be calculated. In the case of notifications in accordance with the building regulations, the fee is paid at the time of notification. Practice shows that nearly every municipality in Denmark charges the owner only if he is allowed to build. If the local authority refuse permission no fee is charged. The local authority may withhold a building permit or dispensation until the fee has been paid.

The local authority can determine that a fee will be charged for the issue of permits in accordance with the Building Act. Such fees (except for standard and minimum fees) will be payable either:

- as a fixed basic amount per m² floor area or per m³

- as a proportion of the building costs.

The proportion is fixed by a local-authority resolution.

Building permits for single-family houses (including semi-detached houses, row houses, chain houses, cluster houses, etc.) and accompanying garage, carport, outhouse etc. can only be subject to a standard fee, which was fixed in January 1983 at Dkr. 500 for each house with an accompanying garage etc.

There are a lot of problems because the fees from one municipality to another vary greatly. It is also difficult to compare two municipalities because they have different rules to charge.

3.5 Technical requirements

3.5.1 Regulatory framework

Denmark has a system of nationwide uniform building regulations. While the Building Act prescribes the principal and general requirements applying to buildings and building quality, the two sets of building regulations provide a more de-tailed description of the minimum requirements for the construction and arrangement of buildings. Most of the requirements of the regulations that contain matters that relate to planning and design are written in mandatory terms. Generally compliance with structural and other codes is deemed to satisfy the regulations and in addition there is a relaxation procedure that is operated by local authorities under guidance from the ministry.

The local authorities may impose additional standards, as thought fit, on certain types of buildings as long as due regard is given to the aims of the regulations. These buildings are shops, offices, commercial and industrial enterprises, workshops and storage buildings, churches, theatres, hotels, hospitals, prisons, barracks, buildings used for education, exhibition, entertainment and other large buildings used for public assembly.

Requirements for existing dwellings

The building regulations state that if, as a result of defects in a property, other persons are exposed to danger, the local authority can demand that the building and surrounding area and buildings, be sealed off and evacuated as necessary. If an order by the local authority to rectify defects representing a danger to tenants of the property or other persons is not respected before a stated deadline, the authority can order the work to be carried out without delay at the expense of the owner. When it becomes evident that structures or materials constitute a hazard to tenants of a building or other persons, the Minister of Housing can instruct the local authority to undertake an inspection of buildings where such or similar structures or materials have been employed. The Minister can also instruct the local authority to communicate

an order to the owner.

The less restrictive provisions concerning alteration works only apply in cases in which the local authority considers that the works cannot otherwise be carried out without substantial alteration of the building. Application of the provisions concerning alteration works depends on the local authority carrying out a special evaluation of the alteration project and the existing building's structures and other technical factors. Each provision is subject to a separate appraisal so that only the specific provision deemed necessary for the existing building conditions is used. If compliance with the general provisions of the building regulations can be achieved without substantial alteration of the building, then the conditions for use of the less restrictive alteration provisions are not fulfilled.

It is not possible to force upgrading of existing buildings.

3.5.2 Formulation

The requirements for materials and structures in the building regulations are to a large extent expressed in the form of performance requirements. The regulations also apply the principle of reference to standards.

3.5.3 Subjects

The following principal technical requirements are prescribed by the two sets of building regulations:

- the position and arrangement of buildings (in addition to the requirements to safeguard the rights of residents of neighbouring properties – e.g. 2.5 m from boundary with neighbouring properties, maximum plot ratio, height of buildings, etc. – a number of requirements are specified for the arrangement of buildings – e.g. level access to buildings, guidelines for the construction of corridors and stairs, the height of habitable rooms, sanitary accommodation and kitchens. The requirements may vary for residential and commercial buildings);
- housing suitable for the disabled (a building must be fit for use by everyone, including persons with restricted mobility or wheelchair users);
- sound construction (building constructions must be of such dimensions that they are able to withstand normally occurring static and dynamic impacts. The precise requirements for building dimensions are prescribed in conformity with Danish and European norms and standards, as referred to in the Building Regulations);
- fire protection (the most important means of achieving the desired standard of fire protection is achieved by fire-separating structures and fire compartments as well as the provision of escape routes and rescue access. Furthermore, a number of fire protection requirements are prescribed with

respect to technical specifications for installations, construction elements and materials);

- indoor climate (the health issue concerns the comfort and well-being of normal, healthy individuals as well as those more susceptible to contamination of the indoor climate, e.g. people with allergies. The regulations cover the use of asbestos, mineral wool and formaldehyde in building materials, the extraction of nitrogen oxide flue gases from stoves, the air-tight sealing of building constructions in contact with the ground to prevent the penetration of Radon gas, etc. Specific ventilation rates are also indicated for different types of rooms);
- energy efficiency (the Building Regulations set out three different methods for achieving the desired reduction of energy consumption and specifies the maximum degree of flexibility that may be exercised in the design of the building);
- chimney cleaning (city and district councils are responsible for ensuring that council residents can obtain chimney cleaning services as required by law).

3.5.4 References, guidances and EC Directives

A number of Danish Standards (DS Standards) to which reference is made in the regulations have been drawn up by the Association of Danish Engineers and are referred to as codes of practice (DIF Codes of Practice).

The DS Standards and DIF Codes of Practice referred to in the regulations have the status of legal requirements.

Guidance to interpretation

There are no sets of examples of design solutions which comply with the building regulations in Denmark, apart from fire safety examples in the Danish Building Regulations (1995, appendix 3). The municipalities normally guide the designer/owner. The Danish Building and Housing Agency publishes guidance information regarding the application of the building regulations. This institute also publishes general recommendations regarding the way in which elements of structures can be designed in conformity with the building regulations.

EC Directive Building Products and Eurocodes

The local authorities ensure that the building products used in a building comply with the Directive.

3.5.5 Certification

Denmark has three kinds of quality statements:

- the MK-approval (a technical approval)

- branch-connected certificates and
- the DS-mark.

In the construction branch technical approvals are issued by *ETA-Denmark* as 'MK-approvals', or 'WE-approval' for water supply and disposal products. Quite a new independent organisation, *ETA-Denmark* manages the technical approvals with the aid of the laboratory of the Danish Institute for Building Research.

For some product groups for which no standards are issued, technical approvals based on the building regulations are compulsory. This is the case for e.g. internal walls, roof coverage, water disposal products, water supply products etc. Technical approvals are also issued on the request of the industry. All technical approvals are officially published. The system is composed in such a way that in the near future the Danish Agreements will be transformed into European technical approvals (*ETA's*). The European technical approval guidelines will be implemented in the Danish regulations to make this possible.

Regular production control based on the technical approvals will be performed by branch-connected inspection bodies, supervised by the Danish Federation of Engineers. In the near future this body will be connected with the Danish Standardization Institute (*DS*).

ETA-Danmark issues the technical approvals that are similar to product certificates.

Product certification is legally compulsory for some product groups, such as reinforcing steel, cement, water supply products, fire safety products, sound insulation products, gas tubes, etc. Approval of other products is voluntary.

In the construction industry product control is also performed by 19 recognised branch organisations. The central management of these organisations is run by the Danish Association of Engineers (*Danske Ingeniør forening: DIF*). The organisations issue certificates under supervision of an independent control commission consisting of representatives of engineering companies. Certification is based on certification schemes that contain many private requirements in addition to Danish Standards and requirements about internal quality control.

There are developments in the Danish system to arrive at a reduction of the certification bodies. There will be only two or three certification bodies, of which the Danish Standardisation Institute will be one, that will perform the certification based on the *EN 45000* Standards series.

The Danish Standardisation Institute (*Dansk Standard, DS*) issues product certificates based on Danish standards and additional requirements for internal quality control laid down in certification schemes for the different product groups. The inspection is carried out by *DS*-recognised inspection bodies. This system of product certification is based on the *EN 45000* criteria.

Within the Scandinavian countries efforts are being made to recognize each other's certificates. Because of this the Nordic Standard (*Nordisk Maerke*) was introduced.

Process certification does not exist in Denmark yet, but there seems to be a need for it and its development is expected in the near future.

3.6 Sources

Literature

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Danish Ministry of Housing, 1995, **Building Regulations 1995**.

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Internet

On the Danish internetsite of Rockwool (www.rockwool.dk) the sets of building regulations can be downloaded (only in Danish).

Another interesting site is the site of The Danish Building Research Institute (SBI: www.sbi.dk/english).

On the site of Spatial Planning Department (part of the Ministry of the Environment) English translations of the Danish planning acts can be found (www.mem.dk/lpa/English/publications).

Contactpersons

- Jens Dons, Chairman Association of Danish Building Control Officers.
- Mette Vielwerth, Ministry of Housing and Urban Affairs.

4 England and Wales

4.1 Introduction

In the UK, builders and developers are required by law to obtain building control approval, which constitutes an independent check of compliance with Building Regulations. Local authorities defined building regulations from 1876, until responsibility was centralised in the 1980s. England and Wales are covered by one set of building regulations, devised by the Department for Transport, Local Government and the Regions (DTLR), formed following the 2001 election as the result of the re-organisation of the Department of the Environment, Transport and the Regions (DETR). There is separate legislation for Scotland and Northern Ireland.

Before 1997 building control was carried out either by local authorities or NHBC Building Control Services Ltd., set up in 1985 and the first organisation to be appointed as an Approved Inspector. Since January 1997, more Approved Inspectors, both corporate and individual, have been appointed, but only NHBC Building Control Services Ltd. has the necessary insurance to undertake building control of new-build houses and flats (DTLR, 2000). A mutually agreed set of Performance Standards for both public and private sector Building Control Bodies (BCBs) was published in 1999 (DTLR, 1999a).

Regulations were highly prescriptive until 1985, when performance requirements were introduced. Both the Building Regulations and the supporting Approved Documents have been amended several times since they were published in 1991. The Building Regulations Advisory Council (BRAC) reviews requirements and suggests revisions as necessary. Also, the DTLR conducts public consultation exercises on major changes. All the Approved Documents and consultation documents are published on the extensive DTLR website, www.dtlr.gov.uk. Regulations apply to new-build dwellings, extensions, material changes² and changes of use. In 2002, for the first time, existing buildings became subject to Building Regulation requirements when heating equipment and windows are replaced.

The system of building control may change again in the next few years. In addition to self-certification schemes for the installation of specified equipment and for replacement windows, which were introduced in 2002, the DTLR is considering the development of self-certification of whole buildings by enterprises or individuals deemed to be 'competent' by accrediting bodies (DTLR, 1999b).

² An alteration is 'material' if work results in a building or a 'controlled' service or fitting no longer complying with a relevant requirement; or worsens the situation if it already did not comply.

4.2 Regulatory framework

The Building Act 1984 provides the legal framework for legislation concerning the content and implementation of building regulations. The relevant legislation current in Spring 2002 was:

- the Building Regulations (England and Wales) 2000, amended by the Building (Amendment) Regulations 2001, 2002;
- the Building (Approved Inspectors etc.) Regulations 2000; and
- the Building (Local Authority Charges) Regulations 1998;

The first two took effect in January 2001, the third in April 1999.

The Building Regulations (England and Wales) 2000 (Statutory Instrument no. 2531), sets out the procedures and requirements of building control. It comprises 6 parts and three schedules.

- Part I: General (citation and commencement, interpretation).
- Part II: Control of building work (meaning of building work, requirements relating to building work, meaning of material change of use, requirements relating to material change of use, materials and workmanship, limitation on requirements, and exempt buildings and work).
- Part III: Exemption of public bodies from procedural requirements.
- Part IV: Relaxation of requirements.
- Part V: Notices and plans (giving of a Building Notice or deposit of plans, particulars and plans where a Building Notice is given, Full Plans, notice of commencement and completion of certain stages of work, energy rating, and completion certificates).
- Part VI: Miscellaneous (testing of drains and private sewers, sampling of material, supervision of building work otherwise than by local authorities, unauthorised building work, contravention of certain regulations not to be an offence, and transitional provisions).

Schedule 1: Requirements.

Schedule 2: Exempt buildings and work.

Schedule 3: Revocation of regulations.

Traditionally, building control was conducted by local authority Building Control departments, with full scrutiny of plans prior to approval or rejection. This system continues, but alternatives were introduced in the 1980s as part of the Conservative government's policy of privatisation and deregulation. The Building Act 1984 introduced a choice of building control service providers and accelerated procedures. Now, building control for almost half of new homes is undertaken by the leading private sector Approved Inspector, NHBC Building Control Services Ltd., and Type Approval is used for the standard house-types of the major house-builders. Changes to legislation in 1997

broadened competition and, in Spring 2002, there were over 40 accredited Approved Inspectors, both corporate and individual. However, NHBC Building Control Services Ltd. is still the only Approved Inspector to have the insurance cover necessary to undertake building control of new housing.

The Building (Approved Inspectors) Regulations 2000 (Statutory Instrument no 2532) comprises eleven parts (with 32 regulations) and eight schedules. It sets out the procedures of building control by Approved Inspectors.

- Part I: General (citation, commencement, revocations, and interpretation).
- Part II: Grant and withdrawal of approval (approval of inspectors, designation of bodies to approve inspectors, manner of approval or designation, termination of approval or designation, lists of approvals and designations).
- Part III: Supervision of work by Approved Inspectors (initial notice, amendment notice, independence of Approved Inspectors, functions of Approved Inspectors, energy rating, Approved Inspector's consultation with the fire authority).
- Part IV: Plans certificates (form of plans certificate, grounds and period for rejecting plans certificate, effect of plans certificate).
- Part V: Final certificates (form, grounds and period for rejecting final certificate).
- Part VI: Cessation of effect of initial notice (events causing initial notice to cease to be in force, cancellation of initial notice, local authority powers in relation to partly completed work).
- Part VII: Public bodies (approval of public bodies, public body's notice, public body's consultation with the fire authority, public body's plans certificate, grounds and period for rejecting public body's plans certificate, effect of public body's plans certificate, public body's final certificate, events causing public body's notice to cease to be in force).
- Part VIII: Certificates relating to deposited plans.
- Part IX: Registers.
- Part X: Effect of contravening building regulations.
- Part XI: Miscellaneous provisions (transitional provisions).
- Schedule 1: Revocation of regulations.
- Schedule 2: Forms (initial notice, amendment notice, plans certificate, combined initial notice and plans certificate, final certificate, notice of cancellation by Approved Inspector, notice of cancellation by person carrying out work, notice of cancellation by local authority, public body's notice, public body's plan's certificate, combined public body's notice and plans certificate, public body's final certificate.)
- Schedule 3: Grounds for rejecting an initial notice, an amendment notice, or a

plans certificate combined with an initial notice.

Schedule 4: Grounds for rejecting a plans certificate, or a plans certificate combined with an initial notice.

Schedule 5: Grounds for rejecting a final certificate.

Schedule 6: Grounds for rejecting a public body's notice, or a combined public body's notice and plans certificate.

Schedule 7: Grounds for rejecting a public body's plans certificate, or a combined public body's notice and plans certificate.

Schedule 8: Grounds for rejecting a public body's final certificate.

The Building (Local Authority Charges) Regulations 1998 (Statutory Instrument no. 3129) authorise local authorities to fix and recover charges for carrying out building control functions, according to stated principles. The regulations make each local authority responsible for setting their own charges for five specified functions (including 'a plan charge', 'an inspections charge', and 'a Building Notice charge') and for doing so according to accounting and administrative arrangements laid down in the regulations.

Some further controls influence the application of building control procedures in terms of fire safety measures, including: the Fire Precautions Act 1971, The Fire Precautions (Workplace) Regulations 1997, amended 1999, and The Housing Act 1985.

4.3 Permit procedures

4.3.1 Categories of buildings

Exemptions

Exemptions from building control include:

- buildings controlled under other legislation (Explosives Act, Nuclear Installations Act, etc.);
- buildings not frequented by people (greenhouses and agricultural buildings, temporary buildings, ancillary buildings such as construction site huts, ancient monuments);
- detached single storey buildings with a maximum floor area of 30 m², which do not contain sleeping accommodation, and no point of which is less than one metre from its boundary; or which is constructed substantially of non-combustible material;
- detached buildings with a maximum floor area of 30 m², designed and intended to shelter people from the effects of nuclear, chemical or conventional weapons, and not used for any other purpose, where the excavation for the building is no closer to any exposed part of another building or structure than a distance equal to the depth of the excavation plus one metre;

- detached buildings, with a maximum floor area of 15 m², which do not contain sleeping accommodation;
- extensions of buildings by the addition at ground level of a conservatory, porch, covered yard or covered way, or a carport open on at least two sides, with a maximum floor area of 30 m². If a conservatory or porch is wholly or partly glazed, the glazing must comply with Building Regulations Part N.

Local authority procedures

Local authority building control departments operate alternative procedures: the deposit of Full Plans, with a priori scrutiny and approval of drawings; and the much faster Building Notice, which is a declaration of conformity with regulations.

Full Plans

The deposit of Full Plans can be used for any type of building, but is mandatory in cases of material changes of use to form a dwelling, a flat or flats, a hotel or boarding house, an institutional building, a public building, or any use subject to Building Regulations in a previously exempt building. Many types of alterations need only a Building Notice, but a Full Plans application is required in the case of:

- extensions and alterations to any building which is used for a purpose designated under the Fire Precautions Act 1971 or to which the Health & Safety at Work (Fire Precautions) Regulations apply³;
- alterations to means of escape in case of fire;
- alterations to the fire safety of a building in respect of: structure and linings (internal fire spread); walls and roof (external fire spread); access and facilities for the fire service.

It is also usual to require a Full Plans application in the case of:

- extensive internal structural alterations to any building;
- extensions of two or more storeys;
- the formation of a room in the roof space.

Building Notices

Building Notices may be used for new-build houses and alterations to existing housing. They cannot be used for buildings designated under the Fire Precautions Act 1971.

As well as new-build houses, Building Notices are usual in the case of:

- minor internal structural alterations to domestic property involving the

³ Such buildings require means of escape in case of fire and comprise some hotels, boarding houses, factories, offices, shops and railway premises.

removal of one or two load-bearing walls or the removal of a chimney breast.

- small single storey domestic extensions of simple design;
- conversion of a garage or similar outbuilding into living accommodation;
- construction of a detached garage;
- detached outbuildings (where not exempt from the regulations);
- new chimneys or flues, or alterations to existing fireplaces, hearths or flues;
- installation of boilers or other heating appliance (unless the installation is carried out by a registered installer);
- installation of a septic tank drainage system;
- installation of an unvented hot water system with a storage capacity over 15 litres;
- provision of a new bathroom, shower or WC and associated drainage, or other alterations to a drainage system;
- replacement of roof covering material;
- underpinning of foundations;
- installation of insulation material in an existing cavity wall;
- alterations to access or facilities for disabled people, or alterations to introduce access or facilities.

Approved Inspector procedures

Approved Inspectors operate a single procedure, starting with the issue of an Initial Notice requesting removal of responsibility for building control from the local authority. The local authority should have no further involvement, but information should be supplied to satisfy their linked powers concerning drainage etc.

National Type Approval

House-types can be submitted for Type Approval, in conjunction with either a Building Notice (if applicable) or the Full Plans procedure. Once the initial application has been passed, the type approved design is registered with the Local Authorities National Type Approval Confederation (LANTAC) and can be repeated anywhere throughout England and Wales. Only site specific details such as foundation and drainage are subject to individual approvals. Features such as windows and roof shapes may be changed as required. A Type Approval Certificate is valid for three years. Type Approval can also be awarded by Approved Inspectors. Indeed this has constituted a large part of the domestic work of NHBC Building Control Services Ltd.

4.3.2 Description of the procedures

This section is focussed on the permit procedures. Performance standards for the (internal) procedures of public and private Building Control Bodies are discussed separately, in section 4.4.

Consultation prior to application

Both public and private sector BCBs offer informal advice and consultation prior to application. Many local authorities publish guidance in the form of leaflets and web pages; this is mostly aimed at owner-occupiers who want to extend or alter existing houses. Advice on the NHBC website is aimed at self-builders.

Documents

Full Plan applications should contain:

- site plans to a scale of at least 1:1250 showing the location of proposed buildings, plot boundaries, adjacent roads, and position of public sewers;
- scale drawings, sufficient to show that work would comply with regulations.

Two copies of drawings are required, of which one is to be returned to the applicant. One or two additional copies are required if the works involve means of escape in case of fire: the number of copies appears to vary between fire authorities.

Many local authorities now offer electronic submission, through the LABC Service's Submit-a-plan website: www.submit-a-plan.com. Progress of an application can be traced through www.track-a-plan.com.

A Building Notice is a statement of basic information, including the name and address of person intending to carry out the work, a commencement date, a statement that the notice is given in accordance with Regulation 11(1)(a) and the location of the building, its current use and intended 11(1)(a).use.

The document should also include:

- descriptions of the proposed building work or material change of use, including a statement of whether or not it is minor work⁴;
- a site plan if the project concerns the erection of a new building or extension of an existing building;
- for new buildings or extensions to existing property a location plan at a scale of at least 1:1250 showing the proposed buildings, plot boundaries, adjacent roads, and public sewers;
- details of any cavity wall insulation or hot water storage system, together with the credentials of installers.

Drawings are not always necessary, such as in the case of some interior work to existing buildings.

⁴ The term 'minor work' relates to existing housing and comprises: material alteration or extension of a one or two storey dwelling-house, provided it afterwards has no more than three storeys; provision, extension or material alteration of controlled services or fittings; or underpinning.

Local Authority National Type Approval requires the submission of three copies of detailed drawings, whether with a Full Plans application or a Building Notice.

Approved Inspectors require for an initial notice:

- site plan to a scale not less than 1:1250 showing the site location, boundaries, and proposed buildings;
- documents in relation to the linked powers of local authorities, to show foul and surface water connections to sewers or other outfalls such as soakaways, and proposals to protect any existing sewer.

The supply of further information is a matter for agreement between the applicant and the Approved Inspectors, but usually comprises two copies of scale drawings, sufficient to show that work would comply with regulations.

Approval/acceptance

The operational procedures of public and private sector Building Control Bodies (BCBs) are increasingly similar, but there are notable differences in the enforcement of compliance.

Local authority BCBs: Full Plans submission

In the case of Full Plans the building owner, or his/her agent deposits all the drawings necessary to demonstrate compliance with the regulations, together with a plans fee and an application form. The local authority must fully scrutinise the drawings and determine the application within a prescribed period. A notice of approval is valid for three years from the date of deposit of plans.

Applications must be approved unless the plans contravene either the Building Regulations or requirements under the 'linked powers' concerning sewers, drainage, or water supply. Any notice of rejection must specify the deficiencies. Plans, can however, be approved subject to agreed modifications.

If the Building Control officer is not satisfied that the proposals meet the requirements of the Building Regulations, there are three possible courses of action open to the applicant:

1. To alter the proposals according to the advice of the Building Control officer.
2. To seek a determination from the Secretary of State if they disagree over compliance with requirements, provided the work has not been started.
3. To apply to the Local Authority for a relaxation or a dispensation of a requirement of the Regulations, if the applicant feels that a particular requirement is too onerous for the circumstances. In the event of a refusal by the Local Authority, to appeal to the Secretary of State with a month of the rejection.

At the deposit of plans, applicants may request that plans are passed in

stages, with approvals conditional on the deposit of further plans, but local authorities are not obliged to do so. Usually, conditional approvals are agreed to allow for further information to be provided at a later date, such as structural design details. Such information must be supplied and approved before the start on site. Even with a Full Plans application, it is possible to start work on site with only two days' notification, although this is inadvisable before approval.

Local authority BCBs: Building Notice

A Building Notice is, in effect, a statement of conformity with the regulations and the applicant must take the risk of having to remedy work if problems are revealed during site inspection. This procedure is widely used by house-builders, usually with standard designs that already carry Type Approval.

There is no process of approval or rejection for Building Notices. Local authority BCBs can only request additional information or require an access agreement with the water utility if work involves building within 3 m of a sewer. There is no procedure to seek a determination from the Secretary of State if there is a disagreement between the applicant and the Local Authority, unless plans are subsequently deposited.

Private BCBs (Approved Inspectors)

An initial notice is an application to a local authority to remove the site from its control in order that an Approved Inspector can undertake building control. An initial notice is completed by the applicant or their agent and by the Approved Inspector. The Approved Inspector must declare any professional or financial interest in the work and submit a declaration by the insurer that an approved insurance scheme applies. There must be an undertaking to consult the fire authority if appropriate.

The initial notice is sent to the relevant local authority. Initial notices may only be rejected on the grounds of incomplete or inaccurate information, unsatisfactory proposals in connection with the local authority's linked powers concerning drainage and sewers, or failure to comply with any local legislation. Rejections must be made within five days.

The subsequent approval process is similar to that of a Full Plans submission to a local authority, including the possibility of an approval with conditions to avoid initial delays.

If the Approved Inspector is not satisfied that the proposals meet the requirements of the Building Regulations, the same three possible courses of action are open to the applicant as with local authority building control: alteration of proposals, request for determination from the Secretary of State; or application to the Local Authority for a relaxation or a dispensation of a requirement of the Regulations.

An applicant may request that the Approved Inspector issues a plans certifi-

cate, which certifies that the design has been checked and complies with the regulations. This can be issued at the same time as the initial notice or later, provided the work has not been carried out. A copy is submitted to the local authority, which has five working days in which to reject it. Grounds for rejection are broadly similar to those for rejection of Initial Notices. Plans certificates can be rescinded by local authorities if work has not started within three years of acceptance.

Inspection

Local authorities are under no obligation to make inspections, but in practice they usually do so. Approved Inspectors are liable for negligence and must make inspections to satisfy themselves that the requirements have been met. Building Control Performance Standards states that both public and private BCBs “shall adopt an appropriate site inspection regime which takes full account of relevant factors such as the nature and complexity of the work, the experience of the builder, etc.”.

A schedule of key stages is agreed and the person carrying out work must notify the BCB when those stages are reached. Typically, these are: foundation excavations prior to concreting; foundation concrete; oversite (ground floor) prior to concreting; dampproof course prior to covering; foul water drainage prior to backfilling; surface water drainage prior to backfilling; occupation prior to completion; completion of works. The Building Control Surveyor may also request notification at other stages of the work that is not specifically included within the Regulations e.g. roof timbers.

In order to avoid delays on site, the BCB must respond to notification within one working day, normally by making an inspection. They may also visit unannounced at other times. Building Control Performance Standards suggests a minimum of 1 visit every 21 days or every 400 man hours. BCBs record observations in a site record book, which gives the applicant or agent a clear record of problems that need to be resolved.

With both Full Plans and a Building Notice, the local authority has powers to order compliance during construction. It can order demolition or remedial works, withhold a completion certificate, and take cases to the magistrates court. An Approved Inspector can issue a notice of non-compliance, but if the person carrying out the work does not comply within three months, the initial notice is cancelled and responsibility reverts to the local authority to enforce the remedy.

Completion

The issue of a certificate of completion by a local authority or of a final certificate by an Approved Inspector, is optional for dwellings, unless requested at the deposit of plans, but is normal practice. Issue of a certificate is only mandatory for work on buildings designated in the Fire Precautions Act 1971.

Local authorities have 10 days in which to reject final certificates issued by Approved Inspectors.

If a scheme that has been approved under a Full Plans submission is built in accordance with plans, but is later found not to comply with the regulations, the local authority cannot take action against the applicant. This also applies following local authority acceptance of an Approved Inspectors' final certificate.

The protection of Full Plans or Approved Inspector approval is not available with a Building Notice, where the whole process of ensuring that work complies with the regulations is carried out at the site inspection stage.

Procedure times

For a Full Plans application, the proposed work is formally determined within a prescribed period. A decision notice must be issued within five weeks or two months, with the agreement of the applicant. Some local authority BCBs undertake to give feedback on amendments or to request additional information within two or three weeks. Work may start two days after application, but this tends to detract from the security of Full Plans submissions.

For a Building Notice submitted with a commencement date, work may start two days later. The design is, effectively, approved in the course of inspection. When an Approved Inspector is used, the only statutory delays are created by the periods allowed for local authorities to reject the initial notice (5 days), the plans certificate (5 days), or the final certificate (10 days). There are no limits set for the time that Approved Inspectors take to determine applications, but speed of decision-making is one of the advantages claimed by private BCBs over traditional local authority processes.

The process of building control can be accelerated in two ways: Type Approval and Building Notices. Each complements practice in the private sector, where volume house-builders mostly build two-storey, detached and semi-detached single family housing, using standard house-types that vary only a little around the country. Nationally accepted Type Approval of standard house-types mean that only site-specific issues, such as connection to public sewers, need local approval. Once a design has Type Approval, approval can be extended to variants of the original design.

The system of Type Approvals is complemented by the Building Notice procedure that allows work to start on site, without scrutiny of Full Plans or approval, two days after notification. In effect, the house-builder asserts that the scheme meets the requirements of the regulations and takes the risk that site inspections may reveal problems that must then be remedied. The risk is reduced if the houses have Type Approval.

Delays can also be limited by agreements to give conditional approvals if some information is outstanding at application, such as structural design calculations, or if minor modifications must be made to the design.

4.3.3 Planning issues

In the UK, the planning and building control systems are separate. Planning controls are devised locally, within the parameters of the Town and Country Planning Act 1990 and associated Planning Policy Guidelines (PPGs) and Regional Policy Guidelines (RPGs). The planning system determines the nature of developments, and particular attention is paid to the character of existing neighbourhoods. Planning permission is required for: all new buildings; extensions and alterations which affect the appearance of a building; a material change of use of land or buildings; sub-division of a house into two or more flats; new access on to a public highway, including a pedestrian access; and new roads. Various types of building work are permitted without planning permission, including small extensions, but stringent constraints apply in Conservation Areas and protected rural areas including National Parks.

Working within the parameters of the Town and Country Planning system, local plans are administered by a planning division, usually within a development department that is separate from building control. However, some local authorities operate a team approach to co-ordinate the development process of each department and reduce delays.

The occupiers of buildings in the vicinity are consulted and the process of public consultation and decision making normally takes eight weeks. Generally, planning permission is obtained before an application is made for building control, although it may be made simultaneously.

4.3.4 Sanctions for non-compliance

Local authorities can prosecute in cases of building work undertaken without notification or work which does not comply with the performance requirements of the building regulations. Penalties are limited to £5,000 plus £50 for each day after conviction that each contravention is not put right. If work is not remedied when requested, the local authority has power to do the work itself and recover costs.

4.4 Building control

4.4.1 Roles and responsibilities

The Department of Transport, Local Government and the Regions (DTLR) formulates planning and housing policy, defines and administers the building regulations, and is responsible for determinations (of interpretation of requirements) and appeals (against rejection of applications).

Local authority planning officers implement local planning policy, which is formulated within national guidelines. Local authorities are responsible for assessing housing needs and conditions and they work with both Registered Social Landlords (RSLs) and private developers to meet the need for affordable housing.

There are two types of Building Control Bodies (BCBs): local authorities and Approved Inspectors. In addition to the national building regulations, BCBs must consider any local statutes, such as the remaining London Building Acts.

The Construction Industry Council (CIC) accredits Approved Inspectors. Before 1997, accreditations were by the DTLR. Both companies and individuals can be accredited as Approved Inspectors, but only NHBC Building Control Services has the insurance cover necessary to undertake building control for new-build housing. In addition to building control, Approved Inspectors can undertake work under the Party Wall etc Act 1996 and check compliance with other legislation and regulations.

Most duties are common to both local authority and private sector BCBs:

- scrutiny and approval or rejection of applications (excluding Building Notices);
- liaison with the Fire Authority for buildings which must have means of escape;
- inspection of work on site;
- notification of any non-compliance with regulations;
- certification of completion (optional for most dwellings).

Although amendments to legislation have reduced differences between each type of BCB, local authorities maintain a leading role, in the sense that they can approve or reject Approved Inspectors' initial notices, plans certificates and final certificates. Only local authorities can take enforcement action in cases of non-compliance with the regulations and they must resume control should private certification fail.

Local authority BCBs have some further powers and duties:

- administration of Building Notices;
- enforcement action in cases of non-compliance with Building Regulations or local legislation;
- retrospective inspection and approval of unauthorised work completed since 1985 under Regularisation applications;
- action on dangerous structures;
- licensing of special and temporary structures;
- additional fire precautions in large or tall buildings;
- means of escape in case of fire from existing buildings.

BCBs must consult the appropriate Fire Authorities if applications concern

buildings that require provision of means of escape under the Building Regulations or the Housing Act 1985, or buildings subject to The Fire Precautions Act 1971 or The Fire Precautions (Workplace) Regulations 1997, amended 1999.

Within the construction industry certain professional bodies are allowed to approve individuals to certify plans as meeting the requirements for energy efficiency or structural design. The building regulations do not require the use of an architect.

Local authorities also exercise some public health functions at the same time as administering the requirements of the Building Regulations. These functions, known as 'linked powers', concern provisions in case of building over drains and sewers, provision of drainage, and provision of water supply.

There are some further regulations concerning services. The Water Industry Act 1991 sets out responsibilities of the water utilities and the rights of building owners and occupiers for water supply and the provision of, and connection to, public sewers. Gas and electricity regulations address issues of safety, not provision of supply.

Although a quality mark scheme is being introduced as part of a programme to discourage 'cowboy' builders, there are no mandatory controls on builders beyond the requirements of section 7 in the building regulation on materials and workmanship: "building work shall be carried out with adequate and proper materials ... in a workmanlike manner".

4.4.2 Municipal departments

The administrative organisation of England and Wales is subject to frequent adjustment and occasional re-organisation. In England, there are currently 46 unitary authorities, 34 shire counties split into 239 non-metropolitan districts, 36 metropolitan districts, and 33 London boroughs, including the City of London. In Wales, there are 22 unitary authorities.

Local government is administered by different types of local authority: in England, there are County Councils, District Councils, London Borough Councils, the Common Council of the City of London, and the Council of the Isles of Scilly; in Wales, the County Councils and County Borough Councils. Each local authority in England and Wales has a Building Control section, which has a general duty to see that building work complies with the building regulations except where it is formally under the control of an Approved Inspector.

Individual local authorities co-ordinate their services regionally and nationally via LABC Services (Local Authority Building Control), which also provides a range of national approval schemes. LABC can also co-ordinate a Development Team for large projects, bringing together representatives from Building Control, Planning, Highways, Environmental Health and the Fire Service, but provided through a single point of contact.

Best practice in building control

The operation of NHBC Building Control Ltd. was governed by policy guidelines endorsed by Ministers at the time the company became an Approved Inspector. In the face of the early competition from the first Approved Inspector, the association representing local authorities developed a model for policy and guidance which was adopted by most Councils. Subsequently, a mutually agreed set of Performance Standards was developed for both public and private sector Building Control Bodies (BCBs) by a working party consisting of the Construction Industry Council, the Local Government Association and the Association of Corporate Approved Inspectors. Building Control Performance Standards was published in 1999. The Standards promote consistency and common practice in operational procedures, and are supported by guidance on how they might be achieved. The standards are not mandatory, but could form the basis of service agreements between BCBs and their clients. The standards cover:

- formulation of policy for the provision of the building control service;
- adequacy of staffing, with experienced and qualified staff;
- time taken for consultations; consultations in addition to statutory requirements;
- 'one stop shop' approach to development consents;
- clear information to clients following assessment of plans;
- site inspection regime;
- completion certificates;
- archiving of records;
- continuing professional development and in-service training;
- monitoring of BCB performance.;
- incorporation of quality management principles, which can demonstrate that the above standards are being addressed;
- observation of professional standards and business ethics.

Additionally, Building Control Bodies may register for quality assurance approval under BS EN ISO 9002 (1994).

4.4.3 Private building control organisations

The Construction Industry Council (CIC) is designated by the government to approve and register private sector building control inspectors. The Construction Industry Council Approved Inspectors Register (CICAIR) has accepted individual applications since January 1997, and applications from corporate bodies since March 1999. Until then, approvals were the responsibility of the DETR. At the time of writing, in April 2002, the register listed 12 companies, approved by the DETR between 1997 and 1999, including NHBC Building Control Services, and 6 companies and 25 individuals approved by CICAIR. Of the original individual Approved Inspectors, 17 did not apply for renewal of their

approval in 2002 (many were nearing retirement age).

All Approved Inspectors, 17 can control commercial, retail, and industrial buildings, and certain types of dwellings, such as halls of residence or staff flats in hotels. They can also control extensions to existing buildings, but only NHBC Building Control Services Ltd. has the insurance cover necessary for the control of new-build housing. It has the advantage of being able to insure its work with its parent organisation, the National House-Building Council (NHBC).

Initially, NHBC Building Control Services Ltd. was restricted to housing of no more than four storeys, but since 1998 it can control any height or type of building. In 1999/2000 it undertook building control for half of new housing.⁵ Use of NHBC Building Control Services Ltd. offers the particular advantage to the larger house-builders that they deal with a single body, rather than different local authorities around the country.

There are four stages to qualification as an Approved Inspector:

1. Application: an application form and a detailed 'knowledge base' must be completed. The knowledge base, which is similar to an open exam, addresses six key areas of knowledge: Building Regulations and statutory control; Law; Construction technology and materials; Fire studies; Foundation and structural engineering; Building service and environmental engineering. It uses the formulation "Please demonstrate, using particular examples from your experience, how you feel you are equipped with a comprehensive knowledge of / an understanding of / an appreciation of..." depending on the topic. Applicants must also submit an operational business plan.
2. Pre-qualification verification: the Registrar checks the knowledge base responses for gaps in experience or qualification that may disqualify the applicant or cause delays at later stages.
3. Admissions panel: the papers are assessed by experts nominated by CIC members and qualified Approved Inspectors. They decide whether the candidate merits a professional interview.
4. Professional interview: three assessors assisted by the CICAIR registrar interview the candidate.

Successful completion of the four stages results in an invitation to register as an Approved Inspector. Approval is valid for five years. New Approved Inspectors are issued with the CICAIR Code of Conduct and Disciplinary Procedures. The fee for the application assessment process is £264 plus VAT. Certification, plus five year's registration and monitoring costs £360 plus VAT.

⁵ During 1999/00, NHBC carried out building control on 74,000 new homes in England and Wales. www.nhbc.co.uk. There were 149,000 housing starts in 1999/00, of which 133,000 were private enterprise. www.dtlr.gov.uk

Of the seventeen first individual Approved Inspectors who did not apply to renew their approvals several continued to work in local authority building control and did not work independently, others were approaching retirement age. The interests of building control officers used to be represented by a professional association, the Institute of Building Control, but it has merged with the Royal Institute of Chartered Surveyors (RICS). The interests of corporate Approved Inspectors are represented by the Association of Corporate Approved Inspectors (ACAI).

4.4.4 Fees

Until April 1999, charges by local authorities for building control were set by government. Now, within certain limits, they are free to set their own scales of charges, provided that, over three years, the income derived from charges meets the 'proper costs' of building control. In other words, the local authority building control service must be self-financing. The amount of fees payable depends on the type of work, the number of dwellings in a building and the total floor area. The Building (Local Authority Charges) Regulations 1998 sets out the basic fee structure. The fee for a Building Notice must equal the total of the plans and inspection fees charged for a Full Plans submission. Both are subject to Value Added Tax (VAT). The fee for a regularisation certificate is 120% of the Building Notice fee, but VAT is not payable. Some authorities offer discounts for certified calculations relating to Part A Structure and Part L1 Conservation of fuel and power in dwellings. Reduced charges may be made for repetitive building work, such as the construction of multiple housing units on the same site. There does not appear to be any provision for a reduction in fees where house-types have LANTAC Type Approval. Fees may not be charged for installation of an unvented hot water system or cavity wall insulation, where the installation is certified and undertaken by an approved installer, or for work to provide access and facilities for disabled people.

Only the plans fee is paid at the deposit of Full Plans. If amendments are required, there is usually no charge for resubmission. Inspection fees are requested at the start of work on site or following the first site inspection, but fees can be paid in instalments. For a Building Notice or Regularisation Certificate, the full amount must be paid at application.

Charges from a random sample of local authorities are shown in table 4.1. Despite deregulation, there appear to be only small variations in charges around the country. For instance, the Royal Borough of Kensington and Chelsea has lower inspection fees than Rushmoor Borough Council in Hampshire or Canterbury City Council, and charges a flat fee per dwelling for regularisation certificates, rather than a sliding scale. Durham City Council has slightly higher fees for small sites.

There are further scales of fees for certain types of extensions, related to

Table 4.1 Examples of local authority building control fees for dwellings up to 300 m² and flats up to 3 storeys (April 2002)

a) Rushmoor Borough Council, Hampshire, Canterbury City Council					
Number of dwellings	Full Plans submission		Building Notice (inc. VAT)	Regularisation (no VAT payable)	
	Plan fee (inc. VAT)	Inspection fee (inc. VAT)	Total (inc. VAT)		
10 dwellings	634.50	1,739.00	2,373.50	2,373.50	2,424.00
20 dwellings	693.25	3,418.08	4,111.33	4,111.33	4,198.80
21-30: for each dwelling:	add 11.75	add 119.85	add 131.60	add 131.60	add 134.40
31+: for each dwelling:	add 5.87	add 88.13	add 94.00	add 94.00	add 96.00
b) Royal Borough of Kensington and Chelsea, London					
10 dwellings	634.50	1,692.00	2,326.50	2,326.50	360 per dwelling
20 dwellings	693.25	3,337.00	4,030.25	4,030.25	
21-30: for each dwelling:	add 11.75	add 117.50	add 129.25	add 129.25	
31+: for each dwelling:	add 5.87	add 88.13	add 94.00	add 94.00	
c) Durham City Council					
10 dwellings	659.56	1758.83	2,418.39	2,418.39	2,469.85
20 dwellings	686.31	3,303.63	3,989.94	3,989.94	4,074.84
21-30: for each dwelling:	add 11.63	add 116.33	add 127.96	add 127.96	add 130.68
31+: for each dwelling:	add 5.82	add 87.24	add 93.06	add 93.06	add 95.04

Figures in Pounds Sterling.

floor area, or loft conversion. There is also a scale based on the cost of work for large projects and other types of work.

The charges regulations do not apply to Approved Inspectors and the fees charged by NHBC Building Control Services Ltd. are a matter of negotiation.

4.5 Technical requirements

4.5.1 Regulatory framework

The Department of Transport, Local Government and the Regions (DTLR) is responsible for the definition, adaptation and administration of building regulations. Schedule 1 to The Building Regulations (England and Wales) 2000, contains the technical requirements, grouped in 13 Parts, which are almost all expressed as brief functional statements and have been amended several times. The building regulations are elaborated in documents approved by the Secretary of State, the Approved Documents. There is one Approved Document for each of the 13 Parts, which each cover a particular category of quality issues. There is also an Approved Document to support regulation 7 on materials and workmanship.

Several of the Approved Documents have been amended at least once. The DTLR is advised by the Building Regulations Advisory Committee (BRAC), which has a rolling programme of review of the regulations. One of their

tasks is to remove any provisions that do not directly affect the issues of health, safety, welfare, convenience, conservation of fuel and power and prevention of contamination of water. As part of the process of review, the DTLR conducts consultation exercises on proposed amendments. One example of a recent consultation is regarding conservatories and porches with a floor area of less than 30 m² that are built as extensions to existing properties. These have been exempt from controls, but views are being sought on whether requirements should be developed in order to avoid poor standards of construction, lack of regard for energy efficiency, and for various safety issues. (DTLR, 2001).

In addition to the national building regulations, some parts of the London Building Acts 1930-1939 remain in force in the City of London and the 12 Inner London boroughs and apply in addition to the building regulations. There are some further local statutes in other areas, mostly concerning fire safety. They are listed in Powell-Smith and Billington (1999).

Other relevant legislation includes: the Party Wall etc. Act 1996, the Housing Act 1985, the Fire Precautions Act 1971, the Water Industry Act 1991, the Gas Safety (Installation and Use) Regulations 1994.

Other legislation, with relatively minor influence on housing development, includes: the Highways Act 1980, the Clean Air Acts 1956 and 1993, and The Environmental Protection Act 1990. There is some further legislation with implications for non-domestic buildings and for the construction process, including the Disability Discrimination Act 1995, which from 2004 will require the removal of physical barriers by service providers.

Most requirements of the Building Regulations apply to all new buildings and extensions to existing buildings. In some of the Parts, such as Part M: Access and facilities for disabled people and Part L: Conservation of Fuel and Power, certain sections apply only to dwellings and others only to non-domestic buildings. Requirements for certain sections of Part B: Fire Safety differ between purpose groups (residential, shop, commercial, office, assembly, recreation, industrial, storage, other non-residential).

There are some further limits on the application of certain requirements. For instance, some fire safety requirements are specific to houses of up to two storeys, and others to dwellings with a floor at 4.5 m or higher. Accessibility requirements apply to dwellings entered at ground level or on storeys served by a lift; reduced requirements apply to other dwellings and for dwellings on steeply sloping plots.

Requirements for existing buildings

Under the Building Regulations, existing buildings are subject to requirements in the case of material alterations or change of use, for example the conversion of commercial buildings to dwellings or the conversion of a house

to flats. Loft conversions are also subject to fire safety requirements.

Material alterations relate to requirements concerning: Part A Structure; Part B1 Means of escape; Part B3 Internal fire spread – structure; Part B4 External fire spread; Part B5 Access and facilities for the fire service; Part L1 Conservation of Fuel and Power; Part M Access and facilities for disabled people. It is not necessary to raise the standard of the existing building, only to avoid making it worse.

There are seven classes of material change of use: where a building becomes a dwelling; contains a flat for the first time; becomes a hotel or boarding house; becomes an institution; becomes a public building; contains a different number of dwellings than before; is no longer exempt. Most sections of the building regulations apply in cases of change of use, but some are only applied in the case of specific changes. For example, Part C4 Resistance to weather and ground moisture is only applied to buildings that become dwellings.

The detailed interpretation of Fire Safety requirements may be varied for buildings of special architectural or historic interest. In such cases, risk assessment may be used to establish the level of protection required, which may be met by fire engineering solutions, such as sprinkler systems.

Otherwise, the only requirements of the Building Regulations (England and Wales) that apply to existing dwellings are the provisions, effective from April 2002, concerning the replacement of heating appliances and windows.

There are further controls over existing dwellings, outside the Building Regulations, that concern safety issues. Local authorities have powers under the Building Act 1984 to order remedial works or demolition in the case of dangerous or dilapidated structures. The Housing Act 1985 obliges local authorities to require provision of means of escape in case of fire for houses in multiple occupation. The Party Wall etc. Act 1996 requires notification of the owners of adjoining buildings of work on an existing party wall, building on the boundary of a neighbouring property, or excavation within 3 meters of a neighbouring building. It establishes rights concerning demolition of inadequate party structures, new building and repair, expenses of building and compensation for damage. Also, the rights of adjoining owners to counter-notice, specifying requirements to build in features to the party wall, such as chimney breasts, or to increase the depth or strength of proposed foundations. There is also legislation to protect the amenity of existing dwellings: the Rights to Light Act 1959 requires that new housing must maintain daylight to existing buildings.

4.5.2 Formulation

The Building Regulations comprise performance requirements. The Approved Documents elaborate the requirements, discuss the underlying issues, and

describe strategies that can be used to comply with the requirements. They give examples of compliance, often by means of diagrams. Examples of compliance sometimes include tables of minimum or maximum dimensions or other values. Compliance with regulations can be achieved by adoption of the guidance given in Approved Documents or demonstration that alternatives comply with the performance requirements of the regulations, usually by reference to other standards. Often, a variety of ways of complying with requirements is suggested. For example, Part B Fire Safety: Appendix A: performance of materials and structures offers options for materials, products or structure:

- to accord with a specification proven by test;
- to be assessed by test against appropriate standards or design guides such as BRE reports;
- to conform to tables given in the Approved Documents; or
- to be designed in accordance with a British Standard or Eurocode.

The Approved Documents are becoming more discursive and easier to understand: each amendment incorporates explanations of the reasoning underlying the requirements and a discussion of the strategies employed. There is also improved co-ordination of the various parts.

There have been some significant changes to the application and requirements of the Building Regulations in recent years, including the extension of accessibility requirements to housing (1999), and provisions applying to existing housing in the revised requirements for the Conservation of Fuel and Power (2001). Other amendments have reviewed the underlying approaches to safety issues or have sought to remove matters which do not relate to health and safety or energy conservation. For example, structural design calculations no longer consider deflection or deformation unless they would impair the stability of another building.

4.5.3 Subjects

The following subjects are regulated within the Building Regulations. The dates in brackets are the amendments current in April 2002.

- A. Structure (1992 Edition, fourth impression (with amendments) 1994, further amended 2000): A1 loading; A2 ground movement; A3 disproportionate collapse.
- B. Fire safety (2000 Edition, amended 2000): B1 means of warning and escape; B2 internal fire spread (linings); B3 internal fire spread (structure); B4 external fire spread; B5 access and facilities for the fire service.
- C. Site preparation and resistance to moisture (1992, second impression (with amendments) 1992, further amended 2000): C1 Preparation of site; C2 Dangerous and offensive materials; C3 Subsoil drainage; C4 Resistance to weather and ground moisture.
- D. Toxic substances (1992): D1 cavity insulation.

- E. Resistance to the passage of sound (1992 Edition, second impression (with amendments) 1992, further amended 2000): E1 airborne sound (walls); E2 airborne sound (floors & stairs); E3 impact sound (floors and stairs).
 - F. Ventilation (1995 Edition, amended 2000): F1 means of ventilation; F2 condensation in roofs.
 - G. Hygiene (1992 Edition, second impression (with amendments) 1992, further amended 2000): G1 sanitary conveniences and washing facilities; G2 bathrooms; G3 hot water storage.
 - H. Drainage and waste disposal (2002 Edition): H1 foul water drainage; H2 cesspools, septic tanks and settlement tanks; H3 rainwater drainage; H4 solid waste storage. Also Sewers Protocol in support of H (2002).
 - I. [There is no part I.]
 - J. Combustion appliances and fuel storage systems (2002 Edition): J1 air supply; J2 discharge of products of combustion; J3 protection of building.
 - K. Protection from falling, collision & impact (1998, amended 2000): K1 stairs, ladders and ramps; K2 protection from falling; K3 vehicle barriers and loading bays; K4 protection from collision with open windows, skylights and ventilators; K5 protection against impact from and trapping by doors.
 - L1. Conservation of fuel and power in dwellings (2002 Edition): Section 1 Design and construction; Section 2 Work on existing dwellings.
 - L2. Conservation of fuel and power in buildings other than dwellings (2002 Edition): Section 1 Design; Section 2 Construction; Section 3 Providing information; Section 4 Work on existing buildings.
 - M. Access and facilities for disabled people (1999 Edition, amended 2000): M1 interpretation; M2 access and use; M3 sanitary conveniences; M4 audience or spectator seating.
 - N. Glazing (safety in relation to impact, opening and cleaning (1998 Edition, amended 2000): N1 protection against impact; N2 manifestation of glazing; N3 safe opening and closing of windows, skylights and ventilators; N4 safe access for cleaning windows etc.
- Regulation 7. Materials and workmanship (1999 Edition, amended 2000) Section 1 Materials; Section 2 Workmanship.

4.5.4 References, guidances and EC Directives

The Approved Documents include many references to British Standards (BS), which are issued by the British Standards Institute. They also refer to publications by the Building Research Establishment (BRE) and various other organisations, for instance Part L1 cites documents by the Building Research Energy Conservation Support Unit (BRECSU), British Cement Association (BCA) and National House Building Council (NHBC); Chartered Institution of Building Services Engineers (CIBSE); Department of the Environment (DoE) and Department for National Heritage (DNH); Waterheater Manufacturers Association

(WMA); and the Society for the Protection of Ancient Buildings (SPAB).

Guidance to interpretation

The Approved Documents provide guidance for some of the more common building conditions and construction techniques.

The Manual to the Building Regulations describes the type of work to which the Regulations apply, the two alternative systems of building control, gives information on how the requirements of the Regulations can be met and includes summaries of other relevant legislation.

DTLR circular letters draw attention to amendments in legislation. The letters, together with appendices, summarise the changes, explain any transitional arrangements, list the revised documentation, and offer contact information for enquiries.

There are various independent commentaries on the implications of the Building Regulations, such as Powell-Smith and Billington (1999), which are usually updated with each major revision of the regulations.

EC Directive on Building Products and Eurocodes

BRAC monitors EC directives to assess the implications for building regulations. Much of the guidance in the Approved Documents is given in terms of performance in relation to British or European Standards or in terms of European Technical Approvals. British Standards may be used for materials or products where European standards or approvals are not yet available, and for some time after.

Approved Document Regulation 7 allows a BCB to reject a CE-marked product on the basis that its performance does not accord with its technical specification, or the declared performance does not meet the requirements of the building regulations. The burden of proof is on the controlling body.

4.5.5 Certification

In October 1997, the Department of the Environment, Transport and the Regions, issued proposals for reducing the administrative burden of the building regulations by means of self-certification by competent enterprises and individuals. The response to the principle of self-certification was largely favourable, and the Department published the consultation paper as *The Building Act 1984 – taking forward self-certification under the Building Regulations (1999)*. The Department identified at least two possible types of competent enterprise:

- specialist contractors, who primarily undertake one aspect of the work, and have the necessary skills to certify their own work. In some circumstances, they may be able to certify the work of others;
 - contractors or clients, who have the necessary expertise to certify that the
-

whole project has been undertaken in accordance with the building regulations.

The Building (Amendment) Regulations 2002 (Statutory Instrument 2002 No. 440) extends self-certification for specified installations of solid fuel and oil fired heating appliances, water-using appliances and internal drainage systems, replacement windows, rooflights, roof windows and doors and lists the appropriate registration schemes. The introduction of energy efficiency controls on replacement windows had threatened an impossible burden on local authorities and prompted the development of the Fenestration Self-Assessment Scheme (FENSA) by the Glass and Glazing Federation. The Building Regulations Advisory Committee (BRAC) stated in its Annual Report 2000 that self-certification will be on the agenda for years to come. However, the DTLR does not appear to have undertaken pilot trials for whole-building self-certification.

However, the construction industry is notorious for poor quality work and resistance to innovation. The self-certification proposals are complemented by DETR initiatives to improve quality in the construction industry. Rethinking Construction (1998), the report of the Construction Task Force chaired by Sir John Egan, identified how the construction process could be significantly improved, not least through supply chain management, and an increased emphasis on partnering. Combating Cowboy Builders (1999), the report of the Cowboy Builders Working Group, led to the development of a Quality Mark scheme to identify competent builders.

4.6 Sources

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Internet

The Building Regulations (England and Wales) and the Approved Documents are published in full at the DTLR website, under the heading of Health and Safety: Construction Legislation: www.safety.dtlr.gov.uk/bregs/index.htm.

UK legislation from 1996 is published at: www.legislation.hmso.gov.uk, but Building Regulations and associated legislation are most easily approached via the links from www.safety.dtlr.gov.uk/bregs/brpub/01.htm.

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Contactpersons

- David Smith, Chairman, Consortium of European Building Control.
- David McCullogh, Chairman, RICS Building Control Forum.
- Huw Taylor, CICAIR.

5 France

5.1 Introduction

France has a population of 60 million, there are 100 departments and 36,000 local authorities. Plans have to be submitted for approval to the local authorities, but the degree of building control is very limited and few inspections are made of the technical aspects of building work. Technical control is compulsory for some types of building and private 'technical controllers' exercise this. Insurance is a dominant factor in the French construction industry.

The regulations of the *Code Civil*, and in particular the regulations that form part of the Spinetta Law (part of the *Code Civil*) determine the responsibilities in the building world that are of very great importance to the building control system. According to these regulations, architects and contractors are responsible for a ten-year period for every building defect, and insurance is obligatory. The policy costs are related to the risks of defects, by which the insurance companies reward thorough technical checking and inspection performed by private building inspection firms by a reduction in policy costs and inspection is then affordable. The technical requirements are set out in many different laws, decrees and ministerial orders. Responsibility for compliance with the law rests with the architect and the contractor.

The scope of building control expanded during the 1980s, with the introduction of requirements for accessibility and thermal performance. More recent ministerial statements advocating higher standards have not resulted in new legislation and, as a result of the economic circumstances of the 1990s there has been a pause in the extension of building regulations.

The technical requirements for sound insulation and for thermal insulation have recently been put at a higher level. The Eurocodes are increasingly implemented in the French norms.

Since an accident at Furiani on Corsica, the requirements for public buildings have become stricter.

5.2 Regulatory framework

The French system of building regulations is highly complex and consists of many kinds of laws and a large collection of official and semi-official documents. The principal documents are the laws (*Lois*), decrees (*Décrets*) and implementing orders (*Arrêtés*) and many ministerial rulings that can function as regulations. The rulings and regulations for a given topic are combined in the Codes. The building and housing Code (*Code de la Construction et de l'Habitation*) and the urban planning Code (*Code de l'Urbanisme*) are the most important ones for building.

The fundamental principles of responsibility for building originate in the Napoleonic Civil Code of 1804. This Code presumes that architects and con-

tractors are responsible for damage occurring in structural works for a minimum of ten years after the completion of a building project. Articles 1792 and 2270 refer to this as follows: Article 1792 states, “If a building built for a lump sum price fails wholly or in part through a defect in construction, even through a defect in the ground, the architect and contractors shall be liable for ten years”. Article 2270 states, “After ten years, the architect and contractor are discharged from providing a warranty for major structures which they built or supervised”.

French law is compiled into Codes. These can be updated by changes to the individual laws, decrees and implementing orders of which they are composed. Each Code therefore has a legislative part (L) and a regulative part (R). Some articles of part (R) refer to implementing orders that are regulative documents although not part of the specific Code.

Central government is responsible for legislation concerning planning, building regulation and housing subsidy. Legal codes consolidate a series of laws made at different times and each is elaborated through national decrees and implementation orders.

The Spinetta Law

With the reforms of the building legislation in 1978 the Spinetta Law was introduced. The Spinetta law is also part of the Civil Code. This law has three aims:

- to increase consumer protection e.g. of the owner or purchaser of a dwelling;
- to reduce delays in the settlement of damages by insurance companies;
- to improve the quality of construction.

The three major subjects covered by the law are:

- the precise definition of builders’ responsibilities, including in particular the presumption of responsibility (no-fault responsibility) of all participants: architects, design officers, contractors, property developers, manufacturers, technical inspection bodies towards the owner during a ten-year period from the date of the works’ acceptance;
- limiting the ten-year liability period to damages concerning the solidity and the watertightness of the works or making them unfit for their purpose;
- the obligation of the ten year insurance that covers the relevant damages, which is two-fold and relates to:
 - the owner of the works: damage insurance policy enabling a rapid financial settlement to effect repair, regardless of establishing responsibility;
 - all participants: professional liability insurance policy;
 - the obligation is limited to building works, so it has no effect on civil engineering works;
 - the technical inspection.

Table 5.1 Authorities and their tasks

Authority	Regulation	Procedure
Parliament	Laws (e.g. Code Civil)	-
President	Decrees (décrets)	-
One or more ministers	Implement orders (arrêtés)	-
Municipalities	-	Building Permit (mainly urban aspects)

5.3 Permit procedures

Public building control, performed by local services, is very limited. There is mainly a check on the location-dependent regulations, the dimensions and the facilities of the building. The location-dependent regulations are mainly laid down in a land-use plan. Upon completion the construction is inspected and checked to ensure the work has been done in accordance with the building permit. Such an inspection can be performed up to two years after completion. Local building control has established a safety committee that must determine whether the requisite safety measures are always taken into account in building plans, particularly for buildings with a public function, such as shops, offices and sports facilities. The level of control and inspection is laid down in a contract with the inspection organisation. It is likely that matters other than the public regulations are also involved in the inspection. For a small category of constructions of great size it is laid down by law that an inspection bureau performs the technical inspection. However, not all constructions are extensively checked and inspected.

The very limited public building control in France is due to a change in legislation in 1967; the aim was to shorten the building permit procedure time. As a result of these changes technical building control by the building control services of the central authorities was nearly abolished. From then on the building control authorities were able to inspect the construction within two years of its completion.

5.3.1 Categories of buildings

There is a distinction between civil engineering works and building works. Another division of construction works can be made according to the building permit procedure they have to follow.

France has divided the constructions into those free of permit, building notice constructions and constructions that have to obtain a building permit by a normal procedure.

Exemptions

The constructions that are exempt from the building permit procedure are listed in article R. 421-1 of the urban planning Code and include works like:

- gas containers in a cellar
- works for the infrastructure of traffic and communications

- statues smaller than 12 m high
- terraces not higher than 0.6 m
- walls not higher than 2 m and
- all other works whose area is smaller than 2 m² and not higher than 1.5 m.

Building Notice

Article R. 422-2 of the urban planning Code contains construction works that follow the building notice procedure, and includes:

- some constructions or buildings with a special function like technical works for the safety control of water, air, road or rail traffic, or works for the distribution of gas or electricity etc.;
- open swimming pools, alterations to buildings that do not change the function or expand the floor area of the building and detached outhouses on an area where there is already another building smaller than 20 m².

Full procedure

The level of control and inspection is not the same for all constructions that follow the 'normal' procedure. In the basic procedure most attention is paid to urban planning aspects and the spatial design of the construction and hardly any to structural aspects or other technical calculations. More attention is given to these for buildings in the public sector, but generally the check on the structural design, safety matters, other technical calculations and the inspection of these aspects in the construction phase is done by the private inspection bodies.

Compulsory technical control

Certain works are subject to compulsory technical control and this is carried out by Technical Control Organisations. These works are mentioned in Decree 78/1146 of the Building and Housing Code. These works are very large buildings or buildings open to the public, like supermarkets, stadiums, theatres, etc.

Building works and civil engineering works

Legal provisions for insurance and inspection apply in different ways to building works and civil engineering works. It is necessary therefore to establish the differences between the two types of works.

Building works are works with the aim of constructing or modifying buildings raised above the ground, inside which people are to be mobile, and which offer at least partial protection against the aggression of external natural elements. Note the inclusion modification works, which are consequently subject to the same legal provisions. Modification is defined as any new construction work carried out on an existing building, possibly for the purpose of rehabilitation.

Civil engineering works are those works that do not fall within the above definition of building works. According to a circular from 1979 issued by the Ministry of Equipment, civil engineering works include industrial civil engineering such as power stations, stockpiling ground units, offshore platforms. Structures such as bridges, tunnels, cable cars; sea and river works; roads and highways; railroads; water supply, sanitation, pipelines; urban roads, other networks and systems; stadiums, open-air swimming pools. Excluded from these civil engineering works are roads that provide private access to a building and associated external services. Works of this description are defined as building works.

The ten-year responsibility together with technical inspection applies to both building and civil engineering works, whereas the insurance obligation 'with dispensations' applies only to building works.

Most civil engineering works are carried out within the public sector (Ministry of Equipment, National Railway Company, French Electricity Supply Authority etc.). Generally, these authorities have their own internal control system. However, the Central Commission of Public Procurement, which supervises public contracts, allows discretion, and the services of a Technical inspection body from the private sector to be called upon.

Obligatory engagement of architect

There is a legal basis in the CCH (Article L.111-2) for the owner to engage the services of an architect to 'specify by means of plans and written documents, the location of buildings, their composition, their layout and an indication of their volume as well as the materials and colours chosen'. This applies to all buildings except those of less than 170 m² floor area (800 m² for agricultural buildings).

Insurance

Compulsory insurance is required for the client and for every builder, provided he is bound by contract. The owner, vendor and developer must all take out structural damage insurance covering the presumed liability in the Civil Code. This obligation also extends to the State in connection with government public works. Builders should not start work unless they have the necessary insurance cover. A contractor can be involved in three warranties, for:

- proper completion (*garantie de parfait achèvement*) – any problem reported by the client must be repaired within an agreed period (this lasts for one year);
- satisfactory performance (*garantie de bon fonctionnement*) – this relates to items of equipment and is for a two-year period;
- ten year liability (*responsable décennale*) -guaranteed by compulsory insurance.

5.3.2 Description of the procedures

All building work, subject to certain exemptions, must have a permit which indicates compliance with planning regulations, highway regulations, safety regulations, departmental sanitary regulations etc. It is valid for two years. Where a zoning plan has been issued by the local authority the mayor issues the permit, otherwise it is issued on behalf of the State.

Consultation prior to application

It is always possible in France to consult the local municipalities about building plans. Besides that most *départements* (and larger cities) have websites on which information can be found about building permit procedures and demands.

Documents

The building plans are submitted by the owner or a representative of the owner to the mayor of the local commune. They should contain a layout, a design of the construction, a drawing that shows the connections with the public utilities and a design of the facade. Structural calculations are not necessary.

Approval/acceptance

The mayor, or in cases of high-rise buildings the prefect, will declare after submission the date on which the permit will be granted. Usually this will be one or two months after submission. In the case of a building notice if the mayor has not responded within a limited period of one month the permit is assumed to have been granted.

Safety and accessibility commission

The local authorities have established a Safety and Accessibility Commission who check whether measures have been taken to guarantee safety. This commission has a key role for buildings open to the public. For example, the architect has to submit a safety paper describing and justifying how the safety regulations are being implemented in the project. The approval of the Safety Commission, with or without minor amendments, is necessary to obtain the building permit.

Inspection

Once the building permit has been granted the local building control authorities do not in most cases perform any control or inspection activities until completion. After the building project is finished the local authorities will check the whole building to ensure compliance with the building permit. This is not a technical inspection, but a check on the physical appearance of the building: the layout, the dimensions and the facades. The law makes provi-

sion for inspections to be carried out by the authorities at the completion of work and the right to inspect can be exercised at any time within two years after the completion of the construction.

Completion

A certificate of conformity is issued if no problems arise during the completion inspection.

In the case of public buildings, the safety commission should be invited to visit upon completion of the work to check the building and pass their approval on to the mayor. Such a document is necessary to obtain the certificate of conformity and it is also the basis on which the mayor will authorise the opening of the buildings to the general public. Often the owner, or the architect on behalf of the owner, employs a technical inspection body to prepare the safety paper and for assistance with the visit by the Safety Commission. There is no requirement for a permit to occupy the building, but the Code states that buildings may not be permanently connected to electricity, gas or telephone services until their construction has been approved.

5.3.3 Planning issues

There is a close relationship between planning legislation and building legislation. The two major principles in the planning code are: the reasonable use of French land, and prohibition of development not covered by a local urban planning document. The planning regulations are known as national planning regulations (*reglement national d'urbanisme*) and these apply if a local authority has not approved a local land use plan (*plan d'occupation des sols*: POS).

The Labour Code contains laws and regulations in connection with building work including the safety of workers. Special attention is paid to the safety of people in places open to the public and in high buildings. There are few specific requirements concerning private dwellings.

Planning certificate (certificat d'urbanisme)

The French building permit for new constructions actually starts with the obtaining of a planning permit from the local authorities. This document gives the potential builder all the information on the special requirements for a building at a particular location, such as the possible function, the maximum dimensions etc. The certificate is valid for two years. The owner of the certificate can make use of the building possibilities as laid down in the certificate as long as it is valid and no changes may be made. In this way the planning certificate is a kind of preliminary check on the local urban planning requirements and gives developers of building plans thorough information and the certainty that these requirements will not be changed.

The planning certificate contains information about:

- the possibility of constructing in a certain area
- the connections to the public utilities
- the possible dimensions of a construction at that particular site
- in the case of demolition, the possibility of reconstruction
- the possibility of splitting a property
- the regulations that should be considered for fitting the construction into the site e.g. height, distance from the borders of site.

Construction practice for detached houses

There are two major situations in the case of the construction of detached houses:

1. A builder makes what is called a development plan for houses (*un programme de maisons*), which is a plan for between 10 and 1000 houses. The technical control and inspection for this kind of construction by a Technical inspection body is very common. These houses are sold individually.
2. An individual person buys a piece of land and asks an architect or a builder to develop his own house. This situation is called circumstantial housing (*habitat diffus*). In these cases technical control and inspection is very rare.

Near large towns the first system is dominant; near small towns or in villages the second is more common.

5.3.4 Sanctions for non-compliance

For buildings open to the public the municipality refuses to open the building until the building is in compliance with the safety regulations, although before the Furiani accident there were some exceptions. For other buildings the technical controller completes the final certificate which includes any aspects of non-compliance. This certificate is given to the owner (and only to the owner, according to the law). In general, the owner refuses to pay the contractors until everything is in compliance. In fact, the objective of the Spinetta Law is not to achieve compliance with the requirements, but to avoid damages. The requirements and standards provide the means to reach this objective. The technical controller has a very strong position legally, so when non-compliance is stated on the certificate, repairs or reconstructions are carried out.

5.4 Building control

5.4.1 Roles and responsibilities

The government and the parliament are responsible for the legislation concerning planning, building control and housing subsidy. The policy-making

ministry is the Ministry of Infrastructure, Housing and Transport (*Ministère de l'Équipement, du Logement et des Transports: MELT*) This Ministry is responsible for defining and executing government policy and laws concerning the building industry, housing policy, and housing and urban quality. The Ministry of Housing is divided into three different directorates – the Directorate of Architecture and Town Planning, the Directorate of Economic and International Affairs, and the Directorate of Housing and Construction

The Construction Quality Agency undertakes monitoring of the working of the insurance system. They give advice to government, to the construction industry and the insurance companies and produce publications on good practice.

The National Council of Housing (*Le Conseil National de l'Habitat*) is an advisory board, with 69 members representing national and regional government and most of the representative and professional organisations.

The Scientific and technical centre for building (*Centre Scientifique et Technique du Bâtiment: CSTB*) provides technical approvals and design guidance.

Qualitel is a non-profit association, created by the Ministry of Housing in 1974, with a board representing professional and consumer organisations as well as public authorities and provides quality labelling for new housing.

The role of the architect is to apply for the construction permit and to undertake any other design work requested. He may engage consultants but he retains liability as laid down in the Civil Code. The title of architect is protected and can only be obtained after having completed the proper education. An architect should also be a member of the Order of architects.

The owner must ensure that the building complies with the regulations and to take out structural damage insurance. The owner has to engage the services of an architect to 'specify by means of plans and written documents the location of buildings, their composition, their layout and an indication of their volume as well as the materials and colours chosen', according to the Building and Housing Code.

The applicant for a building permit has a considerable responsibility: he has to declare in the application form that the construction will meet the technical requirements.

The contractor must build in accordance with the rules of construction and is also liable for the building for ten years. Although only some buildings are required to have compulsory technical control, contractors often seek technical control voluntarily in order to have insurance protection. Every year contractors have to get a new certificate from the organisation OPQCB (*Organisation Professionnelle de Qualification et de Classification du Bâtiment*).

The title of engineer is not protected. There are recognised engineers who have followed the recognised education, but there are also engineers who have had an education at a private school that is not officially recognised.

The local authority issues the permit to construct and can inspect the works

Table 5.2 Subjects of inspection of a Technical inspection body

Always	Very often	Sometimes
solidity of the structure foundations framework	peoples' safety thermal insulation energy conservation measures	equipment employed comfort of the occupants functioning of mechanical and electrical services
envelope	acoustic insulation provisions accessibility	

Source: Brochure of a technical inspection body

both under construction and after completion. Most local authority inspections are made in connection with planning conditions, their role in the control and inspection of the observance of technical requirements is minor. For social housing projects and for some public works they may carry out the technical controls, in all other cases technical control is carried out by private technical inspection bodies. For some larger works, the engagement of an inspection body is obligatory, for most other works the bodies carry out control because of the mandatory insurance. Some works fall beyond the reach of this system and obtain no control and inspection on technical matters at all (see construction practice for detached houses).

In the private sector, the influence of the building control authorities is limited now to the granting of building permits and certificates of completion, for which mainly aspects of urban planning are checked together with a few samples of site inspections in the construction phase or after realisation.

In the public sector the check on technical quality is a little more intensive, but mainly limited to aspects of fire safety.

The insurer plays an important role in the French construction industry. Compulsory insurance is required for the client and for every builder, provided he is bound by contract. The owner, vendor and developer must all take out structural damage insurance covering the presumed liability in the Civil Code. This obligation also extends to the State in connection with government public works. Builders should not start work unless they have the necessary insurance cover. The insurer provides three warranties for contractors:

1. Proper completion – any ‘problem’ reported by the client must be repaired within an agreed period – this lasts for one year.
2. Satisfactory performance, this relates to items of equipment and is for a two year period.
3. Ten year liability guaranteed by compulsory insurance.

The inspection bodies perform thorough control and inspection on a list of topics (see table 5.2).

5.4.2 Municipal departments

Regional

France is divided into 90 regional organisational areas (*départements*), each

governed by a prefect, the representative of central government, assisted by decentralised offices of the ministries. Every department is divided into municipalities (*communes*), which are governed by a selected mayor and council. The mayors work under supervision of the prefect. In general the local council grants building permits, but for some categories of buildings, like high-rise flats, the judgement is made at department level. In these cases the private inspection bodies perform the technical control and inspection. The main concerns of the local authorities are the kind of building, its size and shape and the connections to public utilities. The main document is the zoning plan.

Local

There are some 36,000 municipalities, varying greatly in size; many communes are grouped for conurbations and urban areas. The decentralisation laws gave the municipalities responsibility for town planning and for the preparation of advisory local housing strategies.

Larger municipalities often have a department providing technical services for housing and planning (*services techniques municipaux du logement et de l'urbanisme*). One of their tasks is the definition and administration of the 'zoning' or land-use plans, including public consultation. Furthermore they issue and administer the building permits.

Smaller communes rely on departmental advice (*Directions Départementales de l'Équipement: DDE*).

5.4.3 Private building control organisations

In France, inspection of constructions is exercised by the private sector. Of all the new buildings erected in France, however only 50 % are controlled in this way, with a relatively low proportion of compulsory inspections. Detached houses, which are an important part of the residential buildings in France, are not subject to this building control, as it is relatively expensive, owing to low works value and scattered geographical location.

There are about ten private building control organisations in France, such as SOCOTEC (*Société de Contrôle Technique*) and Bureau Veritas-CEP (*Contrôle et Prévention*). The function of the technical inspector is to contribute to the prevention of various technical problems which may arise. The technical inspector is subject to the same presumption of liability as the architect and contractor, must be completely independent of any design, construction or advisory activity relating to the structure and approved by the Council of State.

The role and function of the technical inspection body are now defined under the Spinetta Law. For 50 years the profession of technical inspection, especially the issuing of decennial insurance policies, developed without legal obligation. The Spinetta law, together with supplementary regulations, gave

the profession official status and defined its new legal framework.

In particular the following has been specified:

- the role of the technical inspection body: intervening on behalf of the owner, with a view to contributing to the prevention of technical hazards, i.e. the risks of errors made by all professionals involved in a project;
- the main subjects of control that should be covered: structural stability and peoples' general safety being the main concerns;
- the conditions of practice of the technical inspection profession.

Each time a technical inspection body is called in, the owner of a building may expect to receive the objective opinion of an independent specialist. In fact, these technical inspection bodies must be completely independent of any design, construction or advisory activity relating to the structure, and must be approved as a recognised inspection body. (This is exactly the opposite situation to the conditions for the German recognised engineer (*Prüfingenieur*), who will only be recognised if he has also experience with design etc.) Whether the inspection is obligatory or not, an agreement is necessary, in accordance with the law of 1978, to authorise the involvement of the technical inspection body. The agreement is issued by an inter-ministerial commission, based on the technical ability of the organisation, the various disciplines within the organisation and the ethics of the organisation, with an emphasis that technical inspection must be entirely independent of companies or firms practising design or engaged in construction activities.

The subjects of supervision of the technical inspection bodies are listed in Table 5.2

It is only in the area of potential high-risk constructions that the law has made it compulsory for the owner to call in the services of a technical inspection body.

In the case of compulsory technical inspection, the services must cover at least the solidity of works subject to decennial responsibility and the safety of people. In all other cases, the owner may contract on a voluntary basis with a technical inspection body and define the extent of services. The insurers frequently require such intervention as a condition for issuing the insurance policies.

Technical inspection services are stimulated in various ways:

- the damage liability insurance profession, in connection with legal provisions thereupon;
- various owner professional organisations that encourage their members to engage in technical inspection for intended projects through general agreements for inspection services;
- some financing bodies requiring the involvement of a technical inspection body prior to granting a loan;
- public authorities recommend the service of a technical inspection body for

other purposes, such as obtaining quality marks and quality management of construction projects.

The intervention of the technical inspection body takes place at all stages of the construction process:

- at the design stage: preliminary advice on the general concept;
- at the stage of detailed design: critical examination of drawings and specifications;
- during the works: periodic inspection of the works including the verification of the builders' internal control;
- before the works are accepted: final opinion to the owner.

5.4.4 Fees

The taxes that are determined for building permits depend on the net floor area (*surface hors oeuvre nette*) of the construction. In general two categories of taxes are applicable:

- local or municipal tax (*taxe locale d'équipement*) for the financing of the public facilities (to make the site ready for building);
- departmental tax for the financing of the Council of Architecture, Planning and the Environment.

Some departments also impose a departmental tax for vulnerable natural areas.

The local tax is facultative and is set by the local authorities. The departmental tax is fixed. For both taxes the net floor area (number of m²) is multiplied with the fixed price (in Euro's per meter) of the tax category concerned. A certain tax rate is subsequently applied to the resulting amount. The local rate varies between 1 and 5 percent, the departmental rate amounts to 0,3%. To give an example; the values per m² in the Department Eure et Loire for apartment buildings are €192 (1,260 F) and for individual houses €273 (1,790 F) for the first 80 m² and €399 (2,620 F) per m² between 81 to 170 m².

5.5 Technical requirements

5.5.1 Regulatory framework

The building regulations are uniform throughout the whole Republic. Technical regulations and requirements can be found in documents as laws, decrees and implementing orders (see section 5.2). Besides these official documents there are a large number of ministerial papers of explanation that function as requirements. The kind of document that is used often in the French system is the Code. This is a collection of regulations and requirements concerning a special subject. A code contains all regulations, recent amendments and

changes, jurisprudence etc., but not the whole contents of these documents. The main texts will be found there, but not all the technical details.

The technical requirements were originally set up for safety and health reasons, though regulations were later developed to guarantee a certain level of living convenience. Compliance with certain standards is obligatory if the standard is mentioned in a ministerial decree 'The professional rules (*les règles professionnelles*). Where there is no other relevant source, a particular profession may issue rules to its members and these are usually recognised as being of particular value by the insurance industry: CCTG (*Cahier des Clauses Techniques Generales*). The CCTG contains the DTU, Uniform technical rules (*document technique unifié*) and other specific requirements that must be complied with in public works construction. Technical approval (*Avis Technique*) contains advice given by inter-professional bodies of experts on the suitability for use and foreseeable behaviour in the use of new procedures, components and materials. They define characteristics, durability etc. and indicate how their use can satisfy the requirements of the regulations.

For new innovative techniques (products, materials, components, equipment or procedures) not included in the *Avis Technique* but that have been used in sufficient experimental work technical experiment assessment (*Atex*), gives an opinion on the feasibility of their use.

Housing standards, measured by average floorspace per person and the level of satisfaction of residents, have increased substantially in France in the last twenty years. This is partly due to national policies to promote quality. The principal features of this policy are the use of conditions allied to grant aid, quality labelling and the progressive introduction of tighter and broader building controls. Planning legislation exerts an additional, but much smaller influence on the quality of new housing.

Requirements for existing dwellings

There are no specific technical requirements for existing dwellings. the rule is to carry out the regulations and standards of new buildings, or to make something equivalent if it is not possible, or at least to improve the existing quality. For each function that is changed (e.g. a new roof, wall or floor), the ten years warranty applies, comparable with the situation for new buildings. For other purposes (acoustics, energy) the owner decides, but to receive a grant and/or to raise a loan you generally need to be in compliance with the new standards.

5.5.2 Formulation

The majority of the regulations are written in general terms and reliance is also placed on technical documents to ensure a reasonable standard of con-

struction. Some of these technical documents are specifically mentioned in the Codes and where this is the case they have a mandatory role. They are normally seen as being technical advice but, if they are mentioned in any contract for building work, they have to be complied with. They include the DTU's and standards.

Technical documents are also important for fire safety to ensure a reasonable standard of construction.

For the purpose of the ten years' responsibility (foundation, structure, envelope) there are two fields:

- traditional technology: ruled by standards (NF Normes Françaises) for construction products (more and more European) and DTU's for construction components and methods;
- non-traditional technology (innovation): ruled by 'technical agreement' – Atec or Atex managed by CSTB (*Centre Scientifique Technique du Bâtiment*).

For other purposes (fire safety, acoustics, energy, etc.) regulations are theoretically general, but very often they impose technical documents (standards or guidelines). This principal is very strong if safety is involved (for instance lifts, electricity and fire).

In fact, although the difference between standards and regulations is legally great, it is not real in practice. If damage occurs, a greater respect of standards and guidelines is required.

5.5.3 Subjects

The requirements of the law relate generally to: the solidity of the structure, safety of people, comfort of occupants, suitability for purpose.

- mechanical resistance and structural stability
- safety in case of fire
- hygiene, health and the environment
- safety in use
- protection against noise
- energy economy and heat retention
- access and facilities for disabled persons
- other requirements.

5.5.4 References, guidances and EC Directives

A major part of the technical requirements is still not laid down in official public regulations, but in standards and practice guides that are determined by semi- or non-public organisations. The French standards and the Uniform technical rules are the most important ones and are compulsory for buildings in the public sector. The insurance companies link the cover of the liability risk or the size of the insurance premium for traditional constructions and

materials to compliance with the ‘rules of architecture’ (*règles de l’art*), to which a large part of these norms and documents belong. In contracts between private construction parties reference is usually made to these complexes of standards.

NF standards published by the national standardisation-organisation AFNOR (*Association Française de Normalisation*) usually define characteristics of products like performance tests and dimensions of construction methods, construction systems, construction elements, materials and construction products. Compliance with certain standards is obligatory if it is mentioned in a ministerial decree.

DTUs are uniform technical rules determined by a co-operative of private and public organisations, of which the representatives of the relevant professional organisations, which will be the users of the documents, are the most important party. The Ministry of Construction Affairs, the AFNOR and the main companies for technical control and inspection are also represented.

The REEF unites the whole set of technical building regulations. It is published by the CSTB, the public establishment under the patronage of the minister responsible for construction. The REEF-assortment can be bought in three forms: the integral text (the REEF book which consists of 24 volumes and almost 20,000 pages), the summary (the MINIREEF book which consists of 13 selected volumes and almost 15,000 pages) and the CD-REEF.

Guidance to interpretation

In France there are no sets of examples of design solutions which comply with the building regulations (comparable with, for instance, the Approved Documents in the United Kingdom). Parties like architects, municipalities and private building control organisations normally guide the applicant for a building permit. The French CSTB publishes (in the REEF) examples of solutions that are designed in conformity with the building regulations.

Implementation of EC Directive Building Products and Eurocodes

The Construction Products Directive and Eurocodes are implemented in the French regulatory system through the European standards which are taking place as new NF standards. This is a slow process, especially when the European standards are lower than the French standards.

5.5.5 Certification

The French system contains several kinds of quality systems; these are:

- the technical approval (*Avis Technique*);
- the product certificate issued on the basis of a technical approval, a standard, or a special product specification.

The system of certification was developed by the government just after the

Second World War. At that time the government paid half the total amount of money used in the building market and therefore had a particular interest in solid and durable materials and the reliability of the construction methods used. The insurance companies were also involved in starting up this quality system, which at that time was called *Agréments*. This historical development of the system explains why the French certificates are not really used for the implementation of the technical requirements, but mainly function as instruments for the authorities and the insurance companies to reach a situation where only materials and methods which are sound and reliable receive financial support or insurance coverage. Thus the quality control contains many more aspects than public requirements.

Recognition and control of the certification bodies are done by the SQALPI (*Service de Qualité de Produits Industriels*), which is connected with the Ministry of Industry. Two of the 15 recognised certification bodies, the French standardisation organisation (AFNOR) and the CSTB, are public organisations, the others are private organisations and mainly branch-related. Product certificates are only legally compulsory for about ten groups of products that are specially related to safety.

Product certificates on the basis of the French standards (NF) are only issued by AFNOR, certificates on the basis of technical approval are only issued by the CSTB, while certificates on the basis of product specifications (*cahier des charges*) are issued by the CSTB and the other 13 private certification bodies.

Process certification exists in combination with specifications of certain materials or building products in the form of AVIS.

Certification (ISO 9000/1.2.3) for engineering companies or contractors is more and more usual. The system of qualification of contractors (OPQCB) is now called certification and not far from ISO 9000. For technical control, companies are more and more certified (ISO 9000) and/or accredited (EN 45000). But notifying is compulsory and plays a role in the building permit procedure or in third party control system.

For some markets, the owners ask for certified companies (nuclear for example), but it is always in a private field and it is a 'plus' and not a 'instead of'.

5.6 Sources

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Internet

There is a wide range of internet sources. For instance via the website of the Ministère de l'Équipement, des Transports et du Logement (www.equipement.gouv.fr) there are links to the various departments and regions. On these departmental and regional sites information can be found about building regulations and building permit procedures.

Codes and Acts can be downloaded from www.legifrance.gouv.

Contactpersons

- Jean-Pierre Mazière (Technical director Bureau Véritas – CEP).
- Jean Moreau de Saint-Martin (Ministère de l'Équipement, du logement et des Transports).

6 Germany

6.1 Introduction

The system of building regulations and building control in Germany is mainly determined by the federal structure of the country and the reliance on a strict system of product approval. However, building regulations do still differ from state to state, despite years of efforts to reach federal uniformity. Although local or regional building control authorities are responsible for building permits and building control, some parts of the control may also be performed by private recognized specialists. Except for products and construction types that have been used for a long time, approval by recognized institutes is obligatory for obtaining a building permit.

The state building regulations are uniform and laid down in the Building Code of the states (*Länder*). At Federal level the Model Building Code (*Musterbauordnung*, 1994) offers an example for the individual building codes. More than 80% of the contents conform with the model code. The deviations occur above all in procedural aspects. This report uses details for the state of Hesse (*Hessen*) to illustrate the arrangements.

The building regulations are broadly functional in nature, but in accordance with the general rules of the art of construction.

German Industrial Standards as well as international standards have official status and are made obligatory for building projects and in the production of building products, building elements and construction systems. In this way the broad regulations acquire a concrete structure.

Public building control in Germany is a combination of permission to build and building supervision via the building permit procedure, performed by local and regional building control services in combination with a very extensive system of quality statements. All constructions, except those that are exempt, have to undergo the same procedure. Officially recognised engineers (*Prüfingenieure*) are authorised to perform part of public building control. In general this is the structural check and the outside inspection, and it is performed on the instruction of local building control. The building permit procedure remains entirely in the hands of public building control.

Germany also has the type approval phenomenon, a certificate or a building permit for a prefabricated dwelling or a construction that is being built again at a different location without a new technical inspection being required.

The extensive system of quality statements and a high degree of implementation of standards lead to considerable certainty about the quality of building products. However, the building products must also be incorporated correctly into a structure, and many requirements are made of that structure, as an assembly of the building products, requirements that cannot be covered by the quality statements of the individual products.

Changes have recently taken place in Germany to reduce the burden on the local authority, in relation to building control, by allowing certification of

compliance in connection with certain types of building which present less risk to the health and safety of the occupants and users.

6.2 Regulatory framework

Although the country has 16 states, building regulations are based on model regulations which are written mainly in functional terms and issued by the Federal Government, each state being permitted to make local variations. The building regulations contain requirements that are mainly to ensure public health and safety, but also include matters relating to the design and layout of buildings and sites. As building regulations and planning law are contained in the same Federal Building Code and are operated from within the same local authority department.

The basis of the building regulations is the model building regulations (*Musterbauordnung*), which is prepared at federal level and gives guidelines for the building regulations which are issued in the separate states. The purpose of the law is to ensure that building installations are arranged, erected, modified and maintained in such a manner that public safety or public order, particularly life, health or the natural fundamentals of life, are not endangered. These requirements also apply to the change of use of a building and to demolition. General standards of health in respect of living and working conditions and the special needs of families, children, disabled and old people, must also be taken into consideration. Technical Building Specifications must be observed, but deviations may be made from these if the general requirements can be fulfilled by a different solution. Some of the requirements, particularly in relation to housing, relate to comfort.

The Building Code has a procedural (building permit) part and a material part and contains the regulations for construction, alteration, renovation and demolition. The requirements refer to matters such as shape, scale, architectural appearance, materials and colour of the building installations and they demand that these should not affect the surrounding area adversely. For some aspects, like matters of public health or energy saving, there are federal regulations.

As every state can issue its own Code, regulations and requirements may differ from state to state. Originally the law was to be described as the Police Law, which is why it is sometimes still referred to as the Building Police Law for which the Federal States are responsible in accordance with the Constitution of the Federal Republic.

An additional protection for consumers is the right of individuals to demand housing quality on the basis of a private law, referring to the national DIN

Table 6.1 Contents of the Building Code of Hesse**Part 1 and 2: General demands and regulations concerning the construction site**

- Applicability, concepts and general demands.
- Construction on the plot and entrance and access of the plot.
- Distances between buildings and distances to adjacent plots, subdivision of the plot.
- Areas not to be built and playgrounds. Fencing/enclosures of the plot and common constructions, common floor-areas.

Part 3: Demands concerning constructions

- Installation for advertising.
- General demands on building construction: stability and durability, protection against harmful influences, fire-protection, protection against heat, sound and earthquakes, traffic safety.
- Building products and building types: general control certificates, proof of the utility of 'individual' building products, proof of consistence with technical requirements, statement of consistence by construction company, certificate of consistence testing, certification and control organisation.
- Walls, ceilings and roofs: bearing walls, supporting columns, exterior walls and dividing walls, fire walls, ceilings, roofs.
- Circulation and escape routes, elevators and balustrades: stairways, stairwells, common accessible hallways as escape routes, windows, doors and cellar light shafts, balustrades.
- Technical equipment within houses: ventilation installations, hot-air heating systems, installation shafts and canals, heating installation, heat and fuel provisions, non-movable combustion motors, water installations, sewage installations, drainage of sewage in water clearing installations, garbage shafts, litter baskets.
- Staying rooms and houses: including staying rooms in cellars and attics, toilets and bathrooms.
- Special constructions: parking bays and garage, bike sheds, stables, exceptions for temporary and minor buildings, constructions and spaces of a special nature or utilisation, constructional measures for special groups.

Part 4: Parties involved

- Principal, design, permit/qualification to build, building contractor, supervision/management.

Part 5: Building control authorities and administrative procedures

- Competence, personnel occupation, organisation, tasks and authorities of building control bodies.
- Constructions needing a building permit and exempt free construction works.
- Building application and documents, building pre-request and response, handling of the application.
- 'Simple' permit procedure and exceptions and exemptions.
- Participation of the neighbourhood.
- Building permission and start of the construction work.
- Phased building permit and terms of validity of phased permits.
- Type-permit and type-testing.
- Mobile/movable constructions, public construction works.
- Prohibition of unauthorised building products, stopping the construction work, prohibition of utilisation and abolition.
- Supervision of the construction activities, inspection of the construction work.
- Fees and registration, fine-regulations.

Part 6: Transitional and closing provisions

- Use of existing constructions and installations, transitional provisions, dissolution of current rights, judicial and administrative provision, local building regulations, date of coming into force.

standards; this applies to tenants of both subsidised and unsubsidised housing. If housing is felt to be unsatisfactory, for example if the heating bill is too high because insufficient insulation has been provided, the tenants may refer to the DIN standard and in general the courts would apply the DIN standards, and require reparation. This can apply even when the DIN standard is not a mandatory requirement of the building regulations.

A three-year warranty is a standard feature of contracts with builders, but five-year warranties are common. This insures against defects; claims are considered with reference to the DIN standards.

The Federal Building Law (1997, *Baugesetzbuch*) deals with town planning measures and urban building development. It provides the general legal basis for building control. It defines the scope, terms and principles of the plans formulated by the municipal authorities in a Building guidance plan (*Bauleitplanung*), both the preparatory (*Flächennutzungsplanung*) and the binding Building guidance plan (*Bebauungsplan*).

The principal objectives of the Federal Building Law are ordered urban building development, socially just ground use, the creation of a pleasant environment and the promotion of a certain standard of living. Housing quality at the level of individual dwellings is not emphasised. However the living needs of the population must be considered in the preparatory Building guidance plan, especially the needs of families, the young, the elderly and the disabled. The binding Building guidance plan may specify the minimum and maximum dimensions of sites for housing, areas for play and recreation, and areas for parking spaces and garages.

6.3 Permit procedures

6.3.1 Categories of buildings

The building control system operates through a plan submission, approval and inspection service by the local authority. Structural stability is checked by the local authority or by a *Prüfingenieur*. The local authority must be notified of the erection of the structural frame and work cannot continue inside the building until the appropriate authority gives permission to continue. If any deviations from the requirements are proposed, owners and occupiers of neighbouring sites must be notified. Recent changes in the requirements, however, mean that for certain types of development, such as low rise residential buildings, and, depending on floor area, buildings which are either single storey, agricultural buildings or other non habitable buildings, a simplified system now operates:

- plans submitted to the local authority can be accepted if the designer states that they comply;

- in the case of structural stability, sound and thermal insulation, proof of compliance must be submitted by a professional architect or engineer who has had at least two years experience as a building control engineer;
- completed buildings have to comply with the regulations and the local authority may check that the planning conditions have been complied with. Local authorities may devolve their inspection role to a *Prüfingenieur*.

A person engaged in the design of buildings, other than certain smaller types of building, must be qualified as an architect, interior designer or engineer. The building contractor and the site manager must be technically competent. A person authorised to prepare building plans (the project planner) is one who is entitled to the designation 'architect', 'interior designer' or 'engineer'. The title 'engineer' is protected, but only in some of the states. These restrictions do not apply to plans relating to:

- detached buildings up to 50 m² floor area and having not more than two storeys;
- buildings not containing habitable accommodation less than 100 m² and with not more than two storeys;
- temporary buildings and specialist work.

Written advice can be obtained from the building control authority concerning individual questions on the building project, before submitting an application. Plans and details must be signed by the principle building contractor and the project planner before being sent to the building control authority for consideration.

Exemptions

The change of use of building installations does not require planning permission if:

- there are for the new use no other, or more comprehensive, regulations than those which applied to the previous use;
- any rooms in a residential building, containing not more than two dwellings, are converted to living rooms for the dwellings;
- rooms in existing residential buildings are changed to rooms for baths or toilets.

Other buildings and installations which are exempt in the state of Hesse include:

- small buildings without habitable rooms, toilets or fireplaces, if the gross volume of the building does not exceed 30 m³ (with the exception of garages);
- weekend houses;
- summerhouses/bowers;

- non load-bearing and supporting building components situated in the interior which have no function for fire-, heat-, sound-protection;
- installations for energy-production and provision: appliances for the distribution of heat by hot water heating and low pressure-vaporised heating; solar energy systems and solar energy collectors in and on roofs or external walls and hot-waterpumps (max. 20 kW);
- pipes, controls and installations used for sewer and waste water disposal, energy (electricity), water including drinking water and heating;
- antennas with a height of max. 5 m; dish aerals to a height of 5 m and a diameter of max. 1.2 m; lightning conductors, flagpoles;
- reservoirs for combustible fluids (max. 5 m³), for water (max. 50 m³ and max. height or depth of 3 m) and waterbasins (max. 100 m³ and max. height or depth of 1,5 m);
- bridges with a width of passage less than 3 m; passages; fences, enclosures and supporting walls with a max. height of 1.5 m;
- rises and quarries with a max. height and depth of 2 m. and a max floor area of 30 m²;
- installations like clothes lines, pergolas, terraces with a max. height of 1 m, billboards (up to 0,6 m²), etc.;
- replacement of installations in houses for water supply, sewage disposal, ventilation and electric installations, etc.;
- alteration of the exterior design by painting, plastering, heat isolation systems, roof covering, or the exchange of windows and doors as long as the construction is not situated in areas for which by laws are in effect regarding the exterior design of constructions;
- changing windows as a consequence of modernisation of dwellings;
- the extension of rooms in attics in the building categories A, B and D when these rooms are added to a building that is already a dwelling;
- maintenance works.

Simple procedure

For housing with no inhabitable space 10 m above ground level, and for agricultural buildings with a floor area not exceeding 150 m² and garages with a maximum user floor area of 100 m² there is a possibility to follow a simple procedure to accelerate the process. The authorities only briefly check these constructions on whether they comply with the regulations and usually give planning permission within four to six weeks.

6.3.2 Description of the building permit procedures

Consultation prior to application

It is always possible to get advice from the municipal building control before an application is submitted, although if the meetings are time-consuming the

municipality may levy a fee.

General information about building regulations and permit procedures is available through the internet. Codes and brochures can be downloaded from the websites of all German states and most of the bigger municipalities.

Documents

The submission of a building plan consists of:

- eight to twelve copies (depending on the town) of all floor plans, elevations and relevant sections, scale 1:100;
- site plan, scale 1:500; structural calculations on the basis of the 1:100 design;
- energy efficiency certificate;
- landscape design;
- calculation and summary of floor areas and volumes;
- cost scheme for project on basis of 1:100 plans.

Approval/acceptance

As part of the building permit procedure, representatives of several public services will be asked for their opinion.

Local Building Control checks a plan first on all planning requirements from the local 'Land Use Code'. The building has to be connected to all public services.

If the building meets with all the requirements, a permit will be granted. The permit may contain conditions that have to be carried out during the construction phase. It will be announced in public and the owners of the neighbouring buildings can act against a decision to grant the building permit.

If there is no refusal two months after receipt of the application approval is considered to have been awarded. The opinions of other authorities or departments need not be taken into consideration in the approval procedure if they are not received by the Building Control Authority within one month after a request for such an opinion has been sent. Planning approval expires if work is not started within three years.

The Building Control Authority approves details of construction; deviations from the requirements of the regulations can be allowed, but neighbours must first be consulted. They can also decide the level of inspection which they wish to carry out and must ensure, that all legal regulation requirements are upheld during erection, use, alteration and demolition as well as during maintenance and repair.

The construction cannot start, not even the ground works, before the permit is officially granted. The permit and all the drawings and calculations on which the permit is based have to be present at the construction site. The principal has to notify Local Building Control at least one week before the start of the construction. If the work is interrupted for a period of more than six months, at least one week's notice of must also be given.

The Local Building Control Authority also controls the construction work. After the structural framing is finished it will be checked with special attention being paid to the additional conditions that were formulated in the building permit. The structural framing is finished when the load-bearing parts, the chimneys, staircases and the roof construction are finished. To allow the controlling authorities to conduct a proper check on all the essential items, the structural frame as well as the construction parts that are important for fire safety, heat and sound insulation and water disposal have to be left uncovered. The principal must make it possible for the inspection to be carried out, which may mean that he has to offer labour and equipment. Afterwards the principal can ask for a report and a certificate. In addition to this extended standard inspection, the Building Control Authorities can perform more inspections and require notification of other construction phases as well.

The finishing construction works can only be started a day after the authorities have received an announcement about this. Once a construction is no longer be dangerous for the public, the Building Control Authorities can give permission for use or occupancy of the building before it is actually finished. The authorities can always enter the construction site, even without the permission of the principal, and can stop all construction works if they notice deviations from the design on which the permit was based. If construction continues regardless, the construction site may be sealed and construction materials and machines may be confiscated. The authorities are even able to order the destruction of those parts that differ from the design or forbid the use of the building if it is used in a different way from what was proposed in the design for which the permit was issued.

Type approval

The stability of prefabricated structural elements can be proven with a type approval according to DIN standards or with a recognized technical approval (*Zulassung*).

For prefabricated elements or units, the proof of structural stability may be furnished to the building control authorities by a type check, with due regard to DIN standards or technical approvals. This test may be carried out by a *Prüfingenieure* – a state-recognized private or public testing institute for structural calculations, is valid in the whole republic and makes a second proof of the structural stability by the authorities redundant. All the same, a building permit is necessary.

In the case of prefabricated houses and other structures built according to the same design at different places, the supreme building control authority may be asked for a type approval. This would imply, in addition to proof of structural stability, the testing of sound-, thermal, damp- and fire-proofing, etc.

Type approval by one federal state is recognized by all the others, so building

control authorities are exempt from the obligation to check, as part of the permit procedure, whether the structure meets the requirements relating to the type approval functions.

Inspection

Building control authorities can decide the level of inspection they wish to carry out. They must, however, ensure during construction, alteration, demolition and use, as well as during maintenance and repair, that the requirements of all legal regulations are upheld. The authority also has the power to take samples of any materials being used in construction and to see approvals, test certificates, site log books etc.

Completion

The building control authority must be given two weeks notice of completion of the structural frame and of the final completion of building installations. Work on the interior of the building cannot be commenced until the structural frame notice has been issued. At the time of checking the structural frame, the components essential for fire safety, thermal insulation, sound insulation and drainage have to be left available for further checking. The final completion work also covers the completion of the water supply and sewage removal systems. Certificates of the result of inspections must be provided if requested by the principal building contractor. Building authorities usually delegate these duties to a *Prüfingenieur*, who will act in their name and on their behalf.

Control for the simple procedure

For these buildings that follow the simple procedure (see section 6.3.1), however, proof of stability, sound insulation and thermal insulation must be given by a professional architect or engineer who must have had two years experience as a building construction engineer. Building plans have to be submitted, and the project planner and other experts involved must make a declaration that the building plans submitted by them comply with the requirements of the regulations. Buildings may only be used when safe use and satisfactory completion are confirmed.

6.3.3 Planning issues

The Federal Building Law sets out the urban planning legislation. It describes the laws and regulations for the planning aspects of construction and there is some interaction between the Law and the building regulation requirements of the Building Code. The building regulations contained in the Building Code also refer to matters such as shape, scale, architectural appearance, material and colour of building installations and states that these should not adversely affect the surrounding area.

The Town Construction Law, or Planning Law, which is enacted by the Federal Government under the constitutional law of the Federal Republic, includes general rules on planning as well as provisions for the permissible use of land, depending on the type of construction (for instance housing, commercial and industrial installations, business premises, office buildings, etc.) and on the orientation of the real estate. The ruling on these items is contained in detail in the Federal Building Law and in the Land use code (*Flächennutzungsplan*, Zoning Plan).

The Land Use Code, issued by the municipality, deals with the essential aspects of how the whole communal area should be used, taking into account the presumed requirements of the community. Thus, the construction plan shows, for instance, which type of area is required (housing, commercial and multi-purpose), the permissible number of full storeys, and other details on how the land could be used. These plans are established along the lines of a legal procedure, and are subject to state approval. The Map Sign Ordinance specifies the colours, abbreviations and pictograms that should be used to represent the contents of the individual map. The Building Control Authority, therefore, will first have to check that the intended building project does not violate the contents of the existing construction plan. If it does, the application will be turned down. Next it has to be considered whether the development (water and energy supply, sewage disposal, connection to existing road network) is secured.

If there is no development plan for the area for which construction projects are planned (this is the case in very small communities which have either no qualified personnel or no money) then the project will only be permitted on the condition that it is placed within the precincts of a coherent agglomeration and is unobjectionable in comparison with the existing structural character and development. Works in the outer area, that is outside the coherent agglomeration, will only be allowed in special cases specified in the Federal Building Law.

6.3.4 Sanctions for non-compliance

Normally if there is no compliance with the building regulations the owner has to pay a fine. But if the non-compliance is comprehensive the owner must rectify the building.

6.4 Building control

There are three different levels at which the government can exert influence on housing quality in Germany: the federal level, the state level and the municipal level.

Urban development is controlled at federal level by the Federal Building Act, elaborated in municipal plans.

The municipal authorities have authority to enact statutes, for example to define how building proposals are to be carried out with particular consideration to social factors.

6.4.1 Roles and responsibilities

The local authority accepts plans and examines them for compliance with the regulations. A *Prüfingenieur* is normally appointed by the authority to act on their behalf to ensure public safety and to maintain quality standards of structures by verifying the conformity of all design and structural work within the legal requirements. Notification is given at various stages of the work in progress but there is no specific requirement to inspect. Any inspections made would tend to concentrate on planning aspects.

The contractor and, within their sphere of influence, all other persons involved in construction, are responsible for complying with the regulations. The person assigning the contract must appoint a project planner, a contractor and a site manager, except in the case of technically uncomplicated buildings.

The project planner shall be qualified both in knowledge and experience to design the building project concerned. He shall be responsible for the completeness and suitability of his design. He shall also ensure that all necessary drawings, calculations etc, comply with the relevant legislation. If the project planner does not have sufficient knowledge, expert specialist consultants should be called in and they are responsible for the designs etc. which they produce. The project planner is responsible for the overall co-ordination of all specialist designs. In the case of buildings subject to the simplified procedure, the professionals involved have to certify that the buildings supervised conform with the requirements of the regulations.

The building contractor must be technically competent. If the local authority consider that he is not, they can stop the building work until qualified personnel are engaged. The contractor is responsible for the satisfactory completion of the work undertaken by him, according to the generally recognised codes of practice and the building regulations, and also for the satisfactory equipping and safe operation of the building site. The contractor must provide the necessary certificates concerning the suitability of building materials, components, methods and fittings.

The site manager ensures that the building work is carried out in accordance with the building regulations and other legal requirements. After completion of the work he confirms to the contractor and the building control authority that the project has been completed accordingly. Building sites generally must be laid out so that the building operations can be carried out in an

orderly manner and that dangers or unavoidable nuisances do not arise. Public utilities must be maintained and trees, which are subject to preservation orders, must be protected. Projects which require building control approval must have a notice board displayed on site giving details of the approval, the name, address and telephone number of the project planner, the site manager, and the contractor. The board must be legible and visible from the highway.

A *Prüfingenieur* is an independent, freelance, fully qualified, consulting engineer with knowledge of structural calculations and structural problems. Other requirements include design experience of more than 10 years, knowledge of materials, economical and ecological problems, building management and building legislation, more than one year's experience as a site engineer and be between 35 – 60 years old. In addition, a *Prüfingenieur* has to have sound knowledge of the role and activities of both private consultancies and the authorities and show ability in handling any potential problem that could arise during the building period. When acting for a building control authority, he is their sole representative, he takes full responsibility and the liability for the controlled and inspected structures. A project planner must also be a qualified and experienced person.

Some local communities have established local councils in which independent architects and planners, as well as representatives from building control authorities are involved. In these councils the large building proposals are discussed, enabling the local communities to find out how the plans are evaluated by independent experts and to correct their plans accordingly.

In order to secure uniformity despite the federal structure of building administration the German Institute for Building Technology has been set up by the Federal Republic and by the states. It provides homogeneous and uniform treatment of all building matters in the area of technical building ruling and is especially responsible for the approval of new building materials, new building components and new types of construction.

6.4.2 Municipal departments

Local authorities or regional authorities (mostly *Landkreise*: small regions) are responsible for granting the building permit and for the building supervision as well as for the acceptance checks for structural work and for the final acceptance checks. Building control is performed on behalf of the state.

Local or regional building control authorities are called *untere Bauaufsichtsbehörden*. They are part of the building departments of the municipalities or districts and, as a rule, are composed – depending on their size – of graduate engineers and lawyers who are officials. In some states the job is done by public servants (officials).

Next in rank is the regional government (Governor or Province). This or any

other equivalent intermediate governmental authority exercises technical supervision of the local building control authorities. Governors and equivalent intermediate authorities are also responsible for the approval of communal development plans and of deviations from existing rules. Finally they decide on appeals filed against disputed decisions taken by local building control authorities.

The Ministers of the Federal states responsible for building supervision – usually the Interior Ministers – are the supreme authorities for technical supervision. Their main task is to see that the law is properly complied with by subordinate authorities and to provide general instructions. This is particularly done by checking their current affairs and by issuing administrative rules which apply and interpret current building law. The supreme authorities of the state are responsible for issuing ordinances on the basis of the Building Code.

With respect to construction planning and the building code the Federal Government has no administrative responsibility but it is, in part, entitled to exercise legislative jurisdiction. The Federal Ministry of Planning, Building and Town Construction establish as Bills and amendments and enacts the necessary ordinances.

There is no general rule for the number of employees of the local or regional building control authorities. The smallest communities (8,000 inhabitants) have one building engineer and a clerical staff of two or three people. Big cities like Frankfurt or Stuttgart (500,00-600,000 inhabitants) have about 120-150 working in this department.

Every local authority must employ at least one *Diplomingenieur* (academic level) and one lawyer. The number of other employees and their educational level required depends on the local situation.

6.4.3 Private building control organisations

Some 60% to 70% of the technical controls are carried out by the *Prüfingenieur*⁶.

In the early nineteen hundreds the tendency in Germany and other European countries was to design and erect bold structures which used much longer spans than normal and often incorporated a system of indirect load. Inevitably this, together with the need for economic construction and saving of material, led to more sophisticated design methods. In 1905 a local building control inspector in Prussia refused to accept a design because he lacked

⁶ Sources used here are the internet site of the BVPI: (Federal association of Check Engineers for Building Technique or "*Bundesvereinigung der Prüfen Ingenieure des Bautechnik*") and a paper by the former vice-president of the BVPI Fritz Mönning: *Building Control in Germany* (1993).

sufficient knowledge to check the calculations.

This developed in to a system where the authorities provided specialised courses and organised separate control institutions. This initiative has since become an important function in the administration of building control. Since 1926 these specialists have been called *Prüfingenieur for Baustatik* which means consulting-engineer for structural engineering. In the Building Codes of the various states the legal provision is stated as follows: “checking and controlling of structures may be delegated to experienced specialists”.

All civil engineering structures have to undergo a checking procedure undertaken by a *Prüfingenieur*. It is an essential requirement that the *Prüfingenieur* has not been involved in the design procedure of a project being checked and that he is in no way affiliated to any other party involved in the project. In some of the 16 states small housing units and other buildings of minor importance (barns, temporary shelters etc) are exempt from the checking procedure.

The *Prüfingenieur* is acting in the name and on behalf of the authorities. His responsibility is to ensure public safety and to maintain quality standards of structures by verifying the conformity of all design and structural work with the legal requirements. He takes full responsibility and the liability for the controlled and inspected structures. The checking procedure consists of both controlling the documents and inspection of the construction work on site.

A structural engineer is appointed a *Prüfingenieur* by a Federal State's Supreme Building Authorities when the following qualification requirements have been met and recognised:

- independent freelance consulting engineer;
- profound knowledge of statics and structural problems;
- design experience of more than ten years;
- knowledge of materials, economical and ecological problems, building management and building legislation;
- more than one year's experience as site engineer;
- aged between 35 and 60.

When an engineer makes an application to become a *Prüfingenieur* he must prove that he is working independently as a consulting engineer. He must be familiar with all aspects of design- and building-work. Further, he has to have a sound knowledge of role and activities of both private consultancies and the authorities and show ability in handling any potential problem which could arise during the building period.

There are three main categories for which an application can be made: concrete (including masonry), steel and timber. A *Prüfingenieur* may be recognised for one or more of these categories, depending upon his application. For each

category he has to undergo the application procedure. This distinction into categories is only valid for difficult and complicated structures of major importance. The *Prüfingenieur* remains a freelance consulting engineer and acts only temporarily on behalf of the authority, who accept his decisions without further verification. The *Prüfingenieur* prepares the official approval for a building application. He does not have a legal relationship with the designer or the owner of the project being checked – his employer is the building authority.

This situation is different when the *Prüfingenieur*, as an independent freelance consultant, works by order of a public or private client. He is also not working in the name of the authorities when he checks special structures which are not subject to approval by district building authorities (highway-bridges, military buildings, etc.)

In cases such as these, the public client makes an agreement with the consulting engineer who is generally an appointed *Prüfingenieur* on the subject of checking the design.

A *Prüfingenieur* acting on behalf of the authorities has the same liability as any authority official. He is liable for the project he is involved in but only for an act of negligence. The state or the authority has overall responsibility.

The *Prüfingenieur* may use the assistance of other employed, qualified engineers, although in order to ensure that all activities are controlled by himself and that he takes all decisions, their number must be limited. His job is to ensure that the design of any structure complies with the requirements concerning the overall stability, serviceability, durability, fire protection, sound and thermal insulation, energy conservation, health and ecology. Very often he is also the only link between different subcontractors and has to ensure that a variety of contributions leads finally to a homogeneous structure with a uniform standard of safety. He controls and supervises the construction of a structure in accordance with the previously approved design documents (calculations and drawings) by continuous on-site inspection. Every control and inspection work must be followed by a clear declaration stating approval or disapproval. In the case of any discrepancy, he must recommend either acceptance or non-acceptance.

The *Prüfingenieur* charges for his services in accordance with the official legal regulations. Every structure is classified into one of 5 building classes. The classes vary from class 1 (a simple structure like a one-storey-house) to class 5 (a complicated and difficult structure like a prestressed bridge). The fees are prescribed by the Building Authorities, though they differ slightly from state to state and are calculated as a reference of the total building cost. For instance a housing unit (class 2), requires a basic fee of 0.55%. Checking of drawings, insulation and fire protection plus site supervision increases this value to 1.1% of the total shell structure cost.

Prüfingenieurs have 'private' status but are recognized by the governments of

the states on behalf of the authorities. The larger building projects will have their own control bureaus (*Prüfamt*). The builder cannot decide for himself whether the control is done by the authorities or by the *Prüfingenieur*. The decision lies within the competence of the local building control authority. The *Prüfingenieur* will also perform the site inspection.

6.4.4 Fees

The fees that have to be paid for obtaining a building permit are determined in each state in a separate Ordinance. In Berlin the fee for just the building permit is 0.2% of the building costs, but this price does not cover the technical control (a thorough control, probably performed by the *Prüfingenieur*) and without exceptions etc. For these additional actions, extra costs will be calculated based on the value of the structural framework and the building 'classification'.

6.5 Technical requirements

6.5.1 Regulatory framework

Many of the requirements of the Model Building Code are written in general terms and the Technical Building Specifications, referred to therein, are considered to be the generally recognised rules for technical requirements. Building products may only be used in buildings where their use, with proper maintenance, is capable of meeting the requirements of the regulations and are fit for the purpose intended. Regulated products comply with, or do not differ significantly from, the technical Regulations published in List A, Part 1 of the Building Regulations. Non-regulated building products are building products which differ significantly from the technical regulations published in List A: Part 1 of the Building Regulations or for which no technical building specifications or generally accepted engineering rules exist.

Suitability is determined in the case of regulated building products by conformity with the published technical regulations, and in the case of non-regulated building products by conformity with the general building permit, the general building inspection certificate, or by mutual consent in individual cases. Regulated and non-regulated products may be used if their suitability is confirmed in the certificate of conformity and they carry the Conformity (C) symbol. The type of certificate is specified for each product or method in the list and can be either: a Manufacturer's Certificate of Conformity (MC), or a Manufacturer's Certificate of Conformity after prior inspection of the building project by an approved inspection agency (MCI), or a Certificate of Conformity issued by an approved certification agency (CC).

Table 6.2 Summary of Technical Building Regulations

List	Content	Certification Required
List A Part 1	Regulated building products which comply with, or do not differ significantly from the technical regulations and either.	MC, MCI, CC, (P) or (I)
List A Part 2	Building products for which technical building regulations do not exist and either i) the use is not subject to compliance with major safety requirements, or ii) are tested in accordance with normal testing procedures.	MC, MCI, CC and (I)
List B	Classes and performance levels contained in norms, European Technical Approvals, etc with which the building products are required to comply.	
List C	Non-regulated building products which are subject to secondary requirements in terms of health and safety.	None

It is also specified whether the certificate must be accompanied by a general building permit (P), or a general building inspection certificate (I).

All bodies which provide certificates of conformity or other certification must be approved in accordance with the Federal State Building Code. Testing carried out by agencies in other European countries must also be approved unless they are licensed in accordance with EEC Construction Products Directive.

It is clearly stated, for the building product in question, which of the technical regulations are recognised for proof of usability and which type of conformance certificate is required. At the same time, the conformity mark regulations and the monitoring regulations of the various states are waived. This provides a considerable degree of liberalisation, in that for a number of building products for which, according to the conformity mark regulations a conformity mark was required, no such procedure is now necessary. As soon as there are harmonised standards for individual building products in the Official Journal of the European Communities, the corresponding technical regulations will be removed from Building Regulation List A.

Table 6.2 presents an overview of the Technical Building Regulations.

The national Building Ordinances are supplemented with many sub-regulations giving technical details for the construction phase or elaborating some subjects that are described only in general terms in the Building Code. For instance the following sub-regulations exist: Fire protection ordinance, Garage ordinance, Approval mark ordinance, Quality control ordinance, Building project ordinance, Ordinance on technical check of work services, etc.

Requirements for existing dwellings

Residents are given the ability to influence housing quality within their own apartments through the Tenant law (part of the 'Bürgerliches Gesetzbuch'). The landlord is bound to "keep the rooms in a state for use in accordance with the contract", under § 536 BGB. The tenant is able to reduce the rent paid if there are inadequacies and so can force the landlord to increase housing quality. The architect or seller is legally responsible for the quality when a house is being built or sold. Several DIN-norms set out standards relevant for inhabitants or buyers.

6.5.2 Formulation

The requirements of the Building Ordinance are formulated in general terms and have a functional character. For example, one requirement says: sufficient sound insulation. For practical use, the Ordinance contains the rule that in constructions the generally recognised rules of technology have to be followed. Many requirements of the regulations are linked to DIN (*Deutsche Industrie Norm*) standards and to international CEN or ISO standards, and products used must comply with these standards. Building products or building methods that deviate greatly from established technical regulations have to undergo an approval procedure.

The promotion and control of housing quality occurs at different political levels and with different instruments and techniques. Legislation concerning urban development is defined at federal level and elaborated in municipal plans. All housing is subject to the building regulations (*Bauordnung*) of the individual states.

Subsidised housing is subject to stricter controls than housing built from solely private finance. Basic value-for-money standards for subsidised housing are given in federal legislation, but standards are principally controlled by the states. In the state of Hesse, the standards of the Technical Guidelines for the Construction of Housing are recommended for all housing, but are mandatory only for subsidised housing.

The national DIN standards are referred to in both building regulations and controls on subsidised housing. There are differences between states in the status they accord to each DIN standard; some are mandatory and some are recommended, but it is generally expected that contractors will build to DIN standards. The widespread use of DIN standards is one symptom of the generally strong, and positive regulatory culture in Germany which is shared by the public and private sectors alike. It is characterised by strong regulatory institutions and legislative structures, collaboration in standard-setting between government and industry, and high rates of compliance.

6.5.3 Subjects

The Building Code of Hesse makes the following distinction in subjects:

- general demands on stability and durability, protection against harmful influences, fire, heat, sound and earthquakes, traffic safety;
 - building products and building types: general control certificates, proof of the utility of 'individual' building products, proof of consistence with technical requirements, statement of consistence by construction company, certificate of consistence testing, certification and control organisation;
 - walls, ceilings and roofs: bearing walls, supporting columns, exterior walls and dividing walls, fire walls, ceilings, roofs;
-

- circulation and escape routes, elevators and balustrades: stairways, stairwells, common accessible hallways as rescue-way, windows, doors and cellar light shafts, balustrades;
- technical equipment within houses: ventilation installations, hot-air heating systems, installation shafts and canals, heating installation, heat and fuel provisions, non-movable combustion motors, water installations, sewage installations, drainage of sewage in water clearing installations, garbage shafts, litter baskets;
- staying rooms and houses: including staying rooms in cellars and attics, toilets and bathrooms;
- special constructions: parking bays and garages, bike sheds, stables, exceptions for temporary and minor buildings, constructions and spaces of a special nature or utilisation, constructional measures for special groups.

6.5.4 References, guidances and EC Directives

The application of DIN standards varies between states. Some are mandatory requirements of the building regulations, others are only recommended. Some are also mandatory for subsidised housing. Individuals can demand housing quality on the basis of a private law, referring to DIN standards, whether mandatory or not. For example as well as the DINs referred to in the HBO, tenants might refer to DIN 18015 concerning the provision of electrical sockets if they feel provision is inadequate. In practice, tenants would ask the developer to improve provision and would rarely go to court.

Guidance to interpretation

For some requirements (for example for the DINs) there are some explanations. Other bodies (for instances the publisher of the DIN standards through a range of specialist literature) also give guidance to the interpretation and implementation of standards in practice.

Implementation of EC Directive Building Products and Eurocodes

The German Institute of Building Technics (*Deutsches Institut für Bautechnik*) grants European technical approvals for construction products and the drafting of guidelines for European technical approvals on the basis of the Construction Products Directive (89/106/EEC of 21 December 1988).

The European Technical Approval is another means, via to the harmonised European standards, for proving the fitness of a construction product for its intended use. Based on the German Construction Products Law of 10 August 1992 (at present the Construction Products Law as published on 28 April 1998 is in force) transposing the Construction Products Council Directive into national law, *Deutsches Institut für Bautechnik* (DIBt) is the only German body nominated to grant European technical approvals (ETA).

6.5.5 Certification

Building regulations are supplemented by technical regulations. The technical regulations are set out in lists which differentiate between regulated and non-regulated building products. Regulated products generally comply with the technical regulations and suitability for purpose is checked either by a manufacturer's certificate of conformity or a certificate of conformity issued by an approved certification agency. All approval bodies must be approved in accordance with the Federal Building Code except those bodies which are licensed in accordance with the EEC Construction Products Directive. A procedure exists for products to be accepted which comply with EC harmonised standards as fit for use.

Germany has three kinds of quality statements: two technical approvals (the *Zulassung* and *Ü-Zeichen*) and certificates, either product or process. The technical approvals in Germany are only issued by the DIBt in Berlin under the name of *Zulassung*. This means: the granting of national technical approvals construction products and types of construction on the basis of the building laws of the states of the Federal Republic of Germany. National technical approvals are granted as a proof of the fitness for an intended use to construction products and types of construction for which European harmonised specifications do not yet exist and are not regulated by German standards or regulations (non-regulated products and types of construction). A special form of *Zulassung* is known by the name of *Typengenehmigung* which is used for prefabricated construction systems which are assembled on site. The assembly process is laid down in the *Zulassung*, which should guarantee a uniform assembly in all the Federal states.

Product approval certification, based on the EN 45000 Standards, is something new for Germany. This means that in time the existing *Eigenüberwachung* and *Fremd-überwachung* will have to be changed, which also depends on the necessity of product approval.

In the construction branch there is a clear separation between:

- public compulsory certification (*Prüfung und Überwachung*) which concerns all construction products for which special ordinances of the states or the *Zulassungen* demand quality control, perhaps only for some aspects based on DIN standards or rules from the Model Building Code;
- private certification (*Gütezeichen*) which is voluntary. The authorities are not involved in this.

Public certification is co-ordinated by the DIBt, who advises the governments of the states on the recognition of control bodies. The certification control is done by bodies that are recognized by the DIBt or by the governments. For all products for which the DIN standards contain rules concerning safety the public certification is compulsory.

At the moment the certification organisation of DIN (DIN CERTCO) issues product certification, personal certification (for instance certification of paint inspectors) and qualified enterprise certificates (for instance qualified enterprises for burglary protection).

6.6 Sources

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Internet

On the websites of the German states the *Bauordnungen* can be downloaded.

Via the website of a publisher of fire prevention publications (FeuerTRUTZ GmbH) the building and fire-regulations of the states are available (www.feuertrutz.de).

Bauregeln online (www.bauregeln.de) is an (paid) online service for standards, building regulations, etc.

The German Institute for Standardisation (DIN: www2.din.de) and the Deutsche Institut für Bautechnik (DIBt: www.dibt.de) provide a wide range of services that support the development, distribution, and application of standards.

The internet site of the BVPI (Federal association of Check Engineers for Building Technique or 'Bundesvereinigung der Prüfsingenieure des Bautechnik') gives information about Prüfsingenieure: www.bvpi.de.

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7 The Netherlands

7.1 Introduction

In 1992 the Dutch Housing Act was drastically revised and a new Building Decree was introduced. This resulted in a system of building control in which new elements were introduced, including three categories of construction works, a centralised and standardised system of technical building requirements (as performance requirements), simplified checking procedures for notifiable construction works and the introduction of absolute deadlines. Three years after their introduction the new legislation was evaluated and the main conclusion was that although the new building regulations had a firm and good basis they were not yet optimal. Over the same period the building regulations became a topic of attention in a project carried out by the Ministry of Economic Affairs into Market working, deregulation and the quality of legislation (MDW: *Marktwerving, dereguleren en wetgevingskwaliteit*). This project focused on the question of how to streamline, simplify and reduce government regulations across a range of policy areas.

The evaluation of the Housing Act and the MDW reports on building regulations have laid the foundation for another revision of the Dutch building regulations. The aim of the new revision is to create regulations that are both better connected with the needs and wishes of Dutch society and that can be better handled and maintained in practice. It is the intention that the new Housing Act and Building Decree, which comes in to force in January 2003 will simplify the regulations and the permit procedures, especially the building permit and the requirements regarding the external appearance of buildings, and make technical requirements more accessible and readable. The main changes relate to the categories of buildings, checking criteria, deadlines, phased procedures, uniform and limited submittal demands and a more objective way of checking the aesthetic aspects of constructions.

In this chapter we take the intended changes of the Dutch regulations as a starting-point. The description we give here is based on the state of affairs in the spring of 2002. It is still possible that small adaptations will be made during the Act's passage through Parliament.

7.2 Regulatory framework

The current Housing Act came into force on 1 October 1992. A new revision will be made from 1 January 2003 onwards.

The Housing Act regulates the whole area of housing, from subsidies to requirements, and from building permit procedures to regulations for existing buildings. The Act refers to the Building Decree for the technical requirements. These requirements are uniform at national level, and all construction works must comply with them.

The Housing Act 1992 consists of 9 chapters and 16 sections:

- Definitions.
- Regulations concerning construction
 - Regulations for new and existing constructions
 - Building regulations
 - External appearing of constructions.
- Special provisions:
 - Supervision of constructions, open yards and terrain
 - Summons/instructions for improvements
 - Condemnation order.
- Permits:
 - Building permit
 - Residence permit
 - Permit to re-use an evacuated or an house or caravan declared uninhabitable.
- Provision in housing need:
 - Housing research
 - Planning, programming and distribution
 - Housing institutions;
 - Financial support from local authorities
 - Financial support from national government.
- Bodies and services for housing:
 - State supervision on housing
 - Municipal building and housing control.
- Provisions in the case of special circumstances.
- Pressure and penalty clauses.
- Final and transitional provisions.

Besides the Housing Act and the Building Decree there exist General administrative order regulations (*Algemene Maatregelen van Bestuur: Amvb's*). There are (or will be) general administrative orders for instance which list the exemptions (permit free constructions), the constructions that qualify for a 'light' permit procedure and for the submittal demands.

7.3 Permit procedures

7.3.1 Categories of buildings

The basis of the Dutch permit procedures will stay intact, so the current system of control and checking procedures will not be changed. The different categories however will change. From January 2003 the category of exempt constructions will be considerably enlarged, the category of notifiable con-

structions will no longer exist, the current division into three categories (construction works that are exempt, construction works that have to be reported and construction works that need a building permit) will be replaced by a set of two: exempt constructions and constructions that need a permit and lastly, construction works that need a permit can follow a 'light' instead of the 'regular' procedure.

In practice this amounts to three categories: construction works that are permit free, that qualify for a light permit and that qualify for a regular permit.

Exemptions

Because of its length and the detailed list the overview of exemptions will not be published as an integral part of the Housing Act but in a General administrative order regulation (which is based on the Housing Act).

Some examples of exemptions include:

- annexes on the side- or backyard not exceeding 30 m²;
- conservatories, etc.: max. one annex or extension on the side- of backyard not exceeding 10 m² gross floor area;
- skylights and dormer windows;
- construction, demolition or changing of window frames or other openings in the facade or facade panels and facade-elements;
- construction of awnings and shutters (except in shopping areas);
- construction of extended balconies with a gross floor area not exceeding 2 m² (front) or 3 m² (side or back);
- photovoltaic solar panels;
- dish aerials with a diameter not exceeding 2 m and a max. height of 3 m (not placed on a scaffold);
- garbage containers not exceeding a height of 2 m and a max. floor area of 4 m².

The complete and final list will be published, probably in early 2002, in a *Amvb*.

In the exemptions a distinction is made between the front and the back of a building. There are more possibilities at the back than at the front of the building.

The 'front' is defined as the front facade, the front yard and the roof area facing the front. If the side facade, the side yard and the roof area on the side of the building borders a public road or terrain, these sides are also defined as 'the front'.

Besides this spatial or orientation demands there are other limitations on exempt constructions. Exemptions do not apply to monuments or city and village areas that have been declared by the government as protected towns or villages.

Exempt constructions must be safe structurally and must meet the technical building requirements. The laws concerning neighbours must also be met. In some cases (e.g. garden walls between plots) the neighbours must give permission.

Light and regular permits

The constructions that qualify for the 'light' permit procedure are enumerated in the same *Amvb* as the exemptions. Categories that meet the demands are (amongst others):

- constructions which concern monuments or city and village areas that have been declared by the government as protected towns or villages or that do not meet the spatial/orientation demands (e.g. a conservatory on the front facade);
- constructions (including extensions and annexes) with a maximum height of 5 meter and a max. gross floor area of 50 m² (as long as there are not exemptions);
- dish aerials, playing equipment, garden furniture with a maximum height of 5 meter;
- construction of a balcony not exceeding 2 m² and construction of a fence (for balcony or roof terrace);
- awnings for buildings other than dwellings and residential flats.

Applications for a light procedure will be checked on their spatial quality: external appearance (aesthetic check), the planning and zoning demands and the demands in the Building Decree concerning structural safety.

The light procedure must be completed within six weeks. This and the fact that the checking during the light procedure is only partially executed, is the main difference from constructions that qualify for a regular procedure.

7.3.2 Description of the procedures

Consultation prior to application

After the introduction of the revised Housing Act in 1992 the practice of prior consultation increased considerably as a result of imposing deadlines on decision-making. The introduction of the three categories of construction works has also intensified recourse to prior consultation. One way the municipalities used prior consultation was to extend the tight schedule imposed on the formal procedure, but to conduct prior consultation on a large scale was in contradiction with the spirit of the law as the applicant's legal security is very limited during prior consultation. Any gains in the efficiency of the formal procedure that had been achieved by putting deadlines on decision-making were reduced or undone by prior consultation. The municipalities maintained that a large share of the activities that are now performed during that

consultation used to be taken care of in the course of the official procedure before the revised Housing Act came into force.

It is not thought that the new Housing Act in 2003 will cause radical changes in the role of prior consultation. On the one hand the importance may diminish somewhat: the category of exemptions will be enlarged and regular permits can be granted in two phases. On the other hand the importance may grow because of the introduction of the sharper time limits.

Documents

As stated there is a general administrative order in which the submittal demands are formulated. The *Amvb* is aimed at uniformity: all municipalities in the Netherlands should have the same demands for the application for a building permit. The *Amvb* describes in detail the documents and documentation that have to be submitted. A distinction is made in the following categories:

- general documentation and documents (e.g. name, address, building costs, etc.);
- documentation and documents necessary for the planning check (e.g. function of the construction, mass, etc.);
- documentation and documents necessary for the aesthetic check (e.g. drawings of the facades, certain details, photo's, etc);
- documentation and documents necessary for the check on structural safety (e.g. various loads, foundations, etc.);
- documentation and documents necessary for the other Building Decree check (e.g. daylight, ventilation, etc.);
- documentation and documents necessary for a check of other building regulations (e.g. safety of the building site);
- documentation and documents and necessary for other checks on the Housing Act (e.g. permit concerning the Monument Law, etc.).

The *Amvb* also explains the way the documentation and documents have to be delivered:

- demands on the situation, facade and detail drawings (e.g. scale, format, information, etc.);
- demands on the calculations (e.g. applied software, calculations on construction, sound, ventilation, isolation and energy performance);
- demands on digital submittal.

Approval/acceptance

Once the application is submitted and is considered as complete by the municipal building control, the checking process starts. Applications for a light procedure will be checked on their external appearance (aesthetic check), the planning and zoning demands and the demands in the Building

Decree concerning structural safety. Regular permits are checked completely, but with the New Housing Act 2002 a phased procedure will be possible. The applicant decides whether to choose a phased procedure or not. In phase 1 the spatial quality is checked: external appearance, zoning plan, monument permit. In the second phase the construction is checked with the requirements of the Building Decree and on ground pollution.

The advantage of this phased procedure is that the applicant can limit the design costs for the constructional elements of the building plan, until he/she is sure that the building permit will be granted on 'spatial' grounds.

As stated before there will be some changes in the Building Decree and in particular the aesthetic check.

Building Decree

A converted Building Decree will be in force from January 2003 which should make the technical requirements more accessible for the market. The systematics and the structure of the Building Decree in particular will be changed considerably, the contents will stay more or less the same. Nevertheless some requirements will be changed.

The new Building Decree will specify for each aspect (e.g. stairway, insulation, etc.) which requirements apply to the various user functions of a construction. There are 12 user functions – from 'residential' to a 'construction not being a building' (bridges, flyovers, etc.) – and some sub-user functions defined (for instance residential: 'block of flats', 'caravan' and 'other').

When the user function is known the requirements per aspect can be looked up. The requirements are defined in functional as well as performance demands (see also Building Regulations in Europe, part 2).

A number of small changes concerning content will be implemented. They involve the following subjects: staircases and ramps, fire safety, surface temperature in toilets and bathrooms, accessibility (sector), view from, and practicability of 'utility buildings', energy saving, practicability of houses and insulation between dwellings.

Aesthetic check

The aesthetic check and especially the political embedding will change. For quite a long time the functioning has been criticised by the committees which perform the aesthetic check. Both the operating procedures for the aesthetic checks and the drastic of the decisions of the committees have led to this criticism. Even the Secretary of State responsible talked about a black box in which decisions are made that are blocked from the view of others.

To ensure that this will be changed in the near future the following measures are taken:

- The municipal council will be obliged to develop concrete aesthetic criteria, which are laid down in a municipal Bill. This can take the form of criteria
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for certain areas within the municipality but it is also feasible that for certain objects and constructions uniform aesthetic criteria will be developed. So called 'counter criteria' have to be developed for exempt construction works in protected towns and villages and constructions that follow the light procedure. Beforehand the applicant can judge for himself if his plan meets the aesthetic demands.

- The political responsibility of the city council for the aesthetic check will be sharpened. The aesthetic committee and the city council may only base their decision on the criteria in the 'Aesthetic Bill'.

The public functioning and 'circulation' of members of the aesthetic committee will be improved. It will be possible that, besides experts, interested citizens may join the meetings of the committee. The maximum number of years one can be member of the committee is three years (with a possibility of one single extension of three years).

Inspection

Building can start when the applicant receives a building permit for the first and second phase. The city council can claim back a permit for the first phase if the applicant does not submit an application for a permit for phase two of the building procedure. This system has been chosen to prevent a situation in which municipalities are haunted by decisions from a distant past.

Once the construction work has started the local building control will inspect during the construction period. There are no regulations concerning the time and depth of inspection, although most local authorities select strategic construction phases to inspect.

Completion

Unlike most other European countries the Netherlands do not generally have a completion certificate. However, buildings where the public interest is concerned (e.g. buildings that are accessible to public visitors like cinemas, restaurants, bars, etc.), may only be used after a user permit is issued.

Procedure times

For both regular and light permits the procedure is formally determined within a prescribed period.

For regular permits a decision must be reached within twelve weeks. The mayor and alderman have the competence to adjourn a decision within a period of six weeks. In the case of a phased regular procedure, the maximum time period of each phase is six weeks. The mayor and alderman may adjourn a decision once, a competence which may be used in phase one or two. Every year they have to inform the city council how they have dealt with this competence.

The maximum period of a light procedure is six weeks. Although the large

majority of light permits can be settled within two or three weeks the period of six weeks has been chosen, to anticipate the interpretation of difficult questions around aesthetics and planning. There is no possibility to adjourn a decision.

7.3.3 Planning issues

Building and planning control takes place within the department of local building control. The review for compliance with zoning plans involves checking if the structure in question is allowed to be built on the intended site. In the Netherlands, the plan is reviewed for compliance with the zoning plan, physical planning requirements and compatibility with its environment. When the department of planning and building control reviews an application in terms of its compliance with the zoning plan and the physical planning requirements, they often engage the assistance of other departments. Most municipalities have a special department which administers the planning control. Local building control (LBC) keeps responsibility for the co-ordination of the various control aspects.

7.3.4 Sanctions for non-compliance

In order to enforce the regulations of the Building Decree, the Housing Act grants several kinds of sanctions to the municipalities. On building without or in contravention of the building permit, there is a penal sanction. Furthermore, the LBC has the competence to stop the works temporarily. If the builder is not willing to undo the contravention, the municipality is entitled to apply administrative coercion. This is the competence to carry out measures to bring the works into compliance with the regulations or to have these measures carried out by others, at the expense of the owner.

If an owner of an existing construction work that does not comply with the Building Decree is not willing to bring it into agreement with the instructions of the LBC, the municipal executive can summon him to make the necessary provisions. If the owner persists in his refusal, the municipality is entitled to make the provisions itself or have the provisions carried out by others, at the expense of the owner. Finally, as far as housing is concerned, there is the instrument of condemnation, for use in cases in which the municipal executive comes to the conclusion that provisions to improve the dwelling do not alter the fact that that it is uninhabitable.

7.4 Building control

7.4.1 Roles and responsibilities

In the Dutch building regulation system, the Building Decree is the central document for the technical requirements. Based on the Housing Act, which itself does not contain technical rules, the Building Decree is a general administrative order, issued by the central government. With regard to some subjects, the Decree authorises the Minister of Housing, Physical Planning and Environment to give further rules by ministerial order.

A typical exponent of the Dutch 'polder model' is the Consultation Platform Building Regulations (*OverlegPlatform Bouwregelgeving*). This platform consists of representatives of all parties within the building sector and functions as an advisory board for the Secretary of State who is responsible for the building regulations. The platform discusses the future development of the Dutch system of building regulations.

Municipalities are responsible for the quality of the housing within their borders, carried out by local building control.

7.4.2 Municipal departments

Every municipality must provide in some way an organisation that performs the tasks that are laid down in the revised Housing Act. Most municipalities have a department of local building control. The most important task of the LBC is the provision of building permits and checking that designs and constructions comply with the requirements of the Building Decree.

In its other function as a touchstone for the condition of existing construction works, the LBC checks whether the building stock complies with the relative Building Decree regulations. Ordinarily these inspections are carried out as a result of complaints by tenants. Active controls are mostly executed on whole blocks of buildings, as a preliminary to urban renewal.

There are many different ways in which the local building control is organised. Sometimes the LBC is mixed with other departments that together form one larger section with mixed tasks. In most LBCs there is at least a plan controller, a structural controller and a construction inspector. The plan controller checks the plans for compliance with the local zoning plan and other planning aspects, for which experts of the urban planning department might also be involved, and as much as possible for compliance with the requirements of the Building Decree. Fire safety is mostly checked by the fire department. Some LBCs have specialists for aspects of building technology, in particular sound insulation. The structural controller checks only the structural design and calculations (strength and stability) of the larger constructions. The level of control depends on many aspects. The most important is the

confidence of the controller in the quality of the drawings and calculations, which actually means confidence in the quality of the structural engineer involved in the project. For the structural controller the calculation prescriptions of the Standards (NENs) are the most important documents. The requirements of the Building Decree refer to these standards.

The construction inspector checks the construction for compliance with the drawing accompanying the building permit. In the plan-checking phase the designs have been checked for compliance with the requirements of the Building Decree.

7.4.3 Private building control organisations

In the Netherlands the controls are partly (especially structural calculations) contracted out to private engineers, although the LBC keeps the responsibility and will decide about the scope of the controls. In those projects where the authorities decide to contract out the control, the quality could increase. Arrangements have to be made about the scope of control and inspections which means that the control procedure is more structured. The quality of control of specialised bodies may be better than those of the average local building control department because they have more possibilities for specialisation.

Dutch government policy encourages normalisation and certification. Wherever possible the government will recognise and reward private law certification as an alternative to public testing and controls. Self regulation and certification are seen as important instruments in the achievement of further deregulation and both the reduction of management costs and the pressure of regulations on citizens and companies. The development of a well functioning, extensive certification system is also considered to be of importance from the international perspective i.e. the international, particularly the European, competitive position. Accreditation is of great importance in guaranteeing the quality and recognition of certificates.

The Dutch government wishes to make the opportunity for voluntary process certification explicit in the Housing Act (see for instance the draft version of the *Nota Wonen* of the Secretary of State of the Ministry of VROM; Remkes, 2000). The intention is to facilitate process certification for design, construction and control on the basis of the Building Decree. The government is already providing insights into the consequences which can be drawn from this with respect to building permit procedures and building supervision.

At this moment an assessment guideline for the process of plan checking has been developed and the intention is to experiment with it in the near future. Individuals or bureaus that work according to processes that meet certain measurable demands could be certified to check out whether building plans comply with the technical requirements.

7.4.4 Fees

The city council fixes in a by-law the fees and the method of calculation of the fees. In all municipalities the fees are calculated as a percentage of the building costs. In most cases a distinction is made between small and large constructions. An extra fee is charged for special, e.g. legal, procedures. There is however no uniform fee system in the Netherlands, which means that the cost of a permit for an identical plan can vary from one municipality to another.

7.5 Technical requirements

7.5.1 Regulatory framework

The Building Decree is the central document for the technical requirements. The Building Decree is a general administrative order, issued by central government. As stated before the Minister of Housing, Physical Planning and Environment may give further rules by ministerial order:

- Rules concerning the application of standards and connection conditions which have been referred to in the Decree. The intention of this authorisation is that the ministerial order indicates which edition of the standard, or which part of it, or which edition of the connection conditions, is applicable. In this way a swift and flexible anticipation of the regular revisions of these documents can be effected.
- Regulations containing technical requirements for a number of specified building aspects. There are different reasons for these authorisations. At the time the Building Decree was formulated, it was clear that for some subjects it was not yet possible to give regulations in the Decree itself, e.g. because the indicated standards did not yet take account of existing buildings. For other subjects it was intended to create a possibility to give regulations when needed, e.g. for occasions that the harmfulness of materials becomes clear. Here too the swiftness and flexibility of regulation by ministerial order plays a part.
- Rules concerning the implementation of the Construction products Directive of the EC.

Requirements for existing dwellings

Concerning the second function, in the Building Decree a minimum quality level is laid down for the state of existing works. If this quality level is not met, or if the quality of a construction work is expected to fall below that level, compulsory quality improvement has to be enforced. For alteration plans, this minimum quality level serves as the lower limit of the policy margin for

granting exemptions from the requirements for the construction of works whose limit values have primarily been adopted for new building. Some articles of the Housing Act determine the 'working' of the requirements for existing dwellings.

All existing dwellings should meet the requirements for existing dwellings. If not, the local authorities can 'send the owner a letter' in which he is asked to improve the quality of the dwelling. If he is going to renovate the dwelling than he should apply for a building permit and has to make a plan that meets the requirements for new to build dwellings. In cases of renewal the municipality can, however, give dispensation at some level between the requirements of new to build dwellings and the level for existing dwellings. They have to motivate the dispensation. The reasons can be economical, architectural etc. The quality level should still, however, be reasonable.

The local authorities can use the regulations for existing buildings passively or actively.

- passive (the occupant of a building has a complaint about the quality of his house and the owner refuses to repair it);
- active (the local authority uses the instrument to force the owners to take part in renovation projects (e.g. to improve the quality of dwellings in a certain town area).

7.5.2 Formulation

The technical regulations of the Building Decree are expressed in performance requirements. In a regulation, the performance requirement is based on a functional definition, that expresses the intention of the performance requirement. The performance requirement consists of a limit value and a determination method. By the limit value, the minimal level of performance is indicated. For the determination method the Decree usually refers to a standard of the Dutch Standardisation Institute (NEN). This way of formulating the regulations has resulted from the Action Programme for deregulation. Briefly, the criteria are that a regulation has to ensure an optimal legal certainty and equality, must be unambiguous and thereby measurable and verifiable, and only in the smallest possible degree may restrict freedom and innovation.

Performance requirements allow a certain amount of freedom in designing a construction work that is maximal when adhering to the criteria of unambiguity etc. of the requirements. However, it may occur that a solution in a building plan that, judged on its own merits, is admissible, does not fit one or more requirements. The reason of this could be the nature of the situation of the construction work or the application of innovative materials or constructions. For these cases the Building Decree contains the equivalence provi-

sions. If such an uncommon solution is desired, it must be demonstrated to the LBC that this solution corresponds to the intention and the level of the performance requirement from which limit value or determination method it will deviate.

For solutions that are not equivalent there is a possibility of getting an exemption from regulations of the Building Decree. This possibility is meant for exceptional cases. The Minister of Housing decides about the exemption after the LBC has informed him that it will grant the building permit as soon as the minister has granted the exemption.

As for alteration or renovation plans, the municipal executive is able to grant exemptions. This ability is used for cases where the regulations for the construction of works (which have been adapted to new buildings) are considered too severe. One of the chapters of the Building Decree specifies the relative municipal competence and the levels down to which the exemptions can be granted.

7.5.3 Subjects

The following subjects are regulated in the Building Decree:

1. General definitions.

2. Safety.

General strength of the building construction; Stability in the event of fire; Floor partition; Bridging differences in height; Staircases; Ramps; Electricity supply and emergency power supply; Lighting; Gas supply; Moveable construction components; Limiting the risk of fire; Limiting the development of fire; Limiting the spread of fire; Further limiting the spread of fire; Limiting smoke formation; Limiting the spread of smoke; Escaping from a smoke compartment; Smoke-free escape routes; Design of smoke-free escape routes; Prevention and restriction of accidents in the event of a fire; Fighting fires; Large fire compartments; Tall and underground buildings; Access to a construction; Resistance to burglaries.

3. Health.

Protection against external noise; Protection against noise from installations; Sound-proofing between communal rooms in one user function; Restriction of resonance; Sound-proofing between rooms with different user functions; Protection against damp from outdoors; Drainage of waste water and faeces; Drainage of rainwater; Ventilation in communal area, communal room, toilet and bathroom; Airing facility; Ventilation in other rooms; Supply of combustion air; Removal of smoke; Restriction of the use of hazardous materials; Restriction of the possible penetration of hazardous substances or radiation from the ground; Protection against vermin; Drinking water facility; Hot water facility; Daylight; Room for the storage of and working with harmful substances.

4. Utility.

Surface area of standing place; Accessibility sector; Free passage; Accessibility; Communal area; Communal room; Toilet; Bathroom; Changing room; Common storage space for domestic waste; Storage space for bicycles; Meter room; Lift shaft; Lift machinery room; Installation space for a sink and installation space for a cooking appliance; Installation space for a fireplace; Installation space for a hot water appliance; Swimming pool.

5. Energy saving.

Heat insulation; Restriction of air permeability; Energy performance.

6. Environment (not yet filled in, it is still an empty chapter).

7. Transitional and final provisions.

7.5.4 References, guidances and EC Directives

In the Building Decree, standards play an important part. Wherever possible the Decree refers to standards (NEN's) or parts of standards of the Dutch Standardisation Institute.

A special feature of the Building Decree, and an essential part of the globalisation of the regulations, is that it effected the principle of free lay-out. This principle applies to new buildings, and means that in the regulations no distinction has to be made any more between, e.g. for dwellings, a bedroom, living room or kitchen. Instead, the regulations are related to the so-called living area as the framework within which the characteristic activities associated with the function of the building can take place. Living area means the total floor area that is intended for division into living rooms and other separate spaces, other than toilets and bathrooms, technical spaces and common circulation spaces. In order to prevent solutions that are impermissible in respect of, for example, daylight admission, ventilation and sound-proofing, the Decree contains in addition some 'safety net regulations' that are related to living rooms. These regulations are such that as a rule they will be fulfilled by solutions that comply with the regulations for the living area. In this way, while observing the rights of disabled persons, the citizen gets as much freedom as possible to design or modify the floor plan of a building.

These standards have been adapted to the Building Decree requirements and contain the determination methods by which one can check whether the work complies with the Building Decree requirements. In some cases, the reason for the reference is that the standard gives a definition of a term used in the Decree, or that the standard contains a limit value too detailed and comprehensive to express in the decree itself. There are forty standards to which the Decree directly refers.

Guidance to interpretation

Performance requirements leave the builder free as to how to comply with

them. Still, there is a practical need for instructions that indicate how to comply by means of current constructions. This need is met by Dutch Codes of Practice, NPRs, which mention the performances measured or calculated for these constructions. The Building Decree does not refer to these NPRs but they have been made on the basis of standards referred to in the Decree.

Other regulatory documents to which the Building Decree refers are the Model Connection Conditions (*Model Aansluit Voorwaarden*) of the associations of public utility companies. These conditions, in turn, refer to standards.

The NPRs offer examples of ways of complying with the requirements of the Building Decree for common methods of construction, although they are not directly comparable with the English Approved Documents. They also offer provisions deemed to satisfy the requirements of the Building Decree, although not every requirement is covered by an NPR. They are mainly concerned with structural and technical aspects (insulation, fire resistance etc.).

There are also many books, without official status, that give interpretations and explanations of the requirements.

EC Directive on Building Products and Eurocodes

The revised Building Decree takes the European regulations into account. Beforehand is New European standards, based on the EC Directive on Building Products, will automatically replace a Dutch Standard, so it will not be necessary to change the Building Decree all the time.

7.5.5 Certification

The infrastructure for quality statements for construction in the Netherlands is of a private nature. The quality statements are issued by certification and approval bodies who are recognised by the Council for Certification (*Raad voor de Certificatie: RvC*). The quality statements are based on guidelines that are controlled by the Foundation for Building Quality (*Stichting Bouwkwiteit: SBK*). SBK gives advice to the Minister of Housing concerning the recognised quality statements. The list of recognised quality statements contains technical approvals (*attesten*), product certificates (*productcertificaten*) and process certificates (*procescertificaten*).

During the building permit procedure, local building control (LBC) tests the calculations and drawings of the building plan. It is up to the purchaser/owner of the building to demonstrate the compliance of the building with the requirements of the Building Decree. Besides the drawings and calculations of the building plan the purchaser has to hand in, during the construction phase, more detailed drawings and test reports of the construction products to be used. LBC carries out inspections to make sure that the building is built

according to the plans that have been handed in. If there is any doubt the purchaser has to demonstrate compliance with the relative requirements of the Building Decree and the LBC decides whether the demonstration is satisfactory. With respect to this decision, the Building Decree states that quality statements that are recognised by the Minister of Housing have to be accepted as sufficient proof of compliance with the relative requirements, both in the case of performance requirements and in the case of the so-called equivalence provisions.

As this report shows in some European countries private parties play an important part when it comes to building control. In the Netherlands we are moving towards a system in which certification plays an important role. Individuals or bureaus that work according to processes that meet certain measurable demands could be certified to check out whether building plans comply with the technical requirements. At this moment (early 2002) a project is well underway to develop an assessment guideline for the process of plan checking. When the concept is ready experiments will start in some municipalities. Certified plan checking could result in the uniform, effective and efficient control of building plans. In the first phase of development certified plan checking and traditional municipal control could co-exist. In this phase however, the (national or local) legislation should provide an official recognition of the certified alternative.

7.6 Sources

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Internet

An overview of the legislation and regulations concerning housing can be found on the website of the Netherlands Ministry of Housing, Spatial Planning and the Environment (www.minvrom.nl: mostly in Dutch but also English documents can be read and downloaded).

Dutch legislation can be viewed and downloaded at the site of the Sdu (www.sdu.nl). Sdu is the publisher of governmental information (mostly in Dutch).

8 Norway

8.1 Introduction

In 1997 the Norwegian system of building regulations was revised drastically. The Planning and Building Act was revised and the building regulations revised and split into several separate codes according to the contents. The new act and the new regulations were all put into effect on July 1, 1997 with several transitional arrangements.

The changes concerning the Planning and Building Act were made in two steps at the same time. First, there were some major changes (all in all some 70 of the total of 120 paragraphs were changed). Systems were introduced for applying for building permits, responsibility and for the control of designing and building works. Besides that minor adjustments were made concerning existing buildings and the possibilities and limitations for the Government to give regulations dealing with the qualifications of firms in the building industry. Second, a minor revision took place concerning the execution of construction work. Requirements were formulated for products for construction works.

Besides the revision of the existing act, new regulations were also introduced. Below we sum up the steps that created resulting in four completely new codes:

- in the existing Building Code the chapters about products for construction works (chapter 12) and methods and execution (chapter 13) were rewritten;
- a method was developed for the approval of constructors or controllers in the building industry;
- a system was established to organise the system of approval of firms;
- changes were made concerning building permits and the necessary paper work;
- the technical demands of construction works were adapted;
- minor adjustments were made on the chapters dealing with zoning.

One of the main new features of the regulations is that according to the new building law the principal is responsible for the technical inspections. Municipal building control departments do not have to control the designs and building activities in an 'active' way anymore. Designers, advisors and contractors should ensure that construction works meet the technical requirements imposed by public law via their own quality care and control systems. The building permit procedure has also been adapted as a result of these changes.

Another important difference between the technical regulations of 1997 and earlier versions is the systematic adoption of performance requirements. The technical regulations document is therefore stripped of specifications. These have instead been included in the guidelines to the regulations (REN veiled-

ning til teknisk forskrift). As a consequence, designers, architects, planners and developers rely more on the guidelines than on the regulations, frequently using and understanding the former as though they were regulations. The introduction to the guidelines clearly states that this is not the correct interpretation of the legal status of the guidelines, but this is usually overlooked in practice.

A further effect of the systematic use of performance requirements is that reference material such as the Norwegian Building Research Institute's series of planning and technical information leaflets are being understood as a form of approvals documents, containing solutions that have been given general acceptance as preferred and legally satisfying solutions. The specifications that are quoted in the comparative analysis are quoted from the guidelines, as this reflects common usage, although legally speaking such an interpretation is less than correct.

In the coming years the Government will do further work on the planning and building legislation. At the moment a committee is working on the planning system, and a new committee will be appointed to go through the building legislation (Rasmussen, 2001). These committees shall co-operate, and the goal is a completely new planning and building act in a number of years.

Besides that the Ministry of Local Government and Regional Development is considering the introduction of time limits (such as in the Dutch situation) and the implementation of some other simplifications and improvements. The goal is set to have a new set of rules for these items put into force in 2003. In addition, attention is paid to subjects like standardisation of applications and control forms, of documentation to the application, and of electronic application and case-handling.

8.2 Regulatory framework

Statutory regulations include the Planning and Building Code and building regulations. There are in addition, regulations for control and proceedings of building projects, regulations on responsibility for planning and works, and requirements for analysis of the effects of developments. The Ministry of the Environment has responsibility for questions relating to planning, whereas the Ministry of Local and Regional Government assumes responsibility for laws and regulations regarding buildings. The local authorities give planning permission, permits to build and carry out control of projects as well as drawing up requirements for developments locally.

In Norway the following Codes and bylaws are important:

- Building Regulations, 1987, changed in 1997 (*Teknisk forskrift til Plan – og bygningsloven*);
- Planning and Building Code 1985, changed in 1997 (*Plan og bygningsloven*);

- bylaws to local plans (*Vedtekter til regulerings og bebyggelsesplaner*).

These bylaws to local plans usually address relatively few quality conditions and all these controls are jointly administered. Therefore bylaws to local plans are treated alongside the national regulations. Not infrequently, however, local bylaws are brought to county or central government for scrutiny, usually to clarify the understanding and legality of requirements. This may affect dwelling quality aspects, for instance in questions concerning density of developments, height and open space.

The aim of the regulations is to ensure that all construction works will be carried out in a professional manner. The construction works must meet the demands concerning safety, health, usability, environment, economy and accessibility for handicapped people. The ministry can formulate regulations in which technical specifications are contained regarding testing and other control systems. The regulations are applicable to all construction works and products used in the building industry. The regulations are nationwide. Municipalities are not allowed to impose supplementary or higher demands, except in cases where the municipality owns the land or the site.

8.3 Permit procedures

8.3.1 Categories of buildings

The regulations are not structured according to building type or type of construction, but differentiation exists in the various chapters according to building height (number of storeys) and use. This is particularly relevant in the fire requirements and accessibility.

In the building regulations difference is made between construction works that are exempt-free, projects that are treated according to notification and projects that needs building permits.

Exemptions

The following construction works are exempted from building permits:

- the demolition, removing or building up of small detached buildings up to 10 m² gross area on a residential property or leisure property, not to be used as a permanent residency, the height of the ridge must not exceed 3.0 m and the cornice must not exceed 2.5 m and the distance from another building must not be less than 1 m;
- minor facade alterations that do not change the character of the building's exterior;
- non load-bearing walls within a fire cell that do not change the essential lay-out requirements;

- installation, alteration and repair of simple installations in existing buildings within a utility unit or fire cell (excluding fireplaces or chimneys: these are subject to application);
- wind break with a height of up to 1.8 m and length of less than 5 m.;
- detached outdoor fireplace, outdoor flooring, small sculptures, etc.;
- fence up to 1,5 m height, in free view zones;
- advertising signs mounted on a flat wall with an area up to 1 m²;
- small antennas for radio and TV (up to 2 m.; satellite dishes max. diameter of 1 m.);
- sustaining walls of up to 1 m and with a distance of at least 2 m from the neighbour's boundary;
- filling or levelling land not leading to a deviation of the original terrain level of more than 1 m (in densely built-up areas not more than 0.5 m);
- parking space on own residential or leisure property for max. 2 cars (unless stated otherwise in ordinances or plans).

Building notices

Erection of a single detached building not exceeding a total gross area of 30 m², not having a cellar, not be used for residential or business purposes and complying with certain demands concerning the boundary partition.

A single addition used as a residential room or for purposes directly related to the residential function, not exceeding a total gross area of 30 m², may have a cellar and complying with certain demands concerning the boundary partition.

8.3.2 Description of the procedures

Consultation prior to application

The building process starts with a regulated, established by law, preliminary consultation. The municipal building control department is obliged to set up a consultation meeting (*förhåndskonferanse*) in which representatives of all the parties involved participate.

The initiator of the project presents his ideas to the municipality. At that stage the municipality has to clarify the specific demands regarding the location and the planned construction work. The new system of technical requirements is formulated in functional terms and does not refer to possible solutions or limit values. During the pre-conference the municipality has to clarify how the requirements should be interpreted. The municipality shall ensure that minutes are kept of the pre-conference, which shall form the basis for further case processing.

Documents and approval/acceptance

An important aspect of the new building permit procedure is the introduction

of a phasing in global and detailed plans and the submitting of control plans instead of complete project documentation. The applicant must submit a written application for a permit. A complete application contains all the information that is necessary to consider the application and issue a permit to execute the project.

In the new system all construction works are inspected and controlled through self-control. The municipalities only control the location-dependent aspects, which arise for instance from zoning or other urban plans, and aesthetic aspects. The municipality also supervises the inspection by other parties and independent control bodies. The importance of self-control depends on the qualifications and quality systems of architects, constructors or contractors.

In the new system classification, recognition and certification of different professional groups within the building industry has become essential. For each construction work the way control takes place has to be determined. Where possible, designers and contractors can carry the control out themselves. When the risks are considered to be great, the contractor/principal has to bring in an independent control body to carry out some or all the control. The applicant for a permit must submit a control plan and indicate a person/party who is qualified to inspect and control during the building. Lists of these qualified and registered persons and parties are available at the municipal departments of building control. A central system has been set up to check out contractors.

Applications may be divided into two or more stages.

Control (plan)⁷

The control plan started out as a check list for the companies that were involved in a project, but has developed into two overview plans, one for design and one for construction. The forms for the plans are standardised.

The original control plan is split into two – one part is the plan, and the other part is the control declaration. The declaration is given by each of the responsible control companies, no matter whether the control is organised internally by or independently. This means that the control plan is only used as a basis for – or as an indication for the need of – municipal supervision or inspection. Usually there is no municipal inspection of the project. When a municipality decides that it will perform a supervision, it is often done as an examination of the company – or rather, the part of the company's quality system that deals with the legal requirements in the planning and building legislation.

⁷ Some detailed information about the way the Norwegian system is set up (e.g. the qualification system of companies) and how it functions in practice is provided by Egil Rasmussen of the Ministry of Local Government and Regional Development.

The requirements for the content of the design control plan are:

- for the design:
 - identification of the professional field and degree of risk and complexity;
 - identification of the actual requirement in the technical building regulation that concerns this actual project;
 - the basis for the actual solution (fixed standard or building details);
 - the actual solution, referring to drawings, descriptions, calculations etc. These should be available for the municipality, but are not handed over as an ordinary part of the building application.
- and for the control:
 - method, extent and documentation of control;
 - description of the way the control will be carried out (internally or independently, and by whom).

The requirements for the construction control plan are:

- for the construction:
 - professional field and degree of risk and complexity;
 - basis for construction, referring to drawings and other design documents.
- for the control of construction the requirements are the same as for control of design.

Stage 1: general permit

Stage 1 consists of the application for a general permit. This application shall indicate the project's external and internal frameworks, including placement, size, shape, facade, any encroachment on the terrain, use, lay-out basis, relation to other involved authorities, neighbour relations, need for exemption, etc. The case processing of this stage shall provide the basis for a general permit, showing what conditions should be stipulated for further planning, including approval and inspection plans.

Applications for approval of a responsible applicant must be completed no later than upon submitting applications for a general permit. Approval of responsible applicants shall be given as early as possible and must be granted before the municipality processes the application for a general permit. Approval of responsible planners and plan inspectors must be granted before the municipality processes applications for their part of the project.

Applications for a general permit shall contain the following documentation. Parts of the documentation may be omitted if the municipality deems them irrelevant to the case in question.

- Local approval already granted or application for approval of responsible applicant, responsible planner and responsible inspector for the planning, including proposals for project classes and disciplines, for example regulations concerning approval of enterprises for right of responsibility.
 - Statement of how the responsibility for the planning is distributed and
-

which enterprises are responsible for planning each part, where the individual enterprise confirms responsibility for its part of the planning by signing the statement. The planning statement shall be signed by the project owner and responsible applicant.

- Inspection plan showing the scope and content of the inspections the project owner promises to carry out for planning.
- Description of how the project fulfils the building provisions, planning provisions and plan decisions according to the Planning and Building Act. This includes: layout, use, ground conditions (danger of landslide and environmental factors), connection to public roads and power grid, architectural design (relationship to any municipal guidelines for aesthetics, neighbouring buildings, landscape adaptation and vegetation, shown in drawings of layout, cross sections and facades, perspective drawings, photomontage, etc.).
- Site plan with drawn-in placement of the planned project showing layout and height, any existing buildings, property boundaries and walls. The information shall be presented in a way that is compatible with public map series.
- How the project will meet general requirements for technical framework conditions for the requirements set out in the Planning and Building Act for: structural safety, structural fire protection and fire escape conditions, energy economy and indoor environment with noise limitation, accessibility, utility and safety in use, durability, technical installations.
- Copy of neighbour notification or written confirmation that neighbours next door and neighbours opposite do not object to the plans.
- Statements and decisions by other authorities of importance to the general permit.

Stage 2: Start permit

Stage 2 deals with the application for a start permit. This stage includes separate documents or statistical calculations, detailed drawings, technical installations, technical solutions, detailed planning, clarification of remaining requirements set by other authorities, etc. The case processing in stage 2 shall provide the basis for a start permit. Before the individual parts of a project are permitted to start, the responsible co-ordinator, executor and inspector for the execution have to be approved. The inspection plan for the execution must be approved before the project is allowed to start. The stages may be divided up further regarding case processing and physical scope. A start permit may be granted for independent parts of the project.

- Applications for a start permit shall contain documentation as stated below in items. Parts of the documentation may be omitted where the municipality deems them irrelevant to the case in question.
- Application for approval of responsible applicant, planner or inspector if there have been changes since the general permit was granted, for example

regulations concerning approval of enterprises.

- Statement showing the division of responsibility for co-ordination and execution of the individual parts, where each enterprise shall sign the statement for its part of the execution in addition to the project owner and responsible co-ordinator.
- Inspection plan for planning in stage 2 unless documented in stage 1 with an inspection statement confirming that the detailed planning has been inspected as indicated in the inspection plan.
- Application for approval of responsible executing enterprise and responsible co-ordinator, if any.
- Inspection plan for execution, indicating form of inspection and who is conducting the inspection.
- Statement of who is the responsible executor's representative at the construction site.
- Description of the project showing compliance with technical requirements, drawings and calculations.
- Any statement or decision by other involved authorities if said statements have not been obtained beforehand.

Inspection

Planning and execution of projects subject to application must be inspected. The inspection shall confirm that requirements set out in or pursuant to the Act are satisfied in the completed project and provide the basis for issuing a certificate of completion when the work is completed and the inspection shows it is in accordance with the requirements.

Choice of inspection type

In carrying out inspection of planning the municipality must approve the use of documented self inspection or independent inspection as forms of inspection.

The municipality shall demand independent inspection for the parts of the project, which could not be approved as documented self inspection. In the assessment, the municipality shall stress the qualifications of the responsible persons, the project's degree of difficulty, the consequence of errors and other factors relating to the project. Documented self inspection is inspection of plans and/or execution carried out by the responsible enterprise itself, if it has approval for said inspection.

Independent inspection is inspection of plans and/or execution carried out by another enterprise with approval for said inspection.

Inspection plan

Proposals for an inspection plan for planning and execution shall be enclosed with the application for a permit and must be approved by the municipality.

The inspection plan shall show the form and scope of inspection as well as the division of inspection responsibility and how feedback to building authorities shall be made.

The inspection plan shall be adapted to the project. In assessing the inspection plan, the municipality shall emphasise prevention of commonly occurring errors and faults.

The inspection plan for planning shall indicate:

- division of inspection responsibility and who is the responsible inspector;
- current provisions for each check point;
- the factors in the planning of the project that are to be inspected, including requirements for products to the construction works;
- calculations and other basic materials as well as what type of document to inspect;
- which inspection tasks are to be conducted as documented self inspection and/or independent inspection;
- how the inspection is to be carried out, documented and reported.

In projects where planning is not complete prior to starting execution, there must be:

- a special start permit for the parts that are fully planned; or
- an inspection plan for the part of the planning indicating remaining planning and the possibility of additional municipal inspection of particular check points, etc. In such cases, the municipality should consider the need for independent inspection.

The inspection plan for execution shall state:

- division of inspection responsibility and who is the responsible inspector;
- the building parts, elements, construction goods, equipment, installations and functions to be inspected and the characteristics of said items and construction as a whole to inspect;
- inspection tasks to carry out as documented self inspection or independent inspection;
- how the inspection shall be carried out, documented and reported, including final inspection.

Execution of inspection

The inspection shall be conducted and documented through planning and execution in accordance with the approved inspection plan for the project in question. The inspection shall provide the basis for the final inspection and certificate of completion when the project is completed.

Inspection shall be conducted according to the methods and frequency stated in the inspection plan(s). Inspection instructions in planning, execution, product or testing standards, etc., shall be followed as far as suitable. A decla-

ration of inspection from the responsible inspector shall be enclosed with the inspection plan and submitted to building authorities as a basis for permits and certificate of completion.

In the event of faults or errors, the responsible inspector shall submit written notification on the appropriate form to those responsible for planning and execution, respectively, with a deadline for correcting said faults or errors. If correction has not been completed by said deadline, the responsible inspector shall report this to the municipality.

The municipality may at any time demand information on inspection status and conduct the inspections it deems necessary as a part of its supervisory function. If the municipality finds that inspection has been deficient, it may, after notifying those responsible, withdraw the approval of responsible inspectors and order stoppage.

The person responsible for inspecting the execution must carry out a final inspection and final review of inspection documentation when the project is completed. The person responsible for inspection shall thus confirm to the municipality that inspection has been carried out with satisfactory results in accordance with permits and requirements set forth in or pursuant to the Planning and Building Act.

A statement of any errors, faults or remaining work with deadlines for correction shall be submitted to the municipality together with the results of the final inspection and review of inspection documentation. If necessary a new inspection shall be conducted before a certificate of completion can be issued.

Completion

When the project is completed, the municipality shall be sent general drawings showing the project as it has been carried out. Any changes from previously approved drawings must be identified, founded and applied for approval so that the municipality can assess the actual inspection arrangement before issuing a certificate of completion.

Information to be entered in public maps must be designed so it can be incorporated into the maps.

When the final inspection and review of inspection documentation show that the project has been inspected in accordance with approved inspection plans, and no faults or errors are shown with respect to the permit, the municipality issues a certificate of completion.

If the municipality finds that the project or documentation has faults or errors with respect to the permit that are of minor significance, it may grant a temporary permit for use of the project or parts thereof. The municipality shall always set a deadline for correcting the faults when a temporary permit for use is issued.

If the final inspection and review of inspection documentation show that the project has significant faults with respect to the permit, neither a certificate of

completion nor a temporary permit for use may be issued until said faults are corrected. Where there is documentation indicating fulfilment of essential requirements, the municipality may implement special inspection measures.

Procedures times

Some small construction works are exempted from building permits, although they should be reported to the municipality and built according to the technical requirements. The municipality must react to the notification within three weeks.

Simple projects must be of such a nature that the application can be treated in a single phase, i.e. concluded with the start permit. The application shall be decided, in writing, no later than within four weeks after a complete application is received by the municipality. If the case cannot be treated as a simple project, the municipality shall notify the applicant within two weeks, stating the reason.

The builder/principal must inform and ensure the neighbours that the construction work in question are in compliance with the demands of the Planning and Building Act.

The general and start permits for the project are granted in writing to the responsible applicant. The permits shall contain necessary approval of responsibility tasks, approval of enterprise for responsibility, inspection plan, any exemptions, conditions set by the municipality or other authorities as well as prerequisites and frameworks for area utilisation.

Placement of the project shown in layout and height shall be pointed out at the site in accordance with the site plan, before the project is realised. The municipality itself may demand to point out the placement of the project at the site or demand to inspect it. The municipality shall grant permission to omit pointing out at the site where it is deemed unnecessary.

There is no information about the average procedure times, but according to our contactpersons in Norway there have been numerous complaints about long procedure times since the introduction of the new Planning and Building Code. Several municipalities, commonly the larger ones, have been cited as spending more than six months on approving projects and some up to a year. The new procedures have also been widely criticised for their complexity which causes delays, increases costs and have been seen to drive small businesses out of the market, as they do not have the necessary manpower to carry out the paperwork relating to inspections and control mechanisms.

8.3.3 Planning issues

The Norwegian planning system relies upon a hierarchy of plan types, all of which are legal documents once they have been approved by the municipal or county authorities. Local plans may address density, building types, height of

buildings, distances between buildings, car parking, quota of 'lifetime' housing, quota of house-types that may be financed by the state bank (although used, the latter may not be altogether legal).

8.3.4 Sanctions for non-compliance

Basically, buildings that do not satisfy the building regulations are illegal. Three sanctions are possible. The local authority may refuse to grant a permit to use the building on either a temporary or permanent basis: occupation may be illegal if the permit is refused and failure to obtain a permit may cause problems with the financing institutions and insurance companies. Alternatively, the local authority may issue a demolition order: these are rarely used, and when served very rarely take effect; normally some form of compromise is reached. The third form of sanction is fines: this requires the local authorities to report the case to the police. After paying the fine an otherwise illegal building becomes legal.

Complaints may be directed to the local authorities or to the consumer authorities or take the form of court cases. In disputes, a combination of all three is commonly used. Most complaints to the consumer authorities concern construction defects rather than dwelling quality.

The sanctions are generally perceived as having little effect. Demands made by the local authorities at the approval stage generally seem fairly effective; however this depends on the forcefulness and technical capabilities of the local authorities, which vary considerably throughout the country. A further problem, noted by several local administrations, is the willingness to grant exemptions by the local boards of politicians. Figures for non-compliance, effectiveness of sanctions etc. do not exist.

8.4 Building control

8.4.1 Roles and responsibilities

Parties involved (in most cases these are public authorities) play a role on three levels.

On a national level two Ministries are involved with planning and building: the Ministry of the Environment defines and adapts the planning laws and regulations and The Ministry of Local Government and Regional Development (KRD) is responsible for the building regulations. The KRD was originally responsible for issues involving the labour market and local government finance and administration. Over the years, however, the Ministry's sphere of activity has been expanded to embrace work in a wide range of other fields. Today it is responsible for matters as diverse as Saami issues, immigration

policy, wage disputes and mediation, housing policy, regional and district development, local government and the administration of elections. The ministry is divided into six departments.

The Housing and Building Department is responsible for housing politics and building legislation. The Department is responsible for a number of legal and economic policy instruments. Subordinate institutions related to the Department include the Norwegian State Housing Bank and The National Office of Building Technology and Administration. Through the use of legislative and economic instruments the Norwegian Government aims to influence the development of the housing and building sector in Norway.

Loans and grants provided through the Norwegian State Housing Bank are used to stimulate the construction of adequate, reasonably priced housing, housing for people with special needs (related to their economic situation or other terms), and to rehabilitate existing buildings, including urban renewal. One of the important fields of responsibility for the Department is the Planning and Building Act's regulations concerning building cases, expropriation, refunding and building codes. The building regulations include requirements for buildings, requirements concerning the municipal handling of building cases and regulations for the approval of building contractors. The building regulations focus on both achieving good quality in the buildings, and good processes in planning and building them. The Building Act defines the overall framework for the construction activities in regards to health, environment, safety and building design and architecture.

The National Office of Building Technology and Administration (*Statens Bygningstekniske Etat*) participates in implementing the Government's building policy. The Office has a main role in the efforts to ensure that buildings are designed and constructed in a way that makes them serve both individual and societal needs. The Office serves as a link between the Ministry and the various branches of the building and construction industry. Furthermore, the Office has a consultative role and provides expert advice to supplement the Ministry's work in the area of building policy.

Especially important for the Office is to inspect that the building regulations are met in actual building and construction cases, and to offer information and guidance in the interpretation of these building regulations. The Office also participates in the development and ongoing improvement of the building regulations. Additionally, the Office is the authority for central approval of companies involved in the building process.

The Norwegian Building Research Institute (*Byggforsk*) is the national research and development centre for the building and construction industry in Norway. It provides services to central and local authorities, industry, building consultants and the public. The institute is an independent, private foundation and is prominent in solving functional and practical design problems.

They are engaged in quality documentation, approval, inspection and control of building products. The institute specialises in the development of performance criteria and testing methods for products, quality assurance, investigation of defects and product control. A special Quality Group is focussing on developing and implementing quality management systems and improvement programmes in various types of companies and organisations.

Two Norwegian standard bodies are active (*Norges Byggstandardiseringsråd* and *Norges Standardiseringsforbund*). They focus on the quality of equipment, fixtures and fittings and have developed some space standards and standards for the calculation of the square area of buildings.

At a regional level there are 20 counties which oversee the local authority practice. The counties handle complaints over local authority planning requirements and interpretations of the building/planning code and regulations.

At the local level there are approximately 440 municipalities/local authorities (*Kommune*). Each municipality is by law required to draw up local by-laws, housing policies, general development plans, and plans for the development of dwelling areas. Most municipalities will also have plans for the housing of special needs groups. They also issue the planning permission and building permits.

Architects, contractors and builders work simply as private practises, under contracts to plan, design and construct housing for whoever contracts them to do so – be it the local authority, private landowners (who may well be a contractor) or a co-operative.

8.4.2 Municipal departments

The municipal departments have the obligation to control whether the rules stated in the planning and building code are respected. Every municipality has a professional bureau that deals with the handling of permits and that carries out the necessary supervision.

The head of the municipal building control has the competence to grant or refuse a permit.

The local authorities are however not financial liable for shortcomings in the design, even when the chosen solution, which at a later stage appears to have defects, has been accepted by the municipal department of building control. Furthermore the municipalities are not responsible for carrying out the technical inspections themselves. An appeal can be made against a municipality decision by a regional commission, and by the minister.

The National Bureau of Building Technique and Administration (NOBTA) has to be consulted in cases of fire-safety. Some municipalities (ca. 100) are however exempted from this obligation. For certain components and methods which are administered by the NOBTA. The Ministry of Local and Regional Government has issued obligatory testing and controlling systems.

Approximately half of the municipalities (some 440) have less than 5,000 inhabitants and have only small building control departments. It was therefore expected that the implementation of the new system could lead to initial problems. Because of their limited personnel capacity. Nationwide organisation of municipal building departments has been established recently, which should particularly support the smaller municipalities.

The character of the work of the municipalities however has changed. Previously there was an active inspection on an incidental basis. Now the municipality has to check the control/inspection plans of the applicant. It is conceivable that the demand on the capacities of the employees of the municipalities has changed.

It was to be expected that the workload would be less in the new situation. The government has implemented the new deregulating system on condition that the workload for municipalities would not grow. According to Norwegian sources experience shows the opposite to be the case: there was a significant increase in applications in the intermediate stage (following the former legislation) which led to lags in handling times and long queues. This took up to two years to overcome, but there are still big differences between different municipalities' processing time, from 2-3 weeks to 10-12 months for similar cases.

8.4.3 Private building control organisations

The private sector is responsible for checking whether the building meets the technical regulations. Building firms are encouraged to develop their own quality care and control systems. It is the intention that these firms shall provide self-control in the near future.

Besides that recognised technical control bureaus (third parties) control and guard the demands and regulations that are based on public law, particularly when the risk of the building/construction is higher.

The qualification system for architects and building companies has various levels.

The bases for the class levels are complexity of the construction work and risk for damage on health, environment and safety damage. Class 1 includes small complexity and risk, class 2 includes small complexity and medium to large risk, or medium complexity and little to medium risk, class 3 includes medium complexity with large risk, or large complexity.

Dwellings with up to four flats, ordinary storehouses etc are ordinarily class 1, ordinary blocks with dwellings or offices are ordinarily class 2. Class 3 is used for projects that require alternative methods of analysis. There can, however, be a mix of classes within one project, for example if a fire solution requires special attention, that part of the project can be put in class 3, while the rest may be class 1 or 2.

On this basis, the construction work is divided into some hundred categories. Besides the three 'complexity/risk' levels, three roles are distinguished: responsible for design, responsible on site and responsible for the complete co-ordination. Most companies apply for approval for the complete set of 'risk and role levels'.

The qualification and experience demands are limited to the professional staff and does not include the administrative staff and the workers. There are four levels of education, from technical school to university degrees. The demands depend on the class, and in the building regulations there is a table for the demands for education and length of experience for each function in each class.

The demands on experience depend also on the class, and vary from two to eight years. Co-ordination responsibility requires longer experience than ordinary performing responsibility in design or construction, and there is also a demand for 'relevant' experience.

Contrary to the demands for education and length of experience, which is related to the professional leadership of the company, the so-called quality system requirements or demands are related to the company. There are four formal demands:

- organisation plan (or rather two organisation plans, one showing how the company is organised, and one showing how the company organises its projects);
- a system for identification of official demands (often just shown in the control plans);
- a system for the handling of documents;
- a system for handling deviations.

In addition, there is a general demand for knowledge of the building regulations.

The system demands do not require more than ordinary checklists, at least for smaller companies, although there are many consultant companies on the market, offering ready-made, complex systems. The documentation demands, when an application for qualification is put forward, is generally based on self-declarations. The system shall, however, be available for the body that issues the qualification certificates.

This national body that issues qualification certificates has (until recently) consisted of a committee, an appeal committee, a professional council, and a secretariat. The committee has now been removed and ordinary certificates are now being issued by the former secretariat, which has become the National Office of Building Technology and Administration, which, as we have seen, is a directory subordinate of the ministry.

As part of the permit application the building and construction companies have to show qualifications in order to be given responsibility. The national

qualification body provides the proof or certificate for this qualification. This certificate has recently been given a duration of three years (formerly two years). If the company does not have a national certificate, it can nevertheless apply for a local issue, but it must renew its application for each new case. The demands are initially the same as for the national certificate, but the municipality can also issue responsibility to persons. At the national level, a certificate is only issued to companies.

Until now, it is estimated that about 1/3 (10,000) of all the Norwegian building and construction companies (30 to 35,000) have obtained a certificate from the National qualification body, and it is also estimated that this figure (which is still increasing) will stop at about 50%. This is about double of what was estimated in 1997. Of the 10.000 companies, 76% had less than 10 employees, 20% had between 10 and 50, and 4% had more than 50 employees.

8.4.4 Fees

The fee scale for case processing and inspection, including local approval of enterprises for responsibility, is given in the Planning and Building Act (paragraph 109). The paragraph however does not indicate a fixed method for calculating the fee for the permit.

The fee is calculated according to the full cost method with respect to work volume, type of case, portion of documentation, etc., reported on the responsible applicant's or project owner's side, self-inspection, the municipality's supervisory duties, whether there is central approval for responsibility, etc.

The new system may not lead to an increase in the fees. Possible extra costs, which may be occurred by hiring an independent control bureau, are at the expense of the applicant for the permit.

8.5 Technical requirements

8.5.1 Regulatory framework

The following parties are involved:

- Ministry of the Environment – responsible for planning issues in the Planning and Building Code;
- Ministry of Local and Regional Government – responsible for issues regarding buildings in the Planning and Building Code;
- National Office of Building Technology and Administration – responsible for technical aspects of buildings, particularly the technical regulations under the Planning and Building Code ;
- Norwegian Building Research Institute – publisher of reference material in the form of information leaflets;

- Norwegian Standards Association and Council – creates and publishes Norwegian Standards.

The following sets of regulations are important:

- Planning and Building Code
- Technical Regulations
- other regulations:
 - regulations concerning procedures and inspection (1997)
 - regulations concerning approval of responsible applicants (1997)
 - regulations concerning analysis of the effects of construction work on the environment, natural resources and society.

Besides the above regulations there are financial incentives with significant quality implications.

Requirements for existing dwellings

Consideration of the quality of existing buildings in the Technical Regulations. Requirements for existing houses and level of requirements for renovation projects.

8.5.2 Formulation

As stated in the first paragraph of this chapter Norway has focussed, since 1997, on the systematic adoption of performance requirements. The technical regulations document contains no specifications. The specifications are recorded in the guidelines to the regulations (*REN veiledning til teknisk forskrift*). An effect of the systematic use of performance requirements is that reference material such as the Norwegian Building Research Institute's series of planning and technical information leaflets are being used as a form of approvals documents, containing solutions that have been given general acceptance as preferred and legally satisfying solutions. The specifications that are quoted in the comparative analysis are quoted from the guidelines, as this reflects common usage, although legally speaking such an interpretation is less than correct.

8.5.3 Subjects

The Technical Regulations under the Planning and Building Act 1999 (13 december, nr 1296) contains the regulations concerning requirements for construction works and products for construction works. The table of contents of the regulations are as follows:

- I General provisions
 - II Maps and plans
 - III Degree of utilisation
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- IV Rules of measurement
 - V Products for construction works
 - VI Methods and execution
 - VII Personal and material safety
 - VIII Environment and health
 - IX Installations
 - X Usability
 - XI The coming into force, abolition of the previous regulations and transitional arrangements.

The objectives of the technical regulations are aimed at health, safety, energy conservation, structural stability, fire resistance, fire fighting, ventilation, drainage, thermal insulation, resistance to rain etc. Supposedly, the basic functional requirements of dwellings are included. There is, however no requirement as to the number or types of rooms.

8.5.4 References, guidances and EC Directives

Some references are made to the Norwegian Standards (NS). Examples of compliance given in the Guidebook to the Technical Regulations include frequent references to NS and to the Norwegian Building Research Institute's planning and building reference series.

Guidance to interpretation

In the previous paragraphs we have already mentioned the various guidances to interpretation:

- Guidelines to the Technical Regulations
- Norwegian Standards
- Norwegian Building Research Institute's information sheets (leaflets).

The structure – and this is of prime importance – is that the Technical Regulations state performance requirements. The Guidebook gives, legally-speaking, examples of solutions which satisfy the technical requirements. Norwegian Standards and the BRI's leaflets are frequently referred to in the guide-book. This has led to the practice that the examples in the guide-book are interpreted and used as though they were the legally binding requirements. Norwegian Standards and BRI leaflets are used as kinds of approved solutions, often to the exclusion of solutions not found in the reference material.

EC Directive on Building Products and Eurocodes

The Norwegian Standards Association (NSF) is responsible for the overall management and co-ordination of standardisation work in Norway. NSF represents Norway in the European Committee for Standardisation and the

International Organisation for Standardisation. Norway actively introduces elements of the EC Directive on Building Products. All European standards (EN) are implemented as Norwegian standards (NS-EN). It is however voluntary to implement these international standards as Norwegian standards. NSF is responsible for marketing and selling ISO publications in Norway

8.5.5 Certification

For specific building products that are difficult to inspect on the building site, checking and control systems have been introduced. They relate for instance to:

- pre-fabricated building elements
- pre-fabricated concrete elements
- smoke canals and heating systems
- synthetic building materials.

Other regulations also indicate control systems for:

- electronic installations
- pressurised boilers, piping etc.
- elements that are heated by gas or liquid fuels
- fuel tanks, etc.

8.6 Sources

Literature

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Grønvold, Ebbe, 1994, **Private quality assurance in public building control 'Documented self inspection'**, Oslo (National Office of Building technology and Administration).

Nordic Committee on Building Regulations NBK, 1990, **Building regulations in the Nordic Countries**.

Sjöholt, O., 1994, **Quality management in building and construction**, proceedings of Eureka conference Hamar/Lillehammer, Oslo (Norwegian building research institute, Byggforsk).

Stabell Rasmussen, Egil, 1991, **Note on the present situation in Norway concerning the structure and role of the building authorities, and the sharing of responsibilities with the private sector**, Oslo (The royal ministry of Local Government).

Internet

On various websites information can be found about the Norwegian building regulations. Most information is in Norwegian, but in most cases also English pages are available:

- National Office of Building Technology and Administration (*Statens Bygningstekniske Etat*): <http://www.be.no>
- Norwegian governmental information can be found on:
<http://www.odin.dep.no>
- Norwegian Building Research Institute (*Byggforsk*): <http://www.byggforsk.no/>

Among the documents available (in English) on these sites are:

- Guidelines for the Technical regulations (1997, *Veiledning til forskrift om krav til byggverk og produkter til byggverk*).
- Revision of the Norwegian planning and building act (status report 97.07.01).
- Experience in introducing performance based fire regulations (paper June 1997).
- Technical regulations under the planning and Building Act 1997 (22-11997, no. 33: *Tekniske forskrifter til plan- og bygningsloven*).

In Norwegian:

- *Forskrift til Plan – og bygningsloven om saksbehandling og kontroll i byggesaker* (1997, Regulations concerning procedures and inspection of construction works).
- *Veiledning til forskrift om saksbehandling og kontroll i byggesaker* (1997, Guidelines to the regulations concerning procedures and inspection of construction works).
- *Forskrift til Plan – og bygningsloven om foretak for ansvarsrett* (1997, Regulations concerning approval of responsible applicants).
- *Forskrift til Plan – og bygningsloven om konsekvensutredninger* (1997, Regulations concerning analysis of the effects of construction work on the environment, natural resources and society).

Contactpersons

- Olav Berge (Director of Statens Bygningstekniske Etat).
- Jon Christophersen (Byggforsk).

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- Inger Vold Zapffe (Kommunal- og Regional Departementet).
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9 Sweden

9.1 Introduction

The essentials of the Swedish regulations concerning building and construction are laid down in the Planning and Building Act. In 1987 the former Building Act was replaced by the new Planning and Building Act. In 1995 new changes were incorporated in the Act aiming to deregulate governmental rules, simplify regulations and requirements and private building and planning control. The primary responsibility for housing and construction quality beyond a few minimum standards has since then shifted in Sweden to developers and landlords, rather than the state and local authorities. The developer must comply with a set of performance requirements, based on the Planning and Building Act, and developed in detail in the Building Regulations. There are no longer any specified requirements for room size, door widths and so on. However, the regulations contain the requirement that all buildings (with a few exceptions) must be accessible by disabled persons.

Since 1995 the building permit which is granted by the local authorities covers only the locational aspects (site and architecture) and does not take the technical requirements into account. The owner himself carries the responsibility for meeting the demands of the technical requirements. There are three different methods for controlling the application: control by self-certification, control by third parties ('approved inspector') and control by Local Building Control (local authorities building department). The third option is only available in very special circumstances. The Swedish governmental authorities have tried to create a situation in which the private market takes over the control activities and avoid the situation in which private and municipal building control compete.

The building control officers of the Local Building Control are responsible for checking the control program of the applicant. They check the credentials of the person/company who is named as responsible for the inspections during the building activities, and they check if the time reserved and the number mentioned for the inspections in the control plan is correct and sufficient.

So these changes in the building regulation have also had an effect on the liability system, aiming towards a system in which the responsibilities of all parties involved is clarified.

9.2 Regulatory framework

The Planning and Building Act (1987) (PBA), contains regulations concerning planning and building. The object of the regulations is, with due regard to the freedom of the individual, to promote equal and good social living conditions and a sound and sustainable environment.

In 1987, legislation in the fields of planning and building and the manage-

ment of land and water resources was subject to radical changes. The Act (1987) on Development Co-operation ESL, and the Act (1987) on the Management of Natural Resources, etc., NRL, also came into force at the same time as the PBA, resulting in amendments to some forty other acts. Right from the beginning, it was realised that a reform of such a radical nature required constant monitoring concerning the detailed provisions of the regulatory system. An initial follow-up was also performed very soon within the framework of a three-year experience project comprising representatives of the Government Office, the Swedish Board of Housing, Building and Planning, the Swedish Land Survey and the Swedish Association of Local Authorities. This formed the background for several legislative changes in the early 1990s.

At the end of 1992 a Commission of Enquiry (the Planning and Building Commission) was set up. Its mandate was to carry out a review of planning and building legislation in the light of the experience gained from the PBA reform and the new conditions which developments in society imposed on the planning of land and water use and on building. The Commission has so far submitted three interim reports, Modified control of building construction (1993), environment and physical planning (1994) and Central review of decisions in planning and building issues (1994).

On 1 June 1994 Parliament (*Riksdag*) adopted comprehensive changes in the planning and building legislation. The decision was based on the Government proposal in the Bill 'Changes to the Planning and Building Act, etc.' which was in turn based on the first interim report of the Planning and Building Commission.

The new legislation came into force on 1 July 1995. Previous regulations shall, however, be applied concerning cases decided by the local authority prior to that day.

According to the new legislation, processing of applications for a building permit is confined to an examination of location and the detailed placing and design of buildings etc. At the same time, a new supervision and inspection system, formally independent of the building permit system, has been introduced regarding the technical requirements for buildings and civil engineering works.

The Environmental Code

The Environmental Code contains overall regulations of how public interests are to be taken into account when authorities and municipalities deal with cases where there are certain kinds of conflicting interests concerning the use of the resources of land, water and the physical environment in general. It is important to observe that the built environment is seen as a natural resource. In about fifteen other special laws the management aspect of natural resources is mentioned as something that will be taken into consideration. Chapters 3 and 4 of the Environmental Code are a kind of umbrella legislation

for the Planning and Building Act.

The starting point of the code is that the natural resources should be used in a way that encourages good long-term management in ecological, social and economic terms.

The Planning and Building Act (PBA)

The PBA establishes a framework within which the municipality can act. One characteristic feature of the PBA is that it sets out a series of general requirements to be observed in the planning and design of building. This act contains regulations about the planning of land and water areas as well as buildings. The purpose of these regulations is, 'with due regard to the freedom of the individual, to encourage the development of an egalitarian society as well as good living conditions and a good sustainable environment to live in for people today and for future generations'.

The municipality has responsibility for planning the use of land and water areas – the planning monopoly of the municipality. Each municipality has to draw up an up-to-date Comprehensive Plan. When issues are weighed in accordance with this act, consideration shall be given to both public and private interests.

The PBA consists of 17 parts, which are divided into many sections:

- after an overview of the introductory regulations (part 1), the PBA zooms in on demands on planning and localisation (part 2) and demands on buildings, sites and public spaces (part 3);
- part 2 points out public interests, which have to be considered in the planning and siting of building developments. The link to the environmental code and how to manage natural resources are mentioned here as public interests;
- part 3 focuses on the general demands on buildings. It states that buildings have to be sited and designed in a way that is suitable with regards to townscape and rural environment and to natural and historic values. Buildings must have 'forms and colours that are aesthetically attractive';
- parts 4, 5, 6 and 7 deal with the Comprehensive Plan, the Detailed development plan area regulations, the implementation of plans and regional planning;
- part 8 deals with the regulations regarding building permits, demolition permits and site improvement permits;
- in parts 9 and 10 the inspection and control of building works and penalties and actions resulting from infringements are described;
- part 11 defines the task of the building committee in accordance with the act;
- parts 12 through 17 successively deal with the state control areas of national interest, appeal procedures, obligation to acquire land and pay compensations, court decisions, authorisation and, finally, provisional regulations.

9.3 Permit procedures

9.3.1 Categories of buildings

A building permit is required in order to:

- erect a building;
- make extensions to a building;
- use or equip a building either wholly or in part for a purpose which is considerably different from that for which the building has previously been used or for which a building permit has been granted;
- make alterations to a building in such a way that they provide an additional home or other premises for retailing, handicrafts or industry.

With regard to constructions other than buildings, a building permit is required in order to:

- construct an entertainment park, a zoo, a sports ground, a ski slope with lifts, a firing range, a harbour for leisure craft, an outdoor swimming pool, a car racing track and a golf course;
- arrange a storage area or storehouse;
- construct tunnels or rock caverns which are not intended for an underground railway or mine operations;
- erect fixed cisterns or other installations for chemical products and which are a danger to public health and the environment, and for materials which may involve the risk of fire or other types of accident;
- erect radio or television masts or towers;
- erect a wind power station if the turbine diameter is greater than 2 m or if the wind power station is sited in such a way that the distance to its boundary is less than the station's height above ground level or if the wind power station is to be fixed to a building;
- erect walls or fences;
- arrange parking spaces outdoors;
- arrange burial grounds;
- make major alterations to the installations.

There are special regulations for one and two-family dwellings and for certain buildings which are intended for total defence purposes the municipality may either waive the demand for a building permit or decide on stricter conditions.

Exemptions

A building permit is not required to arrange or erect an installation, or for making alterations, if it is a question of a smaller installation only intended to meet the requirements of a particular property. A building permit is not required if the property concerned only contains one or two single-family

dwelling or a two-family dwelling and the parking spaces are solely intended to meet the requirements of those properties or if the parking spaces are constructed in accordance with the Road Act (1971) or on land which, in a detailed development plan, has been set aside for a street or road.

Special regulations for areas covered by a detailed development plan

In areas covered by detailed development plans a building permit is required in order to:

- repaint a building or replace its external covering materials either on the walls or the roof as well as other alterations which involve major changes to the external appearance of the building;
- erect or make major alterations to a sign or illuminated installation;
- erect, make extensions to or in other ways make alterations to buildings required for agricultural, forestry or similar purposes.

Special regulations for one or two-family dwellings

There are special regulations for one and two-family dwellings as well as for certain buildings intended for total defence purposes.

The regulations do not cover the measures listed below with regard to one or two-family dwellings and their free-standing outhouses, garages and other smaller supplementary buildings:

- the repainting of buildings in an area covered by a detailed development plan unless this entails a major change in the building's character;
- a sheltered outdoor area next to a dwelling as long as the wall or fence is not higher than 1.8 m, does not extend more than 3.0 m from the dwelling and is not placed closer to the plot boundary than 4.5 m;
- a protecting roof over the type of outdoor area described above, or over a terrace, balcony or entrance if the protecting roof is not greater than 12 m² and does not come closer than 4.5 m to the neighbouring plot;
- erecting two supplementary buildings adjacent to the dwelling, if their total building area does not exceed 10 m², the height to the roof ridge does not exceed 3 m and the buildings are not placed closer to the plot boundary than 4.5 m.

Outside areas covered by detailed development plans, a one and two-family dwelling and its supplementary buildings, walls and fences which are not included in an area defined as a cluster of dwellings, are excluded from the regulations with regard to the following measures:

- smaller extensions if these do not come closer to the plot boundary than 4.5 m;
- supplementary buildings, walls or fences in the immediate vicinity of the dwelling if these do not come closer to the plot boundary than 4.5 m.

Municipal decision on the extent of a building permit

In a detailed development plan or area regulation, the municipality may decide that a building permit is not required as stated in the plan or the time limits need to be imposed in order to carry out required measures.

The municipality may, in the area regulations, decide that a building permit is not required in the manner described in the regulations for:

- erecting, extending or in other way altering supplementary buildings;
- erecting smaller extensions;
- installing or altering installations;
- making extensions or other alterations to industrial buildings;
- erecting, making extensions or otherwise make alterations to simpler vacation cottages, allotment cottages and similar buildings.

Regulations in accordance with the first or second paragraph may not be issued if a building permit is required to safeguard the interests of neighbours or the general public.

Within a cluster of dwellings, permission is required from the neighbours affected if certain measures, are to be carried out without a building permit.

A municipality may, in an area of environmental value, decide that a building permit is required:

- for the carrying out of certain measures, in an area not covered by a detailed development plan;
- for the repainting of a one or two-family dwelling and its supplementary buildings, in an area covered by a detailed development plan;
- for the repair of buildings which are of special conservation value.

The municipality may, in areas which constitute a valuable environment, or where area regulations have been issued, determine that a building permit is required for some specific measures. The municipality may additionally, and if there are special reasons, determine that a building permit is required:

- within areas not covered by a detailed development plan for the erection, construction of extensions and other alterations to buildings for agricultural, forestry and similar activities;
- for the erection or considerable alteration of installations for ground water sources referred to in the Water Act (1983:291).

A municipality may determine, in its area regulations, that a building permit is required:

- for the erection of or for major alterations to an illuminated sign which is located close to existing or proposed installations for total defence, state airports, other public airports, nuclear reactors, other nuclear energy installations or other installations requiring protective or safeguarding zones;
 - to erect or make major alterations to signs or illuminated installations within areas of building environmental value.
-

Building notice

Certain alterations, which were previously subject to a building permit requirement and which relate to the technical aspects of buildings no longer need a building permit. Instead they are, subject to a building notice requirement within the framework of the new supervision and inspection system.

These alterations are:

- alterations to buildings which affect the design of load bearing components or which substantially affect the layout of buildings;
- installation of, or substantial alterations to, heating appliances, flues or arrangements for the ventilation of buildings;
- installation of, or substantial alterations to, arrangements for water supply or drainage in buildings or inside building plots;
- installation of, or substantial alterations to, lifts in buildings.

9.3.2 Description of the procedures

According to the PBA, permits for construction, etc. are given in the form of building permits, demolition permits or site alteration permits.

A building permit concerns construction of a new building, additions to a building, change of use of a building, certain external alterations to a building, as well as the provision of, or substantial changes to, civil engineering works other than buildings.

A demolition permit concerns the complete or partial demolition of buildings.

A site improvement permit concerns excavation or the deposition of fill which will appreciably alter the level of ground within land set aside for development or land for public places, as well as tree felling and afforestation.

The building committee of the local authority processes applications for a permit. This is the committee whose duty it is to fulfil the obligations of the local authority within the planning and building system and to exercise detailed supervision over building activities.

According to the legislative changes which came into force on 1 July 1995, the processing of applications for a building permit has been confined to an examination of the location of a building or civil engineering works and of the design of the works or the site. This means requirements relating to precise siting and external appearance.

Consultation prior to application

When a building notice is received, the committee will promptly convene a consultative meeting unless this is evidently unnecessary. At the consultative meeting an examination is made of such issues as the planning of the works and the measures for inspection, supervision and other controls that are necessary in order that the building or civil engineering works may be assumed to comply with the requirements.

Documents

Applications for a permit is usually in writing (although in the case of simple proposals the application may be verbal). This means that the application must be accompanied by the drawings, specifications and other information required for the scrutiny of the application.

Approval/acceptance

The building owner, i.e. the person who, on his own account, carries out the building, demolition or site alteration works or who arranges these to be carried out, is completely responsible to society for ensuring that a building or civil engineering works complies with the relevant technical requirements. This is made clear by the fact that processing of the building permit application no longer covers the technical aspects of the project and that the building committee is given a purely supervisory role concerning these aspects. In order to enable the building committee to exercise effective supervision of the responsibility placed on the building owner, a new administrative procedure has been introduced which enables the building committee to monitor the building project and to take action if something goes wrong.

Regardless of whether or not a building permit is required, certain building works specified in law may not be commenced for at least three weeks from the date of submission to the building committee of a building notice. This notice gives the building committee an opportunity to assess the need for supervision and inspection.

Inspection

At the time of the consultative meeting or as soon as possible thereafter, the building committee shall, unless this is evidently unnecessary, come to a decision regarding an inspection schedule for the works. It is primarily the responsibility of the building owner to set out what inspection and verification he considers necessary to confirm that the technical requirements have been complied with. The building committee shall determine whether the inspection proposed by the building owner is sufficient and shall approve or reject the inspection schedule, and shall specify any additional inspections, notifications and documentation which in the opinion of the committee are necessary. In this respect, the committee will be primarily guided by the competence of the building owner, the nature and complexity of the project, and the scope and quality of the in-house control system of the building owner.

Quality assurance supervisor

When the inspection schedule has been decided on, it is the responsibility of the building owner to ensure that it is complied with. To aid him in this respect, the building owner shall normally have appointed a quality assur-

ance supervisor. The quality assurance supervisor shall assist the building owner, be present at consultative meetings and inspections and also in other respects ensure that the inspection schedule is complied with. A number of quality assurance supervisors may be appointed to oversee different parts of a project. In such a case, one of them shall co-ordinate their work.

Completion

When the building owner has met his obligations in accordance with the inspection schedule and the building committee has not found it necessary to intervene as supervisory authority, the committee issues a completion certificate.

Failures

If the building committee finds that the building owner has failed to satisfy all the conditions necessary for the issue of a completion certificate, the committee without undue delay decides to what extent use of the building will be permissible until such time as the failure has been remedied.

The supervision and inspection system described above is intended not only to ensure that the technical requirements have been complied with in the project, but also that the project agrees with the building permit, and with the detailed development plan or special area regulations. These issues should be given the necessary consideration during consultative meetings and in the inspection schedule, as well as when the completion certificate is issued. A completion certificate should not, for instance, be issued if the building committee has reason to assume that the building contravenes the provisions of a building permit or a detailed development plan or special area regulations. There is thus a close relationship between a building permit and supervision and inspection during the construction process.

In an area without any detailed plan, in Sweden there is no right to development. The building committee still may issue building permits, if this is proved appropriate. But the applicant has no stated right to receive such a permit, and if the application is refused, he will not get any compensation. The only way to secure an almost automatic right to development and building permit is by the detailed development plan (DDP). There is no specific planning permission in Sweden and formally the planning initiative and responsibility lies in the hands of the municipality, even if in practice much of the initiative and work to take forward a plan may come from the private developer. But when a DDP is adopted, the owner of a proper site within the plan area has the right to get an application for a building permit approved, if the house is in accordance with the plan regulations and the construction of the house satisfies the requirements. If an application is refused, he has the right to receive compensation for the damage, provided that the application is done within the prescribed implementation time of the detailed plan.

Right to develop may be linked with the duty to pay development costs or other obligations. Sometimes such costs are determined as fixed charges for streets, water and sewerage, sometimes – especially in case of big development – they are determined by negotiation and a special development agreement is written. There are no public taxes for development as such in Sweden, only for development gains.

Procedure times

There is no information available about procedure times in Sweden.

9.3.3 Planning issues

Part 4 of the PBA is about the Municipal Comprehensive Plan (MCP) and section 5 is about the Detailed Development Plan (DDP) and Area Regulations (AR). These two sections contain the drafting of those plans and what they are allowed and not allowed to regulate.

The Municipal Comprehensive Plan (MCP) has to note:

- the public interests that should be taken into consideration when making decisions on the use of land and water areas and those environmental and risk factors that should be taken into consideration;
- the main aspects of the proposed use of land and water areas existing development or its preservation;
- how the municipality intends to take national interests into consideration in accordance with what is said about how to manage natural resources in the Environmental Code (EC).

The MCP can be seen as an agreement between national and local interests and gives an accepted framework for continued municipal detailed planning and building site development rather free from state intervention. An important goal in the Swedish planning system is independent municipalities with a sense of responsibility to national objectives.

The MCP is not binding for the public or private sector but has the status of guiding principles. It will cover the whole area of the municipality and will therefore be an overview. For certain areas however – an urban area for instance – it can be deepened and worked out in greater detail. An MCP, as best, is used as a political instrument and co-ordinates different sectors in the municipality. The plan shall successively be renewed.

For defined areas, not covered by a detailed plan, binding Area Regulations (AR) can be adopted in order to ensure that the intentions of the MCP are achieved. AR may be used to control how and to what extent changes in the general rules of a building permit may be permitted. They do not give any right to erect a building.

The MCP and AR do not give any immediate development or building rights

even if they indicate where development is suitable. For larger projects more detailed planning is needed. Only a Detailed Development Plan (DDP) can give rights to build after an application for a building permit. When the projects are smaller a building permit can be sufficient.

A DDP is needed in the following cases:

- new continuous developments that normally require communal roads, water and sewerage;
- new individual buildings with significant impact on surroundings or located in an area with considerable demands for building sites or where examination of the proposed building cannot be carried out in connection with the scrutiny of a building permit;
- if development of existing buildings must be regulated in one connection and comprehensive control is required.

Further regulations for buildings in a DDP are possible, for instance height, position, shape and other things.

A DDP has a strong legal status and determines more or less the right of building in areas. Minor deviations are allowed but only if they are compatible with the purpose of the plan. A DDP gives the municipality specified rights to compulsory acquisition (expropriation) of land needed for streets, parks and other public areas.

A DDP gives strong protection of building rights but only for a limited period of five to fifteen years, named the time-limit for implementation. If the municipality wants a revision of the plan within the time-limit, property owners are entitled to compensation. After the time-limit the DDP is still valid, if the municipality wants it to be. But the plan can be revised any time. A property owner always has the right to build a new building that is equal to existing buildings.

A complete DDP also consists of a plan-report and of an implementation report. Besides this, a DDP has to be based on a programme indicating the starting points and objectives of the plan. Sometimes an environmental impact assessment (EIA) has to be drafted if the plan permits land use that has considerable impact on the environment.

The Environmental Code (chapters 3 and 4) and the Planning and Building Act together form a planning-basis when plans are created and a decision-basis for the granting of building permits.

9.3.4 Sanctions for non-compliance

Developers and landlords have full legal and economic responsibility for complying with building regulations. The Building committee can take legal action whenever necessary if the builder fails to fulfil his obligations according to the acts, regulations and individual decisions.

9.4 Building control

9.4.1 Roles and responsibilities

Legislative powers are held by parliament (*riksdagen*), which is chosen in direct, proportional elections every four years. The parliament enacts laws, decides national taxation and the budget. Parliament elects a Prime Minister, who appoints a government that is the planning, initiating and executive body. Cabinet ministers are responsible for preparing and proposing government decisions.

Government departments in Sweden are relatively small. The Ministry of Environment – responsible for environment, planning and building – consists of 125 persons. To support the governmental administration there are a number of central authorities or boards, each responsible for a sector of the society. To support The Ministry of the Environment, for instance, there are six major different central authorities with, in round figures, 1,500 people. An example of such an authority is the Swedish National Board of Housing, Building and Planning (*Boverket*). The government can give the authorities instructions concerning their policies and activities, but according to the constitution it is not allowed to steer their decisions in single cases. In this sense they are independent from the Government.

Parliament has the legislative power. The government puts a proposal to Parliament as a bill (*proposition*). When a decision for a new act is made in Parliament, the government has the right to institute an ordinance for the act. In the ordinance an authority – for instance *Boverket* – is given the right to publish special regulations in accordance with the act and the ordinance. If it is not necessary the authority has the possibility of publishing general Advice for the Act.

At a regional level Sweden is subdivided into 21 counties, which are headed by county administrations, to which there are links from the central authorities. The County Administration Board is a state agency operating under the general directives issued by Swedish parliament and government. The board is completely independent to take decisions within its frame work. In some cases the County Administration has a position as a court. The head of the county is a governor, appointed by the government for a period of six years at a time. The Governor is chairman of a board of 14, the members of which are indirectly elected.

The smallest political body is the municipality. Sweden has 288 municipalities, in which the population varies from 3,000 to about 700,000. The median size of a Swedish municipality is about 16,000 inhabitants and the median area about 700 km².

The supreme decision-making body in a municipality is the Municipal Council which is directly elected every four years and has a median size of 51 per-

sons. There are more small local parties represented in the Municipal Council than in the Swedish parliament. The Council appoints a number of delegations with about fifteen local politicians, of which some have a seat in the Council as well. The most important delegation is the Executive Board. Another important and compulsory board is the Building Committee.

9.4.2 Municipal departments

Each municipality has to set up a Building Committee which exercises detailed supervision of construction activity in the municipality. This committee examines applications for building permits, demolition permits and site improvement permits and carries out supervising activities and the necessary inspections. In addition to these tasks the committee is expected to:

- encourage good architecture as well as a good urban and rural environment;
- actively follow general developments in the municipality and its surroundings as well as take the initiatives required in matters concerning the drawing up of plans, building and property formation;
- co-operate with authorities, organisations and individuals whose work and interests concern the committee's activities;
- give advice and information on matters which concern the Committee's activities;
- ensure that the Building and Planning Act and any directives and decisions based on it are followed.

9.4.3 Private building control organisations

As stated before, private building organisations play an important role in the inspection and control of the technical requirements of construction works. There are three different methods for controlling the application: control by self certification, control by third parties ('approved inspector') and control by Local Building Control (local authority building department). The last option hardly ever occurs in practice.

There is no information about the way this system is organised or about the 'quality supervisor'.

Some articles refer to 'approved inspectors' who carry out the control and inspection tasks, although it is not known if this means that they have a similar procedure in Sweden as in the UK.

9.4.4 Fees

The building committee may charge a fee for matters concerning a building and tentative approval or matters concerning a building notification or a demolition notification as well as in other cases which require the production

of a site map, the scrutiny of drawings, inspections, the production of archive documents or other time- and expense-consuming efforts. The building committee may also levy a planning fee to cover the costs of measures, which are required to draw up or amend detailed development plans, area regulations and property regulations plans. This planning fee may only be charged if the property owner has use of the plan or regulations.

The maximum fee that may levied is that which corresponds to the municipality's average costs for this task. The basis on which charges are calculated shall be stated in a price list which is agreed upon by the municipal council.

9.5 Technical requirements

9.5.1 Regulatory framework

Most of the technical requirements for buildings and civil engineering works in Chapter 3 of PBA and the regulations concerning building products in the Building Products Act (1992) have been transferred to a new Act (1994) on Technical Requirements for Building Works etc., BVA. The regulations concerning type approval and production control in PBA have also been transferred to the new act. The act also contains certain fundamental regulations concerning ventilation systems.

The Planning and Building Act sets the framework for building regulations and the objectives for all building and planning activities.

Requirements for existing dwellings

The policy of renewal of cities by demolition and rebuilding has been increasingly exchanged for a policy of conserving older valuable parts of the cities. The Swedish Planning and Building Act prescribes that in Detailed Development Plan-areas a demolition permit is required. The building committee of the municipality can refuse a permit if the building ought to be preserved because of its historical, environmental or architectural value. In an area regulated by DDP or Area Regulations it can be stated that demolition is forbidden for certain buildings or within a certain area.

The PBA states in chapter 3 that for all existing buildings extension, modernisation and other alterations should be carried out carefully and in such a way that the building's historical, environmental and architectural values are taken into consideration. Buildings, which are particular valuable from these viewpoints, should not be disfigured.

9.5.2 Formulation

The Building Regulations are mandatory performance requirements (a few

including specifications) and ‘general recommendations’. General recommendations variously comprise examples of provision satisfying mandatory requirements, references to Swedish Standards and other sources, definition of terms and clarifications of the meaning of mandatory requirements. General recommendations may also contain certain explanatory or editorial information. Methods and design solutions set out in European Standards adopted as Swedish Standards (SS-EN), and in European Pre-standards (SS-ENV), are approved as alternatives to the given methods and design solutions. Although the general recommendations are advisory they may represent minimum standards. For example, given the performance requirements for accessibility a turning circle smaller than the general recommendation is unacceptable because of the current size of wheelchairs. Hypothetically, wheelchairs may be improved, reducing the need for a turning circle of this size and developers or builders would then be obliged to demonstrate to the authorities that new improved wheelchairs are in common use, and thus room dimensions can be reduced.

9.5.3 Subjects

There are no longer any specified requirements for room size, door widths and so on. However, the regulations contain the requirement that all buildings (with a few exceptions) must be accessible by disabled persons. The Building Regulations state that this means, for instance, that a ground floor WC must be accessible by a person in a wheelchair. But how this is done is up to the developer. The non-mandatory Swedish Standards (*Standardiseringen i Sverige*: SS) give minimum measures and are referred to for guidance.

The table of contents of the Building Regulations (BBR 1994, with amendments BFS 1995:17 and BFS 1995:65; Boverket, 1996) is as follows:

1. Introduction (mandatory provisions, type approval and production control, standards and terminology).
2. Workmanship and operating instructions (earthworks, demolition, operating and maintenance instructions etc. and fire safety installations and ventilation systems).
3. Design (room height, access, dwellings, accessibility of rooms, supplementary housing facilities and plant rooms and service rooms).
4. Mechanical resistance and stability.
5. Safety in case of fire (fire resistance classes and other conditions, escape in the event of fire, protection against the outbreak of fire, protection against the spread of fire inside a fire compartment, protection against the spread of fire and fire gases between fire compartments protection against the spread of fire between buildings, loadbearing capacity in the event of fire and fire-fighting facilities).
6. Hygiene, health and the environment (air, light, temperature, moisture,

water supply and drainage, discharges to the environment).

7. Protection against noise (sound insulation, sound level and reverberation time).
8. Safety in use (protection against falls, against injuries due to collisions, trapping or tripping, against burns, explosions, drowning, being locked in, poisoning, electric shocks).
9. Energy economy and heat retention (limitation of heat losses, efficient use of heat, efficient use of electricity).

9.5.4 References, guidances and EC Directives

Guidance to interpretation

There is wide scope for discretion to be exercised locally because the Act and the Building Regulations are fairly non-specific. Although there may be no detailed specifications, builders and housing companies tend to work to a high standard; for example, The Planning and Building Act requires sufficient green space for play and recreation, but there are no detailed specifications. However builders and housing companies always provide playgrounds, green space, benches etc. and the municipalities provide sports fields. Similarly, although the dimensions for clear opening widths of doorways are only advisory, the builder has to show that the rooms are accessible, and there is no other way than to make the doors wide enough, so the status of mandatory versus advisory requirements is usually a non-issue.

EC Directive on Building Products and Eurocodes

In the Design Regulations (BKR) of the Swedish Board of Housing, Building and Planning it is stated that methods and design solutions set out in European Standards adopted as Swedish Standards (SS-EN), and in European Pre-standards (SS-ENV), are approved as alternatives to the methods and design solutions set out in this Statute, subject to the limitations and other conditions which may be specified in the Board's regulations relating to the standard concerned. Such regulations are published in the Board's regulation series BFS/NAD. These regulations shall also be applied when reference is made in this Statute to a European Standard or European Pre-standard which has been adopted as a Swedish Standard.

9.5.5 Certification

In Sweden type approved or production controlled materials and products refer to materials, structures or arrangements which have been type approved or subjected to production control in accordance with Sections 18-20 of BVL. Construction products which have been shown to satisfy the requirements in Sections 4 and 5 of BVL are considered to be of equal status.

Swedac, the Swedish Board for Accreditation and Conformity Assessment, is a central public authority acting under the Ministry for Foreign Affairs, and is the national accreditation body. It is also responsible for co-ordinating, monitoring, providing advice and information in matters relating to conformity assessment as required by the Act concerning Conformity Assessment. All public authorities that publish regulations concerning conformity assessment are required to liaise with Swedac.

Swedac assesses the competence of bodies that perform analysis, testing, calibration, certification, or inspection. Swedac accredits companies or organisations that apply for it. Accreditation is voluntary, although it is a prerequisite to be allowed to operate certain services, as required by public authorities or other bodies.

SWEDAC is also involved in work aimed at international harmonisation of conformity assessment, not only (although particularly) within the European Union but also world-wide, in accordance with international World Trade Organisation (WTO) agreements.

In Sweden accreditation is performed through:

- laboratories performing analysis, testing or calibration;
- certification bodies for certification of products, quality and environmental management systems, information security management systems, occupational health and safety management systems and personnel;
- environmental verifiers for EMAS (the EcoManagement and Audit Scheme);
- attestors of public procurement procedures;
- inspection bodies.

All accreditation is performed against requirements as set out in European standards (the EN 45000 series and, in certain cases, also requirements as set out in ISO standards, for laboratories ISO/IEC 17025).

9.6 Sources

Literature

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10 Comparison

10.1 Introduction

In this chapter the systems of building control are compared. Section 10.2 goes into the regulatory system of the eight countries. The building permit procedures are dealt with in section 10.3. Aspects are discussed like the procedural difference that is made between categories of construction works, the way the inspections are carried out (preventively and during construction) and the duration of the procedure. Section 10.4 subsequently describes and analyses the systems of building control in the various countries.

10.2 Regulatory systems

In most of the countries analysed the regulations concerning building permit procedures, technical requirements and planning aspects are determined at a national level. Belgium and Germany are the exceptions to this rule. In Belgium the three independent regions (Brussels, Walloon and Flandres) are responsible for the regulations in this field. This leads to some variety in the rules. On the other hand, the national Civil Code (which directly influences the responsibilities in the building sector) leads to more congruity. In Germany the various states play a decisive role in establishing their own Building Codes. They are based however on the same nationally accepted Model Building Code so in practice the regulations tend towards harmonisation.

In most countries the Acts and Codes that regulate the building permit procedures also contain references to the technical requirements.

Another point in which most European countries match is that the planning regulations give directions at a national level which provide regional or local authorities with a framework to fill out the planning issues in a more detailed manner. Table 10.1 gives an overview of the situation in the eight countries.

Belgium describes the building procedures in the Environmental planning Decree. This Decree also incorporates planning aspects. In order to submit building permits the municipality must have municipal spatial structure plans that are in effect. Only a few technical requirements can be found in national regulatory documents. These requirements mostly concern the fire safety of buildings. The Civil Code is important because it determines the responsibilities and liabilities in the building sector. The system that has originated from this forms the basic factor for guaranteeing building quality.

The Danish Building Act prescribes principal and general requirements applying to buildings and building quality. The two sets of building regula-

Table 10.1 Regulations determining building permit procedure and planning aspects

	Building permit procedure and Technical requirements	Planning aspects
Belgium (Flandres)	Environmental planning Decree 2000 (<i>Decreet houdende de organisatie van de ruimtelijke ordening</i>) Civil Code (<i>Code Civil</i>)	Environmental planning Decree 2000 (<i>Decreet houdende de organisatie van de ruimtelijke ordening</i>)
Denmark	Building Act 1995 Building Regulations 1995, 1998 (<i>Bygningsreglement 1995, Bygningsreglement for småhuse 1998</i>)	Planning Act (1999, and other relevant Acts) (<i>Lov om Planlægning</i>)
England	Building Act 1983 and Building Regulations 2001	Town and Country Planning Act 1990 (which forms the basis for subordinate orders and regulations)
France	Building and Housing Code (<i>Code de la Construction et de l'Habitation</i>) Civil Code (<i>Code Civil</i>)	Urban Planning Code (<i>Code de l'Urbanisme</i>)
Germany	(model) Building Code (<i>Muster</i>) <i>Bauordnung</i>	Federal Building Law 1987 (<i>Baugezetzbuch</i>)
Netherlands	Housing Act and Building Decree 2003 (<i>Woningwet en Bouwbesluit</i>)	Spatial planning Act 1962 (<i>Wet op de Ruimtelijke Ordening</i>)
Norway	Planning and Building Code (<i>Plan og bygningsloven</i>) Building regulations 1997 (<i>Teknisk forskrift til Plan og bygningsloven</i>)	Planning- and Building Code 1997 (<i>Plan og bygningsloven</i>) Bylaws to local plans
Sweden	Planning and Building Act 1996 (<i>Plan och Bygglagen</i>) Building Regulations 1996	Planning and Building Act 1997 (<i>Plan och Bygglagen</i>)

tions which originate from this Act (one with a general purpose and one focussed on small buildings) describe in more detail the procedures and the technical requirements. Planning aspects are laid down in a separate Planning Act, which is accompanied by many other Acts that have spatial consequences (Act for the protection of nature, protection of forests, etc.).

Regulations in England and Wales are based on the Building Act (1984) which provides the legal framework for the Building Regulations 2001 (including separate regulations concerning approved inspectors and charges regulations). The Building Regulations describe mostly the procedures. The technical requirements are described in schedule 1 of the Building Regulations. Planning issues are regulated in the Town and Country Planning act (1990; including acts concerning listed building and conservation areas and hazardous substances). On the basis of these Acts, Orders and Regulations have been issued. Besides building permits, planning permits are required in England and Wales in many construction cases.

Like in Belgium, in France the Civil Code – and especially the part known as the Spinetta Law – plays an important role in determining the responsibilities

and liabilities of parties within the building sector. This influences – amongst others – the procedural aspects and the roles parties play in the building permit procedures and the way building quality is guaranteed. Contrary to Belgium, in France procedural and technical aspects are also incorporated in a nationwide Building and Housing Code, split into a legislative part and a regulative part (decrees of the Council of State). Other technical requirements can be found in different laws, Decrees and ministerial Orders. The Urban Planning Codes give directions for the local municipalities for local urban planning, which has to be taken into account when decisions are made concerning (existing and) new constructions.

In Germany the Model building regulations are prepared at a federal level and they give the guidelines for the regulations which are issued in the separate States. The contents of the regulations of the various States are more than ninety percent similar. The Building Regulations give procedural rules and references to technical requirements (which are described in detail in German Standards). The Federal Building Law (1997) deals with town planning measures and urban building development. It provides the general legal basis for building control. It defines the scope, terms and principles of the plans formulated by the municipal authorities in for instance Building guidance plans.

In the Netherlands the Housing Act gives the procedural framework for the building permit procedures and technical regulations. Detailed regulations are formulated in General Administrative Order Regulations of which the Building Decree (which contains the technical requirements) is an example. The Spatial Planning Act deals with spatial developments within the Netherlands. Local municipalities are part of the framework responsible for the formulation and execution of local zoning plans.

The Planning and Building Code is an important part of the Norwegian legal framework for building permit procedures, planning aspects and technical regulations. The Building Regulations contain a separate set of technical requirements. Several by-laws regulate urban and town planning aspects.

In Sweden the Planning and Building Act (PBA, 1987) is the central document that contains the regulations concerning planning and building. Mandatory provisions and general recommendations concerning structures can be found in the Design Regulations (BKR, 2000 published by Boverket). The design regulations are pursuant to the Planning and Building Act and the Act (1994) and the Decree (1994) on Technical Requirements for Construction Works. Planning issues like the municipal comprehensive plan, the detailed development plans and area regulations are also sketched (in broad outlines) in the PBA. We can conclude that (except in Belgium and to a lesser extent in Germany)

Table 10.2 Categories of construction works for different procedures

	Exemptions	Light procedure	Full procedure
Belgium	yes, listed	urbanistic permit: simple file	urbanistic permit: extensive file
Denmark	yes, listed	notification system	two types of building permit: small dwellings and other buildings
England	yes, listed	building notice (new-build houses and alterations)	full plans
France	yes, listed	building notice	building permit
Germany	yes, listed	simple permit	building permit
Netherlands	yes, listed	light permit	regular permit
Norway	yes, listed	building notice	general and start permit
Sweden	yes, listed	building notice	building permit

all the countries studied regulate building permit and planning procedures at a nationwide level. As we have seen in the previous chapters the similarities end here. The contents and regulations differ between the various countries. In later paragraphs of this concluding chapter we will elaborate on that.

10.3 Building permit procedures

In this section we focus on the procedures by which the regulations are actually implemented in practice. We also look at the categories of buildings, the description of the permit procedures (from prior consultation till completion) and finally we briefly describe the relations with planning control.

10.3.1 Categories of buildings

In all the countries studied private organisations (principal, architects, contractors etc.) are responsible for respecting and implementing the (based on public law) building regulations. In every country a building permit is needed to start construction work. The European countries analysed have however developed various procedures for different construction works and activities. Most countries distinguish construction works that are exempt from building control. Also most countries have construction works categories that have to meet the requirements but are not checked beforehand and inspected. Another similarity that occurs between the countries is that they distinguish between a standard permit procedure and a ‘light’ procedure in which only a partial (preventive) check/inspection takes place (e.g. a building notice). Table 10.2 shows the distinctions in construction works in the eight countries.

Construction works to which the regulations do not apply

All countries have defined a category of construction works that the building regulations do not apply to. In general this involves constructions with specific functions, like army barracks or other government buildings. Often in these cases special regulations have been drawn up by, for instance, the ‘con-

struction service' of the governmental institution concerned. In almost all countries the building regulations include civil engineering works. France has made a distinction between the regulations for civil engineering works and building works.

Permit free construction works

Every country describes within the building regulations construction works that do not need a building permit. In general these permit free works are small alterations and renovation works or extensions, annexes, garden sheds, etc. or construction works for forestry, agriculture and horticulture. Temporary constructions are also often exempt although in most cases this does not apply to any stayingrooms in dwellings. Local building control has the right to control these exempt works once they have been built. When they do not meet the demands stated in the building regulations the owner/builder can be forced to take measures afterwards. Recently there has been a tendency in Europe to enlarge the category of permit free construction works. In the Netherlands the category of exemptions will be enlarged substantially from January 2003. In the comparison of the European countries we have already reckoned with the proposals to enlarge the Dutch category of permit free construction works. The Netherlands will then become one of the countries with the most liberal demands (i.e. concerning permit free construction work). In general, the construction works that are permit free are described in broad outlines. In comparison with other countries the Belgian and German lists of exemptions are, because of their detailed description, very sizeable. Sweden and France beat the lot on the other side of the spectrum: their exemptions are defined in quite general terms.

Table 10.3 illustrates on the basis of some selected cases, the possibilities for permit-free building in the eight European countries studied. The table shows that only in England (and Wales) and the Netherlands can extensions and annexes be constructed without a building permit. There are however some conditions which refer to, for example, the floor area and the location of the construction works. At the moment conservatories with a maximum floor area of 30 m² are permit free in England. There is a lot of discussion going on because these conservatories have an eminent negative effect on the energy performance of a dwelling. In the Netherlands the demands on annexes are relatively light. The German regulations (in the Hesse) state that small construction works without a stayingroom, toilet and heater are permit free. Because of this description it is highly questionable whether these constructions may be attached to dwellings.

In Sweden the permit free extension is only applicable for single family dwellings and semi-detached houses. Small constructions such as fences and walls are permit free in every European country.

Table 10.3 Regulations in the eight countries for relatively minor construction works

	Extension (for residential purposes)		Annex		Dormer window or solar panel		Garden fence		(Dish) aerial	
Belgium	'light' permit	a: 21 m ² b: 3 m	'light' permit	a: 21 m ² b: 3 m	permit free	c: 20%	permit free	b: 2 m	'light' 'permit'	b: 4 m d: ?
Denmark	building notice	a: 50 m ²	building notice	a: 50 m ²	building notice	?	permit free	b: 1.8 m	building notice	b: ? d: 1 m
Germany	permit free ?	e: 30 m ³	permit free	e: 30 m ³	permit free	?	permit free	b: 1.5 m	permit free	b: 5 m d: 1.2 m
England	permit free	e: 30 m ³	building notice	?	building notice	?	permit free	?	permit free	?
France	permit free	?	building notice	?	building notice	?	permit free	b: 2 m	building notice	?
Netherlands	permit free	a: 15 m ² b: 3.25 m	permit free	a: 30 m ² b: 3.25 m	permit free	?	permit free	b: 2 m	permit free	b: 3 m d: 2 m
Norway	building notice	a: 30 m ²	permit free	a: 10 m ² b: 3 m	permit free	?	permit free	b: 1.8 m	permit free	b: 2 m d: 1 m
Sweden	permit free	?	permit free	?	building notice	?	?	?	?	?

a) maximum floor area b) maximum height c) maximum percentage of total roof area d) maximum diameter
e) maximum volume ?) unknown or uncertain

Building notices

Besides exemptions most analysed countries recognise a category of construction works that must be announced to the local building control. The applicant has to give notice of the intended construction work, but there is no or no complete preventive control to check if the construction meet the regulatory demands. No permit is given. In some countries the planning aspects of the building notices are checked beforehand. In almost all cases the building notice applies to minor construction works where location-dependent demands do not play a role. Building control always has the right to intervene when the construction turns out to deviate from the regulations. England, France, Denmark, Norway and Sweden have introduced the building notice procedure for these construction works. In England the applicant may choose if he/she wants to apply for a building notice or a full plan/permit procedure. If the applicant chooses for a building notice he may run the risk that the local building control intervenes afterwards. English experts are of the opinion that this option system functions well in practice. Experienced applicants choose for the building notice in the case of simple construction projects. To get more certainty in advance a full plan procedure is chosen when they are dealing with more complex projects. Belgium and the Netherlands have made a distinction between simple (or light) and regular permit procedures. Germany also does not have a building notice procedure, but the German regulations distinguish a category of construction works (roughly up to a maximum volume of 200 m³) that are eligible for self-control and a more simple permit procedure.

Table 10.4 The role of pre-consultation and the inspections of global and detail design in the eight countries

	Pre-consultation	Inspection of global design	Inspection of detail design
Belgium	possible, not regulated	yes	no
Denmark	possible, not regulated	yes	yes (inspection of structural work, possibly after permit is handed out)
England	possible, not regulated	after submission, before permit is handed out	yes (inspection of structural work, possibly after permit is handed out)
France	possible, not regulated urban- istic certificate is needed before application of building permit	yes	no
Germany	possible, not regulated	yes	yes (inspection of structural work, possibly after permit is handed out)
Netherlands	possible, not regulated	yes	yes (inspection of structural work, possibly after permit is handed out)
Norway	obligatory (regulations)	yes (locational aspects, inspection plan), which results in a 'permit under conditions'	yes, only the inspection plans
Sweden	obligatory (regulations)	yes (locational aspects, inspection plan)	yes, only the inspection plans

Full plan permits

As stated before all countries have building permit procedures for which in the end local or regional building control are responsible. The way these procedures are organised however leads to uncountable differences between the studied countries.

10.3.2 Description of the procedures

Consultation prior to application

In all countries it is possible for an applicant for a building permit to contact the local building control and ask for information about the specific demands he/she should take into account when developing his building plan further (see also table 10.4). An applicant will also want to make inquiries if there is doubt about the feasibility of the design/plan. In most countries local building control has set up consulting hours, where potential applicants can discuss their building plans and where local building control informs them about the demands and possibilities. In a growing number of countries information, regulations, application forms etc. can be downloaded from the internet.

In most countries this consultation phase does not form a part of the legal fixed building permit procedure. Norway and Sweden are the only countries in which the consultation phase is specified in the building regulations. It is a fixed and obligatory part of the permit procedure. All parties that carry certain responsibilities in the planned construction project (applicant, architect, contractor, etc) must be present (or represented) at the meeting. In the con-

sultation meeting, building control has the task to clarify the specific regulations that are in force for the location of the planned construction work. A further purpose of the meeting is to establish the control method during the design and execution phase of the project. In the Netherlands we have seen that lengthy building permit procedures are nearly always caused by conflicts with the demands of the zoning plan or aesthetics. It is often the case that zoning plans are outdated or not yet fully developed for a certain location. In these cases an exemption procedure has to be followed and that causes delays. Another thing we see in some cases in the Netherlands is that during the preliminary consultation phase plans are controlled as if they were complete permit applications. In this way the prescribed maximum handling periods can actually be ignored. In other countries there are also possibilities to escape the maximum periods.

Submission of the building permit

All the countries studied have a set of conditions regarding the submission of a building permit. Some countries (e.g. the Netherlands) have determined these conditions at a national level (in the Housing Act). In other countries the national law gives a framework and the conditions can be elaborated at a local level. The nature of the documents that have to be submitted depends on the way the control procedure is organised. The regulations in France, Belgium and Germany state that applications for a permit (for certain building works) must be prepared and submitted by a recognised architect. By making such demands the chances grow that the application for a permit is adequately prepared. A preventive check during the procedure still has to be carried out, but a well-prepared application can lighten the task of the controller considerably.

Preventive check of the technical requirements

The way the application is checked varies considerably in the different European countries (see also tables 10.4 and 10.5 and section 10.5). Concerning the procedural aspects the following observations can be made. In Norway, Sweden, and for small building projects Germany too, local authority building control does not perform the technical inspection. In these countries local authority building control has to approve the way the private control organisations propose to carry out the check. In Norway and Sweden a control plan is checked, which contains information about the person/organisation who is going to check, the method and subjects of the checks. Germany and France have introduced the Type Approval. This is actually a building permit for the constructional aspects of a design. The Type Approvals are issued by government agencies and are valid nationally. For construction works that already have a Type Approval, one has to apply only for a permit for the location aspects.

Table 10.5 Regulations concerning start building, inspection during construction and completion

	Start building	Inspection during construction	Completion
Belgium	after permit is granted	no	no
Denmark	after permit is granted and declaration that construction work is going to start	yes	after declaration of applicant that regulations have been met
England	2 days after submission of application	regular inspection points, obligatory notice	completion certificate
France	after permit is granted	no	completion certificate (possible up to 2 years after completion)
Germany	after permit is granted (within 3 years)	thorough inspection of structural work, before the building may continue (applicant may ask for an inspection certificate)	building may be used after building control declares it is safe to use
Netherlands	after permit is granted, often after declaration that construction work is going to start	regular inspection points	no
Norway	maximum 4 weeks after submission of detail plan application	supervision of inspectionplan	completion certificate
Sweden	3 weeks after submission of notice	supervision of inspectionplan	local authority contracts inspection out

Inspection during execution

The way the inspection during the construction work is organised also differs widely. The distribution of the responsibilities during the execution corresponds with the way the responsibilities are distributed during the phase of the preventive check of the constructional aspects. In Germany where inspections are carried out by local authority building control (or on behalf of them by a recognised private control organisation), the construction is thoroughly inspected. The applicant/constructor has to invite the inspectors and must make it possible that control and inspection activities can be carried out. On the request of the principal a certificate is issued after the inspection. In some other countries the applicant/constructor invites local authority building control for inspection at fixed points (e.g. after realisation of the foundation, ground floor, etc.). Construction work may only continue after these points if inspection has taken place.

Completion

The countries have chosen various appointed procedures to check the completion of the construction work (see table 10.5). On request of the applicant/principal local authority building control in England inspects the completed building and issues a completion certificate if the inspection result is positive. In Germany a building may only be put into use if local authority building control states that it is safe to use. This could even be before the building is fully completed. The French local authorities have the right to

inspect construction works within two years after completion. If everything is in order a certificate is handed out. In Denmark a completion certificate is issued when the applicant/principal signs a declaration that the construction has been built according to the regulations. The Norwegian procedure also closes with the issuing of an end-certificate in which local authority building control declares that the results of all the checks and inspections were satisfactorily. Local authority building control in Sweden contracts the end inspection out to independent inspection organisations. It is not fully clear what the effects are of these end-inspections and end-certificates and what rights can be derived from them. In most countries a building may not be put in use as long as the end certificate is not issued or the end-inspection has not taken place. This guarantees to a certain degree that also during the execution phase of a project there is pressure to comply with the regulations and requirements.

Duration of procedure

The maximum duration period in Belgium amounts in principle to 75 days. In England (&Wales) the maximum is five weeks, plus a possible extension of three weeks. The building permit procedure in England only applies to the constructional aspects, whereas in most other countries other aspects (e.g. planning, aesthetic, etc.) are also taken into account. In Germany the permit is fictitiously granted after eight weeks. Local building control in France must announce a date at the moment the application for a permit is submitted. This usually means a maximum period of one to two months. Denmark has not established in the regulations a maximum duration of the procedure, but on average the period is five weeks. The Norwegian and Swedish permit procedures are divided into periods. The Norwegian building permit procedure is clearly phased. The phasing is linked with the way the responsibilities for the inspection are divided in Norway. In the first phase a permit is issued (a 'permit on outlines') for the location-dependent aspects and the contours of the building plan. This first permit also deals with the way the control and inspection plan is worked out. Subsequently the applicant can apply for permits that are dealt with at times that are connected with the development of the construction plan. In Norway construction work may begin four weeks after the application is submitted. In Sweden this period amounts to three weeks. The Netherlands has for both the simple and the full plan procedure formally determined a prescribed period. For regular permits a decision has to be reached within twelve weeks. The maximum duration period for a simple procedure is six weeks. Compared with the other countries (except for Belgium) this seems to be a relatively long time span.

10.3.3 Planning issues

In some countries the control of aspects which are linked to the location of

the construction work (zoning plans, aesthetics etc.) fall outside the scope of the building permit procedure. England (& Wales) makes a distinction between the building permit and the planning permission. Another local authority department than building control takes care of the planning permission. One has to have planning permission in order to apply for a building permit. The advantage of this model is that the length of procedure time for a specific building permit can be minimised. Long time-consuming exemption procedures (as can happen sometimes in the Netherlands) can be avoided. In France and Belgium the check of planning aspects is part of the building permit procedure (it is even the most important part of the procedure). But before a construction plan can be developed, the applicant needs a certificate that states all specific location bound provisions and conditions. This gives the applicant something to hold on to and (in principle) there can not be any surprises concerning the possibilities and demands of the future function of the construction work, its physical appearance, the dimensions, etc. In the Netherlands a phased permit procedure will be introduced. In the first phase the location aspects will be emphasised.

10.4 Building control: public versus private systems

10.4.1 Introduction

The first question we are dealing with in this section is how the control of building applications takes place in the various countries. As we have seen in the country monographs and the previous section, the – often public law based – responsibilities are divided in different ways. In the following section the systems of the eight countries are ordered according to the division of tasks for building control. The accent here lies on the technical control of the building plans and the site inspections. The aesthetic and planning control are left out of consideration.

A distinction can be made between the responsibility for granting the permit and execution of the plan checks and site inspections.

I Responsibility for granting the building permit

In all the analysed countries the local or regional authorities are in charge of the building permit procedure, i.e. they grant the permits. Only in England and Wales does an alternative exist in which private organisations may grant a building permit which only covers the technical aspects (and not the planning aspects, see under ‘G’).

II Responsibility for technical checks of applications and on site inspections

Both private and public organisations can be responsible for the check of the design application and the on-site inspection if building activities meet the technical requirements. When private parties are responsible for these tasks local authority building control in most cases stays in charge to supervise the control of these private organisations. Based on the possibilities in the eight countries the following categories can be distinguished (see also figure 10.1).

Public responsibility

- A. Local building control authority executes control.
- B. Local building control authority partly or wholly contracts out control to private organisations (but local authority stays responsible).

Private responsibility

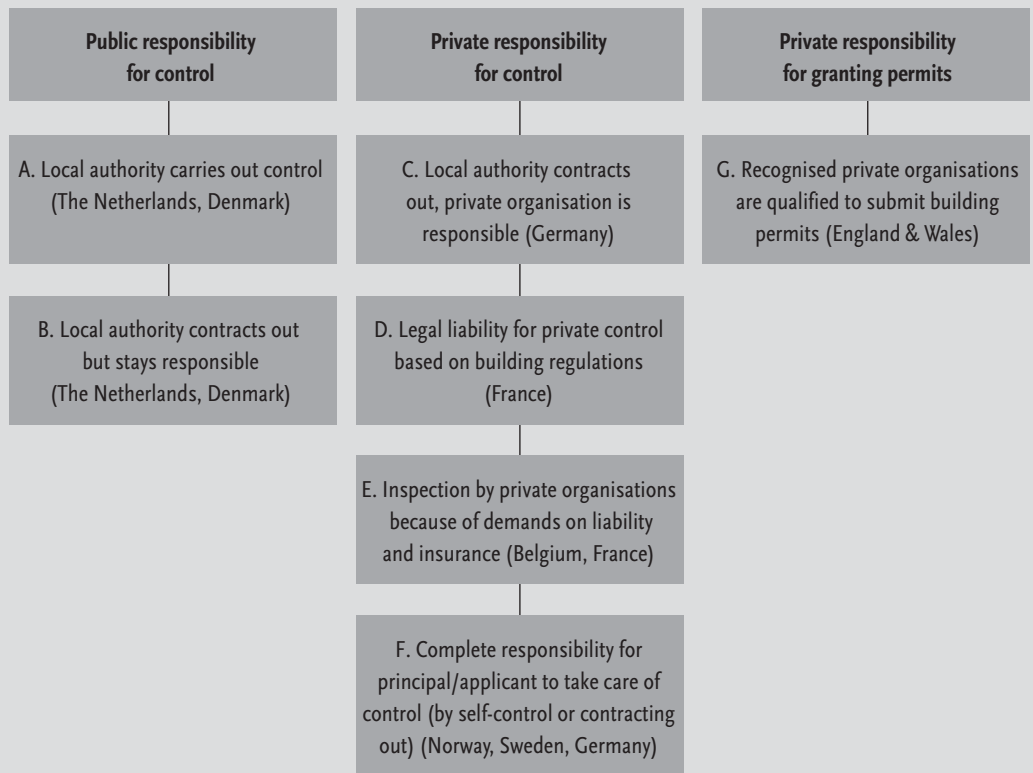
- C. Local authorities partly or wholly contract out inspections to recognised private control organisations, which are responsible for the tasks that are contracted out.
- D. Legal liability to bring in recognised private control organisations for certain checks based on building regulations (e.g. certain building works or regulations).
- E. Legal liability (based on private law) for control by private organisations because builder has to fulfil obligations not linked to building regulations (e.g. liability, insurances).
- F. Complete responsibility for the principal/applicant to take care of the inspections (e.g. through self-control or independent recognised control organisations).
- G. Recognised private organisations are qualified to submit building permits.

In the following sections we will elaborate on these categories.

10.4.2 A: Local building control authority executes control

This system forms the basis in all the analysed countries. However Denmark and the Netherlands are the only countries in which local authority building control is the only existing form of building control. In the case of the Netherlands we have to point out however that there are developments towards a more important role of private organisations by the check on the technical requirements. This is not in practice yet, so the Netherlands are still categorised in 'group' A/B.

Compared with other possible systems (with a more important role for private organisations) one can question if this model leads to an optimal quality

Figure 10.1 Responsibility for the execution of control

of inspection. In the first place local authority building control in the Netherlands can hardly be made responsible for the quality of the inspections. The execution of the control activities (as to frequency and profundity) varies between (and also within) local authorities and is not always in proportion to what is actually needed. The size (in terms of capacity) and quality of local authority building control differs widely in the Netherlands. Small municipalities in particular have problems keeping the knowledge and skills up to date (e.g. new building methods and changes in regulations). The administrative burden for the applicants is relatively heavy. Beforehand they have to prove (by means of substantial plan documentation) that the regulations are fulfilled. This is quite different in a system in which for instance self-control plays an important role, and where only a control plan has to be drawn up.

10.4.3 B: Local authority building control contracts out control, but stays responsible

In the Netherlands local authority building control sometimes contracts out some parts of the control (e.g. the check on constructive calculations) to private engineering firms. The local authority stays responsible and settles the scope of the control. In general this system is the same as A, especially for the applicant. In the cases/applications where parts of the inspections are

contracted out however, it could be that the quality of the inspection is better than with system A. An agreement is made about the scope and thoroughness of the inspections and the inspections are carried out in a well-ordered manner. Besides that it is possible that the inspection by a specialised engineering firm is of a higher quality and intensity than that done by the local authority. The costs of the contracted out inspection activities are deducted from the municipal fees.

10.4.4 C: Local building control authority contracts out control and partly or wholly, responsibilities

This is the case in Germany. Local building control contracts out many control activities to specialised and recognised engineering firms. These firms are responsible for their control. A disadvantage for the applicant is that he/she has to pay separately for this added control. On the other hand: the quality of the control is beyond dispute. The firms/engineers involved are specialised, recognised, have to comply with heavy demands to qualify and are liable for the quality they deliver. When mistakes occur in building parts or functions of the building that are inspected and should have been detected, the firms/engineers are legally liable for damages. In terms of the administrative burden system C is not essentially different from systems A/B. The costs of the inspections could be higher than A because the efforts made to realise the control are higher. Through advantages of scale and efficient management of the specialised engineering firms competitive prices could be offered. The total costs the applicant has to pay, depends on the way the municipal fees are calculated. On the other hand the security that is offered in advance that the quality is good, could lead to financial benefits (e.g. easier acceptance of guarantees, lower insurance premiums). The administrative burden (and possibly also the revenues) for the local building control authorities decreases with this system.

10.4.5 D/E: Legal liability for private control organisations to inspect

A distinction can be made between the 'source' that causes the liability in these two systems:

- in system D the liability for private organisations to control is based on building regulations (e.g. certain building works or regulations);
- in system E inspection by private organisations is based on liability or insurance demands.

In France the principal/applicant for certain construction types (e.g. constructions with a high 'fire-risk', especially big buildings) is legally obliged to hire

in a private engineering or control firm. On principle this system is the same as described under C. The main difference is that it is not the local authority but national law that decides in what cases this control firm has to be brought in. In France and Belgium in some cases extensive controls by private organisations commissioned by the contractor are necessary because of the strict liability system and the sometimes obligatory insurance system. The characteristics are more or less the same as systems C and D. The quality of the control is generally high. The applicant has to pay extra for this control, but these extra costs could counterbalance a reduction of the premium costs of the possibly obligatory insurance. Compared with the Dutch situation (see system A/B) this probably leads to a higher security that a certain quality level is reached. The effect on the total cost of the permit procedure is not known. The control costs that have to be made to ensure a lowering of the insurance premiums, are relatively high. Efficient management, competition and advantages of scale should have lowering effects on the cost of the private control bodies. Because of the important role private organisations play the situation has grown in France where local building control authorities hardly execute any preventive checks and inspections anymore. This means that there is a category of construction works (where there is no control by private organisations) that are not controlled at all. These construction works must apply for a building permit. The fees are independent of the level on which inspections are carried out.

10.4.6 F: Complete responsibility for the applicant to take care of control

In this system the applicant/principle is responsible for arranging and organising sufficient control (e.g. through self-control or independently recognised control organisations). In Norway and Sweden the applicant is always responsible for the execution of the controls and inspections. In Germany this is the case for certain construction works: residential buildings with a maximum height of one storey and a maximum floor area of 200m²). Local building control authority checks the control plan in which the applicant indicates how all the necessary inspections – during design and on-site – are provided for to ensure that the construction meets the demands of the building regulations. The local authority decides for which case they are satisfied with a self-control system from the building firms involved (designers, construction specialists and contractors) and for what instances they insist on an independent inspection by a specialised inspection body. This system offers good guarantees for efficient, effective and high qualitative inspections. Local building control authorities oversee the completeness and quality of the inspections. It is feasible that the principal/applicant will choose building firms that have their own self-control system. This stimulates firms in the building industry

to work out their quality-care system in such a way that they offer an explicit insight into the quality-inspections to meet the public building regulations. This offers a possibility to integrate controls and inspections in such a manner that they serve both public and private interests.

The administrative burden for the local authorities changes. The attention shifts from preventive checks of the design and on the site to supervision of the control plans. In the end this will lower the administrative burden. Initially the applicant/principal and building firms will experience a higher burden. By the further development and implementation of quality-care systems this burden will disappear and advantage can be taken from a higher quality. All in all the increase of costs can be restricted.

10.4.7 G: Recognised private organisations are qualified to submit building permits

It is conceivable that a private organisation preventively controls a design, inspects on-site and submits a building permit based on public building regulations. We find an example of such a system in England (& Wales). Private organisations can be recognised as an Approved Inspector, who checks if the design and execution meets the technical demands and is authorised to submit a building permit. The applicant/principal may choose between local authority building control or an Approved Inspector. An Approved Inspector does not have the same competences as a local building control authority. When conflicts arise about whether the regulations are being met (especially during the construction phase), the Approved Inspector has to call in whether local building control authority to take action.

11 Conclusions

11.1 Introduction

In this last chapter we interpret the descriptions of the systems of building control of the eight countries and answer the research questions, formulated in section 1.2. A limitation on the answering of the interpretative questions is the fact that we can only build on the formal descriptions of the systems of the eight countries and make use of very approximate information on the way the various systems function in practice. In following research projects of the OTB Research Institute for Housing, Urban and Mobility Studies, we plan to go into the details of the systems of building control more and come to quantitative comparisons. Another problem that occurs at the interpretation of differences in the regulatory systems is that they have to be seen and be understood within a complex structure of history, tradition, culture, construction practice, etc. We only have to point to Belgium and France where the Napoleonic code, which originates from the early 1800s has strongly influenced the building regulations. So we have to realise that a system can not easily be transferred from one country to another, but the systems can inspire each other. Knowing that our research is far from complete, we will still indicate some remarkable differences, developments and trends. The three research questions are handled in three successive sections. Section 11.2 places the regulatory system of the Netherlands in the spectrum of systems of the eight European countries. In section 11.3 we focus on the developments in the spectrum of European systems of building control. The final section 11.4, mentions some essential elements for efficient and effective building control that could be the ingredients for a uniform European system.

11.2 The Dutch building regulations within the spectrum of regulations of other European countries

Besides the comparison of detailed elements of the system of building control, the Dutch ministry of Housing, Physical Planning and Environment was interested in the position of the Dutch regulations in the spectrum of the regulations in the other countries. The first research questions was therefor formulated as follows:

How do the Dutch building regulations relate to the regulatory systems of other European countries?

The following assessment criteria are used to compare the regulatory systems:

- the scope of government responsibility (quality aspects, control procedures, control tasks);

- the effectiveness of the regulatory systems (to what level are the goals of the regulatory system realised);
- the efficiency of the regulatory systems (which is the administrative and financial burden for citizens, companies and governments).

Scope of government responsibility

A major indication for the position of a regulatory system in the European spectrum is the scope of the Government responsibility for the quality of building. In the first place the scope and level of technical requirements is decisive. Then, the description of constructions works that have to meet these requirements are of importance followed by the commitments for the building permit procedures.

The scope of the technical requirements of the Dutch Building Decree is worked out in part 2 of this study. The global conclusion is that the system for the performance formulation of the Building Decree is quite unique, but the subjects and level of requirements are quite average on the European scale. The differences in systems hinder an adequate comparison of level of requirements. The idea is that in the future, the requirements, especially those related to safety and health issues, will grow towards each other. This process starts with the harmonisation of determination methods through the development of the Eurocodes. If the determination methods are equal then any difference in the level of requirement is more obvious. One might expect that in the next step the levels may also grow more towards each other. The utility requirements are more and more removed from the Dutch Building Decree because they would hinder the design and construction process and would not be necessary any more to assure basic living conditions. In other countries also utility, usability or comfort are losing their importance in the sets of requirements. In particular the requirements that give minimum measures for rooms or dwellings are getting rarer. In England and Norway, where such requirements were already removed some years ago, this led to bad designs. Therefore in England in some cases alternative, private law guidelines took over the role of the public requirements. In Norway a system was developed in which a state bank that issues mortgages for new houses, judges the quality of layouts. Good quality is awarded with lower interest rates.

The next determination for the scope of government responsibility is the definition of the range of construction works that have to meet the technical requirements. In this project we focus on houses. In the eight countries all the technical requirements apply to newly built houses. Alterations and extensions mostly also have to meet these requirements, but they are increasingly subject to light building control procedures or are exempt from

control. The Netherlands is the only country that gives explicit requirements at a specific level for existing houses. Local authorities can inspect buildings to ensure they meet these requirements. If they discover some deficiencies than they can force the owner to improve the building. If a building permit is needed for the building action that follows, then this building action has to meet with the requirements for new buildings. The local authorities can grant exemptions from the 'new' level to the (minimum) 'existing' level, mostly because of economic or monumental reasons. We have not discovered such an explicit approach in the regulatory systems of the other countries. In England however regulations of another nature (social conditions instead of building regulations) determine when authorities can force improvement of houses. In the case of refurbishment the building requirements for new buildings apply.

The third element that determines the government responsibility is the building permit procedure and the level of control. In this respect the role of government in the Dutch system is rather broad within the European spectrum. In all countries it is the owner of a building that has to respect the technical requirements and has to apply for a building permit to the local authorities. The way the actual control on conformity with the requirements are carried out in the design phase, before the granting of the permit, and inspections during the construction phase varies a lot between the studied countries. This has been described at length in section 10.4. Private parties play important roles in the execution of this actual building control in many of the studied countries. Remarkable in this respect is that this privatisation of the control and inspection function, only applies to the technical aspects of a building and not the location linked planning aspects. In all the countries these matters are the subjects of local authorities control. The intention to privatise the control function by the certification of private companies in the Netherlands fits very well within the European trend.

Adding all the elements together, we can conclude that the Netherlands is not over-regulated, but belongs to the countries with the most extensive role for the government in building control.

Effectiveness of the regulatory systems

The effectiveness of a regulatory system could be defined as the way the regulations contribute to the defined goals of the regulations. The goals can be found in the starting points of the technical requirements. In the Netherlands these are: safety, health, energy economy, utility and environment. The effectiveness of the whole system of building control could be measured by the realised quality of the buildings. We do not have such data at our disposal. An alternative can be found in some indicators for the way the minimum

requirements are met or in the way the system of building control functions. If the building industry functioned in a perfect way and the compliance with public requirements could be assured in the primary development processes, actual building control could be very limited and still be very effective. This leads to the observation that it is of eminent importance that the technical requirements are very well known in the building industry and that the people that have to work with them are well enough educated for this. The system of the performance requirements of the Dutch Building Decree provides in theory clearness, design freedom and optimal chances for keen designers. The abstract formulation however, requires good explanation and simple guidelines of how to interpret the requirements for standard solutions. The English Approved Documents seem to be a good example for an effective explanation of requirements. The effectiveness of the actual checks on building plans and site inspections can be determined by the way these controls are organised and performed. These organisational characteristics indicate the chance of effectiveness, but there are a lot of other aspects that will determine how far these chances are effected in practice. The current Dutch organisation model does not function well. Local authorities are the only organisations that carry out the technical building control and a number of investigations have pointed out that they are performing poorly. Our analysis points out some areas that could be improved within this approach, but a real alternative approach has more chance of achieving an effective system. Local authorities vary a lot in size. Small towns have too little capacity and quality to perform their tasks. But the bigger towns also have problems. Sometimes the consequences of observations of building control are frustrated by local politics that also has to serve other interests. Although the technical requirements are laid down at the national level, the interpretation at the local level can vary a lot. Local authorities more and more contract out control work to private companies.

Checks of building plans by local authorities for the building permit take place very late in the design phase (end of pipeline). Deficiencies that are found have to be solved within a worked out plan. This can have major consequences and will probably not lead to optimal designs. Control within the primary phase (during the design) could give an early indication of problematic aspects in the design and could lead to early improvements. Organisational models for building control that address this situation have a better chance of leading to an effective system.

Efficiency of the regulatory systems

The question of efficiency is far too complex to be answered on the basis of the available data. The level of administrative and financial burden can indicate the efficiency of a system of building control for citizens, companies and

governments caused by the obligations of the regulatory system. Citizens and companies need to make their building plans in compliance with the requirements, have to submit applications for a building permit and pay fees for permit and control. The national government draws up the regulations and needs to communicate them to the users of the regulations and the local authorities have to handle the permit procedures and carry out control tasks and receive fees. In France and Belgium lower insurance fees compensate the expenses for actual control and inspection. In England the control by Approved Inspectors sometimes gives the clients ten years warranty.

In the current situation applications for building permits in the Netherlands seem extensive. A system of self-control or control by an advice organisation could decrease the administrative burden in this respect. The certification of self-control, on the other hand, could also introduce new additional administrative obligations. The costs of certified private building control could be compensated by a reduction in fees for the building permit and cheaper insurance's or warranty arrangements.

11.3 Developments in the European spectrum of building regulations

The next question to be answered deals with the developments within Europe and the European countries. It is formulated as follows:

Are the systems of building control in the European countries converging or diverging?

There is a current trend towards a growing harmonisation of policies and regulations at the European level. This trend can also be recognised within the construction sector and in the domain of building regulations. However, until now, the harmonisation has been limited to the level of building products and determination methods in the form of the EC Directive for building products and the Eurocodes. It is conceivable that in the future building regulations and permit procedures will also be taken into account in this development.

When answering the question a distinction can be made between the following aspects: the scope of the building regulations (what kind of construction works the regulations apply to?), the procedures (e.g. consultation, phasing of procedure) and responsibilities concerning inspection and control.

All countries recognise different categories of buildings for which various procedures are applicable (exemptions, 'light' procedure or building notice and regular procedure). The content of the categories differs in the studied

countries, implying no converging development in this area. The same applies to the procedures. Consultation prior to the application of a permit is possible in all countries, but the way it is worked out is different. Only Norway and Sweden have incorporated this consultation phase in the building regulation, the other countries having developed a more ad hoc policy. The way planning aspects are handled in the countries also differs, but we can notice a converging development here. Some countries have made a distinction between a planning and a building permit. Other countries have introduced or are going to introduce phased permit procedures, which amounts more or less to the same effect.

We come finally to the control of the permit application and inspection during the execution of the construction work and the role and responsibilities of public authorities and private organisations in the building sector. Almost every European country used to have a 'traditional' control system, in which local authority building control played a key role. This system has undergone major changes and the role of private organisations within the permit procedure has grown considerably. Due to liability reasons this has been the case in Belgium and France for a long time. In Germany the responsibility of the check engineer (*Prüfingenieure*) to enlarge the security that buildings are built according to the rules also goes back a long time: to the early 1920s. In the other countries however the developments are from a more recent date. In England Approved Inspectors have been able to take over the role of local authority building control since the mid 1980s. At the moment the English are considering enlarging the role of private organisations further by introducing a form of self-certification for architects. This could mean that inspection and control could be integrated in the design and draft phase of building projects. The same idea is behind the recent propositions in the Netherlands to certify architects, building advisory organisations, construction companies, etc. to check whether the plan meets the technical requirements of the Building Decree. In Norway and Sweden the decision has been made to move away completely from the traditional role of local authority building control. The applicant is responsible to take care of the necessary inspections. Local authority building control checks the control plan. In Denmark local authority building control can contract out inspections to private organisations, but they stay responsible for the inspection. To our knowledge there are no developments in Denmark comparable with those described for the other countries. With the exception of Belgium and France (where financial and liability reasons play an important role) the main motives for the other countries to adapt their system is to do with enlarging the quality of the building control.

The actual harmonisation of building regulations at the European level takes place at the level of building products that have to meet European require-

ments in order to be used in construction works. This development is followed by the harmonisation of determination methods (calculation rules) in the form of Eurocodes. If the Eurocodes are implemented in the technical regulations in the different countries, it might be a crucial step to a further harmonisation of building regulations. At the moment the systems and formulations of the requirements are very diverse, as are the control procedures. The trend of privatisation of technical building control could lead in the future to a uniform system for the specification and recognition of private building control. Such a development could contribute to an open market and the internationalisation of construction activities.

11.4 Ingredients for a future European building control

The final question in this first part of Building Regulation in Europe is the following:

What are interesting elements of the regulatory systems of the different countries that contribute to effective and efficient building control and could be the ingredients for a uniform system of building control in Europe in the future?

In the latter parts of chapter 10 and the interpretation in the sections 11.2 and 11.3, we mention some essential elements for an adequate system of building control. These elements together could form the basis of a uniform European system. Building regulations should meet the demands that can be made on government regulations and policies in general: unambiguous, efficient and effective, therefore it is necessary that:

- the technical requirements should be clear and nationally wide uniform (The most obvious solution is that the government or a governmental organisation at a national level defines the regulations. The performance approach provides a good basis. The determination methods are uniform in Europe if the Eurocodes are implemented in all the countries. All countries can set their own limit values that can vary because of regional reasons (like climate). It is important that the systems are the same.);
- the procedures should be transparent, effective and efficient (The technical requirements should be clear and nationally wide uniform. The procedures should be transparent, effective and efficient. It must be possible that an applicant can get information about the feasibility of the planned construction work as early as possible. This could be realised in various ways, for instance by making a distinction between a permit for location dependent aspects (e.g. planning permit) and a permit for location independent aspects (e.g. building permit) of construction works. Other ingredients that can contribute to this goal are the introduction of an obligatory pre consul-

tation meeting, a phased procedure and fixed permit handling times.);

- self-control offers the optimum chance for effective and efficient actual control and inspection (During the design phase the architects and advisors should carry out the check on compliance, integrated in their working processes. The same goes for the site inspections that can be best carried out by the construction firms. Designers, advisors and builders know all the ins and outs of their plans and construction works and can most effectively and efficiently carry out the necessary quality control. In some countries a development towards the introduction of self-control has been made. Self-control is only possible if its quality is adequately assured. In Norway and Sweden systems of self-control have operated for a few years. Germany also has some form of self-control. The Netherlands is developing a certification schema for self-control and England is also considering the introduction of some kind of self-certification as they call it. For the future it will be challenging to develop an international standard for the certification of self-control for plan checking and site-inspection.)

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The protection of safety and health of their citizens is a major reason for governments to draw up regulations for the built environment. In the course of time other points of departure, such as utility, energy economy, sustainability and economic motives have come to play a part. For these subjects technical requirements are formulated and the procedures for checking building plans against the requirements and issuing the building permits have been laid down in laws.

In search for ingredients for a uniform system of building control in Europe, Delft Technical University (OTB Research Institute for Housing, Urban and Mobility Studies) and the University of Liverpool (School of Architecture and Building Engineering) carried out an international research project into the systems of building regulations, implementation and control and the systems of technical requirements in the Netherlands, England, France, Germany, Sweden, Norway, Belgium and Denmark resulted in two books: 'Building regulations in Europe. Part I, A comparison of the systems of building control in eight European countries' (this book) and 'Building regulations in Europe. Part II, A comparison of technical requirements in eight European countries' (Housing Urban and Policy Studies volume 24).

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