

# **A Review of the Employment and Skills Needs of the Construction Industry in Ireland**

*A Study by the Skills and Labour Market Research Unit (SLMRU) in FÁS for the  
Expert Group on Future Skills Needs*

**Final Report**

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## Preface

The Expert Group on Future Skill Needs (EGFSN) has asked the Skills and Labour Market Research Unit of FAS to provide a detailed analysis of the employment and skills needs of the construction industry over the period of the National Development Plan 2007-2013.

The construction industry is entering a very challenging period; there was a significant decline in the number of houses and apartments built in 2007 and many commentators are of the view that this adjustment was inevitable and that the level of residential building in recent years was unsustainable in the longer term. In contrast, output is expanding in some other areas of the industry.

The EGFSN is conscious of the fact that the construction industry is undergoing a process of transition and that this process has the potential to create employment opportunities in expanding markets for some of those workers who will be displaced by the contraction in new residential development.

The study adopts a positive approach to developments in the industry and the employment potential to which these developments could give rise. The forecast presented in the study assumes that there will be a considerable increase in activity in some market segments, particularly in infrastructure as a result of the implementation of the National Development Plan (NDP), and the residential repair and improvements market - driven primarily by the sustainable agenda.

Furthermore, it is undoubtedly the case that some projects will emerge over the forecast period, that are not in the NDP and which cannot be foreseen at this time. Such projects will help to offset the adverse impact on employment of any under-achievement of the targets in the NDP.

The study indicates that by 2013 employment in the new residential sector could have declined by over 50%; from around 150,000 at the beginning of 2007 to 65,000 workers by 2013. However, it has identified almost 50,000 employment opportunities in expanding markets within the industry - much of it created by the National Development Plan and increased activity in residential repair and maintenance.

These figures demonstrate the critical role which retraining can perform in facilitating the transition of workers from the new residential sector to other, expanding sectors in the industry.

**Ms Anne Heraty**  
**Chairperson**

## Executive Summary

### ***The construction industry will undergo a process of radical restructuring***

The analysis in the study indicates that the construction industry will undergo a process of significant change in both quantitative and qualitative terms over the period 2007-2013.

The level of activity in new house construction will decline significantly in both absolute and relative terms<sup>1</sup>. In contrast, the level of activity in civil engineering and residential repair and improvements will rise significantly.

The construction industry which will emerge from this process will more closely resemble the structure of the European construction industry where the share of activity accounted for by new house building is significantly lower than in Ireland.

In the short-term (2006-2009) employment in new house building is forecast to decline by over 100,000. However, owing to anticipated growth in other parts of the industry, overall employment in construction is expected to fall by about 80,000 in the short-term. In the longer-term total employment is expected to recover and may reach 231,000 in 2013 (38,000 below the average level in 2006).

These forecasts are contingent on a number of factors. Firstly, they assume that the capital expenditure targets in the National Development Plan are achieved over the forecast period. If there is a significant under-achievement of these targets, the employment forecast in this report for 2013 will be considerably lower.<sup>2</sup> Secondly, they assume that the implementation of the Energy

Performance of Buildings Directive will trigger a considerable volume of activity in the house repair and improvements market between 2009 and 2013.

Thirdly, the forecasts are based on the assumption that those displaced from the new house building sector will take up the employment opportunities that will emerge in other parts of the sector. But this will only be possible if appropriate re-training programmes are put in place.

If one or all of these assumptions prove to be over-optimistic, the employment projections in the report are unlikely to materialise.

The restructuring of the industry will create changes in the skills profile. These changes will be accentuated by legislation and changes in building technology and processes. As a result there will be relatively more professionals in the workforce and relatively less crafts-persons; the building process itself will more closely resemble a manufacturing activity and the industry will have a strong international focus.

### ***House building to decline as investors leave market***

The decline in new house construction over the period 2007-2013 will reflect a contraction in investment activity and a reduction in demand from first-time buyers. However, it is anticipated that affordability will improve considerably through 2009 as interest rates stabilise at current levels or decline.

Furthermore, it is expected that house prices will decline in real terms in 2008 following declines in 2007 and that this trend, combined with the elimination of stamp duty for first-time buyers and increases in interest relief in the 2008 Budget, will bring the first-time buyer back to the market in 2009.

The level of new house construction in recent years has been much higher than the

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<sup>1</sup> The term 'house' is used to cover all residential dwellings including apartments.

<sup>2</sup> For example, the forecasting model indicates that a 25% annual reduction in NDP activity over the forecast period would result in a further reduction of 20,000 in employment.

level of household formation. Indeed, less than half the new houses built in the intercensal period 2002-2006 were purchased by first-time buyers and many were purchased by investors. Consequently, the level of activity in residential development in the near future will be very much influenced by the behaviour of investors.

Investors were attracted to the new housing market for a number of reasons. First and foremost, the price of houses had been increasing at a far higher rate than the inflation rate since the beginning of the decade and this made house purchase an extremely attractive investment option.

The expectation of high capital appreciation was the single most important factor in attracting investors to the housing market. But two other factors were also significant. Firstly, houses which were purchased as holiday homes qualified for various forms of tax relief and this increased their relative investment value. Secondly, there has been a large influx of immigrants over the last few years and these new-comers provided a rental income to investors while their properties appreciated in value.

These factors no longer apply. The price of houses is declining significantly in real terms, tax relief on holiday homes is being phased out<sup>3</sup> and it is expected that the level of immigration will decline by roughly 50% of recent levels over the next few years.<sup>4</sup>

As a consequence of these developments, it is anticipated that the number of houses purchased by investors will decline dramatically in the short-term. Some investment activity may resume in the medium-term as prices stabilise, but it is

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<sup>3</sup> A small number of tax relief schemes will continue and the forecasts assume some relatively modest level of investment even in the short-term.

<sup>4</sup> It is assumed that immigration will average 30,000 annually in 2007, 2008 and 2009 or 90,000 in total. Net immigration was over 67,000 in 2007, this means that the immigration estimates for 2008 and 2009 are close to those of the ESRI in their QEC Winter 2007 report of 20,000 and 10,000 respectively.

not anticipated that investment will ever return to the levels which prevailed in the period 2002-2006.

Overall, the study predicts that new house construction will decline quite rapidly from its peak of over 88,000 in 2006, to about 25,000 in 2009, and that numbers will stabilise at an average of between 45,000 and 50,000 in the medium-term. The forecast is for an average of 45,000 new houses and apartments completed each year over the period 2007-2013 inclusive.

This projection is slightly more pessimistic than the recent Government estimate which suggested that there was a sustainable demand for 60,000 house completions annually.<sup>5</sup>

The reason has to do with our estimation of the population growth in the traditional house purchasing age-cohorts of 25-34 years. Together with affordability, this is one of the key determinants of the volume of first-time buyers entering the housing market.

The numbers in this age group are made up of the natural increase in the population and the net immigration flows. The declining birth rate in Ireland during the 1980s means that the numbers entering this age-cohort from the domestic population will decline over the forecast period.

In addition, many immigrants will leave the construction industry as the job-market contracts – a point strikingly illustrated by the analysis of the nationality of the 18,000 workers who left the construction industry between the first and second quarters of 2007.<sup>6</sup>

Our figure of 45,000 house completions on average reflects predictions for lower net

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<sup>5</sup>The 'Review of the Construction Industry 2006 and Outlook 2007-2009' expects house completions to decline to just 60,000 at the end of 2008 before levelling off or even increasing.

<sup>6</sup> In total, the number of non-Irish working in the construction industry declined by 2,200 from the last quarter in 2006 to the last quarter in 2007

immigration over the forecast period. Specifically, the forecasts assume an average level of net immigration of 30,000 between 2007 and 2009 – much of it occurring in 2007 and 2008.

### ***Social housing and house repairs and improvements will expand***

There will be a number of positive developments in the residential sector over the next few years. Firstly, it is probable that a record amount of social housing will be built over the lifetime of the National Development Plan. The Government is committed to building or acquiring 27,000 houses by 2009.

In addition, the Government is committed to building 40,000 affordable houses in partnership with the private sector. These initiatives should help to off-set to some extent the anticipated decline in demand for private housing and ensure that a reasonable level of house completions continues over the medium-term.

Secondly, the introduction of mandatory energy rating to the existing housing stock at the point of sale or rent from January 2009 will result in a significant increase in activity, particularly in insulation and the installation of sustainable technology heating systems. It is expected that the sale price of the house will be influenced by its energy rating and this will create a demand from householders, whose houses have a low energy rating, to engage in significant upgrading. The analysis in this study suggests that about 900,000 houses of the current stock have extremely low levels of energy efficiency and require significant upgrading to achieve a good rating.<sup>7</sup>

While this upgrading activity will be a gradual process, and may not manifest itself until 2009 and after, it is predicted that other forms of house improvements, particularly extensions, will expand strongly in the short-term fuelled in part by relatively high levels of disposable

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<sup>7</sup> The figure of 900,000 is the number of houses built before 1991 when energy regulations did not apply.

income. It is difficult to measure activity in this sector as many of the extensions do not require planning permission. However, it is anticipated that this sector will expand strongly in 2008 and 2009. Subsequently, much of the activity in this area will be strongly influenced by the sustainability agenda.

### ***Other building activity will also expand significantly***

The other two markets within the construction industry – general contracting and civil engineering – are both expected to perform positively over the period to 2013 in both output and employment terms.<sup>8</sup>

With regard to general contracting, the performance of the commercial sector is perhaps the most difficult to predict. It performed strongly in both 2006 and 2007 but the indications are that it has begun to slow-down and there are a number of reasons for believing that activity in this sector will contract sharply over the next few years before experiencing a modest recovery towards the end of the forecast period.

With regard to the retail market, there is evidence that Ireland may be reaching saturation point in respect of the construction of large retail warehouses. Ireland now has the third largest ratio in Europe of retail space per 1,000 of the population - lower only than Sweden and the Netherlands. Large retail outlets are particularly evident in the counties surrounding Dublin and activity in these centres, as in the rest of the country, has been sustained by the boom in consumer expenditure of the last few years. This has been reflected in very high rental values for these properties.

However, consumer expenditure is expected to be much weaker over the next

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<sup>8</sup> General contracting is defined as all other building excluding residential development and civil engineering. Civil engineering is defined as including all activity related to the development of the physical infrastructure.

few years, reflecting the slowdown in the economy and the decline in consumer confidence generally. This slowdown in consumption has accelerated in recent months because of a general restriction in credit, reflecting the impact of developments in the US sub-prime market on international financial markets.

The slow-down in economic activity will also reduce the demand in both the office and industry market over the next few years. Indeed, the relatively strong performance of the office and retail sector in recent years means that activity in these markets could be very modest in the latter half of the forecast period.

Following a sharp increase in the construction of agricultural buildings in 2006, the level of output in this area is expected to remain strong. It is expected that the demand for construction services and products will increase over the next few years because of the anticipated increase in prices and incomes in the agricultural sector.

General contracting will be given an added impetus by the injection of large amounts of Government funding under the National Development Plan. The Government has allocated approximately €33 billion to fund the construction of schools, hospitals and other social infrastructure projects. There is a separate €2 billion allocated to the building of public offices under the decentralisation programme.

Activity in the civil engineering sector is also projected to increase sharply over the period 2007-2013 because of the National Development Plan. The Plan envisages total expenditure of approximately €80 billion over the period on non-housing infrastructure, of which approximately €45 billion is allocated to the improvement of the physical infrastructure. This includes €14 billion for the major new roads network and €4 billion for new sewerage works.

These figures represent a substantial increase on the infrastructure spends in the 2000-2006 NDP and will ensure a

significant increase in both output and employment in civil engineering projects over the period 2007-2013.

***But total output and employment will decline***

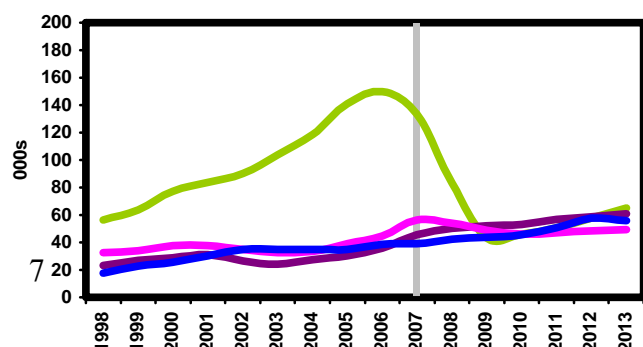
However, from the perspective of the industry as a whole, the projected increase in civil engineering and general contracting - combined with the forecast increase in activity in residential repair and improvements - will not be sufficient to produce positive growth levels, or off-set job losses arising from the projected contraction in new house building. This is because the latter accounts for over half of total output and a somewhat higher proportion of employment.<sup>9</sup>

The projected annual average new house completion rate of 45,000 represents a major reduction on the peak figure of over 88,000 units completed in 2006 and inevitably a contraction of this magnitude will give rise to significant job-losses. Our forecasts assume that in the worst year for new house building, namely 2009, there will be almost 110,000 less persons employed in this sector than in 2006 – a decline of 45%.

While the new housing sector is expected to resume positive growth after 2009, nevertheless the forecasts in this study indicate that this sector will have 85,000 less workers in 2013 than in 2006.

Despite this level of job-shedding in the new residential sector, the study is forecasting that overall employment in the construction industry in 2013 will be 231,000, which is 38,000 below the 2006 average employment levels of 269,000, or 54,000 below the 2006/07 peak employment figure of 285,000.

**Figure:E1  
Construction Sector Employment Forecasts**



shortage is expected to increase, especially in the United Kingdom and Poland.

There will also be some opportunities for employment in other sectors in Ireland for certain types of construction skills, particularly electricians.

The volume of exits from the industry – mainly through retirements - is relatively high for construction craft-workers, and it will also result in a contraction in employment without corresponding rises in unemployment levels.

Furthermore, there are approximately 40,000 non-Irish persons working in the industry. It is reasonable to expect that many of these workers will not have the same degree of attachment to Ireland as Irish-born workers and will seek employment in other European markets as the Irish industry contracts.

Indeed, as already stated, there is evidence that this process has already commenced. The results of the CSO National Quarterly Survey for the second quarter of 2007 shows that of those who exited the industry in the previous three months, non-Irish nationals outnumbered Irish nationals by 3:1.

A significant proportion of non-Irish workers in the industry are Polish nationals. The economy in Poland – including the construction industry – is expanding strongly and the Government in Poland is keen to attract back Polish workers to assist in the further development of their economy.

It is reasonable to assume that the improved performance of the Polish economy will have an impact on the number of Polish workers who enter and stay in the industry in Ireland. There is evidence that the number of Polish workers coming to Ireland is beginning to decline.<sup>10</sup>

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<sup>10</sup> The number of Polish workers who have obtained PPS numbers has declined significantly in the latter half of 2007.

The reason for this relatively benign

The reason for this relatively benign prediction is that the analysis has estimated that the expanding sectors in the industry have the potential to create employment opportunities for 49,000 workers. These job increases will be in infrastructure (26,000) and residential repair and residential maintenance and improvements (23,000).

Figure E1 shows employment trends in each of the main sub-sectors of the industry over the last decade and for the projection period. The graph illustrates the extent to which new house building has contributed to a very rapid rise in employment, the sharp fall expected from the peak, and the gradual increase expected from 2010 onwards.

A feature of the employment projections, illustrated in Figure E1, is that the highest employment losses occur by 2009. In that year, total employment is projected to be only 188,000, which represents a reduction of 100,000 from the peak employment figure of 288,000 at the beginning of 2007.

***Job-losses will not result in equivalent levels of unemployment***

It is not expected that job losses in the industry will result in equivalent rises in unemployment. There will be many employment opportunities in the construction industry in the United Kingdom, Northern Ireland and the newer EU Member States such as Poland.

Currently, there is a significant shortage of craft-workers in these markets and this

The employment market of the entire European Union, including the relatively large and adjacent German market, will be available as of right to the workers of the former accession countries from 2011. This will give immigrants from these countries significantly more job opportunities than they have at present.

### ***The skills profile of the industry is changing***

Many of the jobs which emerge in expanding areas of the industry can be filled by persons previously employed in the new house building sector. However, there is a limit to the extent to which this transition can occur naturally. This is because the skills which will be most adversely affected by the contraction in new house building – bricklaying, plastering, plumbing, carpentry and painting – are not required to the same degree in civil engineering, general contracting or even in house improvements.

The upgrading of the housing stock will offer employment opportunities for some craft-workers – notably for plumbers and electricians – but the main needs will be for energy rating assessors, energy consultants, and, most significantly, insulation specialists and installers of sustainable technologies. The latter may include many electricians and, in particular, plumbers who have decided to specialise in these new technologies. However, in these cases, some enhancement of their existing skills will be required.

Similarly, while the forecast expansion of activity in both civil engineering and general contracting will create many additional employment opportunities, these will tend to be in areas other than the traditional craft trades. For example, there will be many opportunities in project management, in engineering, in building services and in the operation of specialised plant equipment.

### ***Changes in the skills mix are being driven partly by new technologies***

The changes in the skills mix in the industry are being driven by a combination of new building technologies and legislation. With regard to new technologies, the study shows that new forms of construction – usually involving some aspect of off-site manufacturing – are becoming the norm in respect of large construction projects in general contracting in both the public and private sphere. The advantages of this form of technology are that it produces less waste, it often has superior thermal and energy efficiency properties, it is constructed within a safer working environment, it saves time, and factory-based finishes are generally of a superior quality compared to traditional methods.

The demand for off-site construction technologies varies between different construction markets. Timber frame construction continues to be the predominant form of off-site manufacturing in the residential market and is estimated to have accounted for about 30% of new housing.

But other forms of panellised building methods are entering the residential market and rapidly expanding their market share. Light gauge steel frames, for example, are becoming the technology of choice in the duplex and apartment markets<sup>11</sup> while this technology is also very suitable for high rise residential units – a market which is expected to expand significantly over the next few years.

A concrete-based technology, called insulated concrete forms (ICF), has been applied successfully in the building of a number of residential dwellings and may become a more widely-used method of construction over the next few years.

Innovations in cement board technology and dry brick construction are providing an alternative to block and brick construction as they require less skills and time to erect.

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<sup>11</sup> Unlike timber, they can incorporate concrete flooring.

Other modular forms of construction are also increasing their share of the Irish market. Both kitchen and bathroom pods are being used in the hotel sector and to some extent in apartment complexes. However, the use of pods, especially imported pods, are relatively expensive and therefore are only viable in respect of large-scale projects.

Nevertheless, despite increasing market share, there have been problems in integrating off-site manufacturing with traditional on-site construction. These problems reflect the fact that custom and practice on sites is very different from the type of culture which supports the design, manufacture, delivery and installation of manufactured modularised components.

In comparison to on-site construction, the latter involves more intensive consultation at the design stage of the project, more strict delivery and payment schedules, and greater care in the installation of the modular components.

Many of these issues could be effectively addressed through appropriate training. Indeed, there is a general consensus in the industry that training holds the key to enabling the industry to fully exploit the economic advantages of off-site development.

#### ***Legislation is also a key driver in the changing skills mix***

One of the key attractions of off-site construction is that the technologies meet the current thermal requirements of Part L of the building regulations. The industry is now required to adhere to more strict regulations in respect of the management of waste, the use of sustainable sources, and the environment.

The current regulatory environment will become stricter over the next few years, particularly in respect of setting minimum standards for energy efficiency in buildings.

The Government is reviewing the scope and structure of the building regulations to

prepare for the next revision of Part L thermal performance requirements. Revised Part L requirements will come into effect in 2010 and will aim to achieve up to a 60% improvement in the thermal performance of houses compared to current standards. Furthermore, it is certain that the review will set higher standards for energy efficiency in relation to such technology as lights, boilers, insulation and air infiltration systems.

The Government is also determined to reduce the level of construction and demolition waste which is being dumped on landfill sites throughout the country. The 1998 Waste Policy Statement set a target of recycling 80% of construction and demolition waste by 2013. While it should be acknowledged that progress has been achieved by the industry in the context of reaching these targets, a great deal more needs to be done.

Thus, as a result of new legislation, there will be an increased demand for managers, professionals and skilled workers with appropriate knowledge and expertise in sustainable construction and environmental-related areas.

#### ***Qualifications are becoming mandatory for an increased number of occupations***

There have been a number of developments over recent years which have resulted in extending the range of occupations for which qualifications are mandatory. These developments include a greater awareness of health and safety issues, which has resulted in the introduction of the Safe Pass requirement for all workers on building sites. For similar reasons, many of the qualifications acquired under the Construction Skills Certification Scheme (e.g. scaffolding, construction plant operation) are mandatory.

It is also likely that in the future appropriate qualifications will be a mandatory requirement to practice in the construction-related professions (e.g. architects).

Many of the activities associated with sustainable construction, such as the assessment of the energy efficiency of buildings and the installation of heating systems, require appropriate qualifications in order to qualify for a range of grants.

***Greater exposure to international markets will accelerate change and provide business and employment opportunities***

Over the last decade, the Irish construction industry has become increasingly involved in international markets. The level of construction activity will increase significantly in many European markets. Notable projects in the UK include the Thames Valley Gateway and the London Olympics. The industry in Northern Ireland and in some countries such as Poland is embarking on a major programme of infrastructural investment.

Significantly, the opportunities in the United Kingdom will include residential development as well as major projects in civil engineering and general contracting. It is to be expected that many Irish contractors who experience a contraction in their residential building activities in Ireland will seek to expand their activities in the United Kingdom.

These companies will have to comply with the energy-efficiency regulations which pertain in these countries, and these regulations are currently stricter than those which apply in Ireland. The Government of the United Kingdom has taken a very proactive role in promoting the use of building technologies which are compatible with its policy on reducing CO<sub>2</sub> emissions from residential development. Its stated objective is that all new houses built after 2016 should be carbon neutral.

The fact that many Irish companies will seek to win contracts in the UK market over the next number of years should accelerate the diffusion of sustainable technologies and techniques as well as skills within the Irish industry.

The job opportunities provided in other countries are likely to attract some of those made redundant in the Irish residential sector.

***Management is becoming more complex***

There are a number of developments within the industry which will make the task of management more complex and indeed more critical than it has been in the past.

Firstly, the transition to off-site methods of construction introduces a complex (increasingly international) supply chain to the production process. It also increases the time-sensitivity of delivery schedules. Supply chain management skills will become much sought after as the industry moves towards quasi-manufacturing methods of construction.

The introduction of fixed-term, fixed-price contracts and changes in EU procurement procedures is creating a demand for persons with specialised knowledge of the costing of large contracts. There has been a shortage of such 'estimators' in recent years.

***Professional skills have been difficult to source***

The increasing professionalism of the industry is reflected in the types of skills which the industry has been finding difficulty recruiting in Ireland.

The monthly FÁS/ESRI employment and vacancies survey has consistently showed the industry experiencing difficulties recruiting quantity surveyors and site managers/foremen.

The immigration data for 2007 shows that the industry was continuing to bring in architects, engineers and quantity surveyors from abroad – mainly under the Green Card system. The engineers were predominantly civil and structural engineers, but a number of engineering specialists were also being recruited from abroad.

The severe contraction in commercial activity, expected in 2008 and continuing through 2009 and 2010, may result in a sharp decline in the demand for some professionals, especially architects, project managers, and quantity surveyors.

***In the short-term, there may be a decline in student enrolment in third-level construction courses***

In response to these shortages, the third-level education system has introduced a number of additional professional courses – for example in architecture, civil engineering, construction economics and construction management. The sharp contraction in the construction sector which is forecast in this report may result in some graduates from these courses experiencing difficulties obtaining employment in the short-term.

It may also result in a decline in the number of students enrolling in construction-related courses at third-level. This may be particularly the case in respect of those types of courses which have expanded very rapidly in recent years (e.g. Level 6/7 courses in Institutes of Technology).

In the medium term, however, the demand for certain professionally-qualified construction workers will increase – particularly civil engineers.

***Extensive up-skilling and re-skilling are required to maximise employment***

The combination of a decline in house building and the transition to off-site methods of construction will, in the medium-term, dramatically alter the skills profile of the industry.

There will be both winners and losers in this process. Some occupations will experience a significant decline in the level of demand for their skills while the industry's requirement for other skills will expand.

***There will be a reduction in the demand for some skills***

The study provides forecasts of employment for 34 occupations in respect of the four main sub-sectors in the industry between 2006 and 2013. These forecasts are presented in Tables E3 to E5 (at the end of the Executive Summary).

Currently, the skills profile of the industry is dominated by the skilled craft-workers who account for 43% of direct employment – the equivalent of 116,000 workers. Most of these are employed in the residential sector and they will feel the brunt of the contraction in new house building.

The crafts which are predominantly employed in the residential sector include bricklayers, plasterers, painters, roofers, carpenters, glazers, plumbers and tilers.

The figures in Table E4 show the extent of the decline in the employment of craft-workers as a result of the contraction in new residential construction. For example, the employment of carpenters will decline by over 16,000, bricklayers by almost 8,000, roofers by over 3,000 and plumbers by over 6,000 over the three years between 2006 and 2009 in the new residential sector.

There will be some pick-up in the demand for these crafts from the sectors which are expected to expand – particularly residential repair and maintenance – and this will ameliorate the extent of the decline. The figures in Table E4 show the overall contraction in employment in the trades as a consequence of the forecast change in activity. For example, in the case of carpenters, there will be increased employment in non-residential areas of 6,000 leading to an overall decline of 7,200 over the whole period. Plumbing also shows gains in non-residential employment of 2,900 to set against the loss of 5,100 new residential jobs.

Among the other occupations which show an overall decline in employment from 2006 to 2013 are bricklayers, roofers and related trades, plasterers, building contractors, scaffolders and related trades,

painters and decorators, and building labourers.

Table E5 shows that the employment losses will be greater in the short-term (2006-2009). For example, the overall decline in employment among carpenters between 2006 and 2009 is forecast at 13,000, whereas for the whole period the decline is forecast at 7,200. Similarly, plumbing is forecast to decline by 4,800 in the short-term and 2,200 in the longer-term.

While past trends in employment do not show any significant technological displacement of specific occupations, the more widespread use of modern methods of production over the forecast period may result in changes in the demand for some occupations. Specifically, employment of bricklayers and plasterers could decline because of the increasing use of new methods of construction (e.g. panellised construction and modular components).

***But there will be an expansion in the demand for other skills***

There will be a significant expansion in the demand for a number of skills, particularly those associated with sustainability, off-site construction and civil engineering.

As shown in Table E4, among the occupations which are expected to increase in employment are civil engineers, managers and other professionals, truck drivers and road workers. There are also two crafts, electrical and construction plant fitting, where increased employment is forecast.

With regard to sustainable construction, there will be a growing demand for persons trained in assessing the energy efficiency of buildings and those with the proficiency to advise clients on the relative merits of different sustainable energy technologies.

There will also be a demand for persons qualified in the installation of sustainable technologies. Currently these technologies are being installed by workers who, in

many cases, are not qualified and as a result there have been a considerable number of cases where the technology has not performed to the required standards.

There will be a significant demand for persons who have a thorough knowledge of insulation materials and their installation.

Overall, the analysis in this study estimates that there could be about 3,500 jobs annually in these sustainable-related construction activities. Many of these jobs will be suitable for persons from a plumbing or electrical background (with appropriate up-skilling).

With regard to off-site construction, there will be a growing demand for managers who can source components nationally and internationally, who can manage strict delivery schedules and a highly complex assembly process. The supply chain management expertise which is associated with multi-national companies will become a fundamental requirement for medium to large building contractors.

In addition, there is a requirement for general operatives to be trained in the installation and erection of panellised construction, including timber frame.

The forecast expansion of activity in physical and social infrastructure will result in an increased demand for steel-fixers, construction plant operators and drivers, and fitters.

***There will be a decline in the number of apprentices sponsored by employers***

As stated above, the forecasts predict a major contraction in the employment of craft workers in the short-term. Consequently, it is inevitable that the requirement for apprentices will decline. This has already occurred. It is estimated that there will be a reduction of approximately 60% in the sponsorship of apprentices in the construction trades by the end of 2008 and a number of apprentices will have been made redundant.

An apprenticeship in the construction trades provided a very good career path to over 5,000 young persons annually in recent years. Over half of these young persons had Junior Certificate qualifications and obtaining the National Craft Certificate at the end of their apprenticeship provided them with a Level 6 qualification. In the short-term this career path will not be available to about 2,000 young persons annually and in the long-term the opportunity to undertake a construction apprenticeship will remain below the record numbers of the last few years.

***The Irish construction industry is relatively large in comparison to the industry in other European economies.***

The industry in Ireland provided employment for about 14% of the workforce at its peak in 2006. In contrast, the corresponding figure in comparable European economies is an average of 7%. It is reasonable to assume that over the long-term, the relative size of the Irish industry will move towards the European norm. This is unlikely to occur during the period under review as the forecast activity under the NDP, combined with the relatively low level of the housing stock, should continue to support relatively higher activity levels in Ireland.

***The restructuring of the industry will give rise to a number of key challenges***

There are a number of key challenges that arise as a result of the analysis in this study and these are outlined below.

- To assist those made redundant in house-building to acquire the skills to obtain alternative employment.
- To ensure that the skills and qualifications required by the new and expanding sectors of the industry are delivered in an effective and timely manner.
- To assist redundant apprentices to complete their apprenticeship.
- To ensure that the apprenticeship system is maintained at a level sufficient to meet longer-term industry needs.
- To ensure that the curricula of education and training courses are appropriately adapted to meet the changing requirements of the industry.
- To ensure that there are no difficulties in respect of skills and qualifications that would hinder the capacity of Irish contractors to exploit business opportunities in overseas markets.
- To adapt provision in the higher education system to the anticipated quantitative and qualitative changes in the construction industry.
- To provide alternative career paths for those young persons who would have previously been expected to take-up construction apprenticeships.
- To ensure that where mandatory qualifications are required, suitable training, assessment and certification systems are in place.

**Table E3**

**Occupational forecasts: construction sector (000s)**

Occupation	2006	2007	2008	2009	2010	2011	2012	2013
Building managers	6.0	6.2	5.3	4.4	4.5	4.8	5.2	5.4
Civil/mining engineers	6.0	6.5	5.9	5.3	5.3	5.6	6.1	6.2
Architects	1.1	1.1	0.9	0.8	0.8	0.8	0.9	0.9
Quantity surveyors	3.1	3.2	2.7	2.2	2.2	2.4	2.6	2.7
Bricklayers, masons	15.2	14.9	11.6	8.8	9.0	9.7	10.6	11.2
Roofers, slaters, tilers, sheeters, cladders	7.1	7.2	5.8	4.6	4.7	5.0	5.5	5.7
Plasterers	13.9	13.7	10.7	8.1	8.4	9.0	9.8	10.4
Builders, building contractors	21.5	21.5	17.3	13.5	13.8	14.8	16.1	17.0
Scaffolders, riggers, steepplejacks	2.7	2.7	2.2	1.7	1.8	1.9	2.1	2.2
Floorers, floor coverers, carpet fitters, tilers	1.5	1.5	1.3	1.0	1.0	1.1	1.2	1.3
Painters & decorators	11.5	11.8	10.0	8.3	8.4	9.0	9.8	10.1
Other construction trades n.e.c.	4.2	4.3	3.6	2.9	2.9	3.1	3.4	3.5
Metal working & production & maintenance fitters	3.8	4.0	3.6	3.2	3.2	3.4	3.7	3.8
Electricians, electrical maintenance fitters	21.4	22.4	19.7	16.8	16.9	18.2	19.8	20.2
Plumbers, heating & related trades	16.3	16.7	14.0	11.5	11.6	12.5	13.6	14.1
Steel erectors	0.3	0.3	0.3	0.2	0.2	0.2	0.3	0.3
Barbenders, steel fixers	0.9	1.0	0.9	0.8	0.8	0.9	0.9	1.0
Welding trades	1.1	1.2	1.1	1.0	1.0	1.1	1.2	1.2
Carpenters & joiners	36.0	36.1	29.1	22.9	23.4	25.2	27.4	28.8
Drivers of road goods vehicles	7.1	7.4	6.4	5.4	5.5	5.9	6.4	6.6
Mechanical plant drivers/operators	6.8	7.0	6.0	5.0	5.1	5.4	5.9	6.1
Crane drivers	1.5	1.5	1.3	1.1	1.1	1.2	1.3	1.3
Pipe layers/pipe jointers	0.4	0.5	0.4	0.4	0.4	0.4	0.5	0.5
Construction and related workers	5.8	5.9	5.0	4.0	4.1	4.4	4.8	5.0
Mates in Building Trade	1.6	1.6	1.3	1.0	1.1	1.1	1.2	1.3
Road construction & maintenance workers	1.9	2.0	1.8	1.6	1.6	1.7	1.9	1.9
Other building & civil engineering labourers	32.3	32.3	26.0	20.4	20.9	22.5	24.4	25.7
All other labourers & related workers	3.7	3.9	3.4	2.9	2.9	3.1	3.4	3.5
All other managers	5.6	5.9	5.3	4.6	4.6	4.9	5.3	5.5
All other professionals	4.5	4.9	4.5	4.0	4.0	4.3	4.7	4.7
All other associate professionals	3.0	3.2	2.8	2.5	2.5	2.7	2.9	2.9
All clerical	7.9	8.3	7.3	6.2	6.3	6.7	7.3	7.5
All other craft	5.4	5.7	5.0	4.3	4.4	4.7	5.1	5.2
All services	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4
All sales	1.8	1.9	1.8	1.6	1.6	1.7	1.9	1.9
All other operatives	3.2	3.4	3.0	2.7	2.7	2.9	3.1	3.2
All other labourers	2.4	2.5	2.2	1.8	1.8	2.0	2.1	2.2
<b>Total</b>	<b>269.0</b>	<b>274.7</b>	<b>230.0</b>	<b>188.0</b>	<b>190.7</b>	<b>205.0</b>	<b>222.8</b>	<b>231.2</b>

**Table E4**  
**Net job gain/loss by sub-sector and occupation, 2006-2013 (000s)**

**Table E5**  
**Net job gain/loss by sub-sector and occupation, 2006-2009 (000s)**

2006-2013 total net job gain/loss						2006-2009 total net job gain/loss					
Occupation	New residential	Residential R&M	General contracting	Infrastruct.	Total	Occupation	New residential	Residential R&M	General contracting	Infrastruct.	Total
Building managers	-1.7	0.5	0.2	0.4	-0.6	Building managers	-2.2	0.3	0.1	0.1	-1.6
Civil/mining engineers	-1.1	0.3	-0.2	1.1	0.2	Civil/mining engineers	-1.3	0.2	0.1	0.4	-0.7
Architects	-0.3	0.1	0.0	0.1	-0.2	Architects	-0.4	0.1	0.0	0.0	-0.3
Quantity surveyors	-0.9	0.3	0.1	0.2	-0.4	Quantity surveyors	-1.2	0.2	0.1	0.1	-0.9
Bricklayers, masons	-6.2	1.8	0.1	0.3	-3.9	Bricklayers, masons	-7.8	1.2	0.1	0.1	-6.4
Roofers, slaters, tilers, sheeters, cladders	-2.5	0.8	0.1	0.3	-1.4	Roofers, slaters, tilers, sheeters, cladders	-3.2	0.5	0.1	0.1	-2.5
Plasterers	-5.6	1.6	0.1	0.3	-3.5	Plasterers	-7.0	1.1	0.1	0.1	-5.7
Builders, building contractors	-8.0	2.4	0.3	0.7	-4.6	Builders, building contractors	-10.1	1.5	0.2	0.2	-8.1
Scaffolders, riggers, sleepers	-1.0	0.3	0.0	0.1	-0.6	Scaffolders, riggers, sleepers	-1.2	0.2	0.0	0.0	-1.0
Floorers, floor coverers, carpet fitters, tilers	-0.5	0.1	0.0	0.1	-0.2	Floorers, floor coverers, carpet fitters, tilers	-0.6	0.1	0.0	0.0	-0.5
Painters & decorators	-3.5	1.0	0.3	0.7	-1.4	Painters & decorators	-4.3	0.7	0.2	0.2	-3.2
Other construction trades n.e.c.	-1.4	0.4	0.1	0.2	-0.7	Other construction trades n.e.c.	-1.8	0.3	0.1	0.1	-1.4
Metal working production & maintenance fitters	-0.8	0.2	0.2	0.4	0.0	Metal working production & maintenance fitters	-1.0	0.1	0.1	0.1	-0.6
Electricians, electrical maintenance fitters	-5.3	1.6	0.8	1.7	-1.2	Electricians, electrical maintenance fitters	-6.7	1.0	0.6	0.5	-4.6
Plumbers, heating & related trades	-5.1	1.5	0.5	0.9	-2.2	Plumbers, heating & related trades	-6.3	1.0	0.3	0.3	-4.8
Steel erectors	-0.1	0.0	0.0	0.0	0.0	Steel erectors	-0.1	0.0	0.0	0.0	-0.1
Barbenders, steel fixers	-0.2	0.1	-0.1	0.2	0.0	Barbenders, steel fixers	-0.2	0.0	0.0	0.1	-0.1
Welding trades	-0.1	0.0	0.1	0.1	0.1	Welding trades	-0.2	0.0	0.0	0.0	-0.1
Carpenters & joiners	-13.0	3.9	1.3	0.7	-7.2	Carpenters & joiners	-16.3	2.5	0.6	0.2	-13.0
Drivers of road goods vehicles	-1.9	0.6	0.3	0.5	-0.6	Drivers of road goods vehicles	-2.4	0.4	0.2	0.2	-1.7
Mechanical plant drivers/operators	-1.9	0.6	-0.4	1.0	-0.7	Mechanical plant drivers/operators	-2.4	0.4	0.0	0.3	-1.8
Crane drivers	-0.4	0.1	0.0	0.1	-0.2	Crane drivers	-0.5	0.1	0.0	0.0	-0.4
Pipe layers/pipe jointers	0.0	0.0	0.0	0.1	0.1	Pipe layers/pipe jointers	0.0	0.0	0.0	0.0	0.0
Construction and related workers	-1.9	0.6	0.2	0.3	-0.9	Construction and related workers	-2.3	0.4	0.1	0.1	-1.8
Mates in Building Trade	-0.6	0.2	-0.1	0.2	-0.3	Mates in Building Trade	-0.7	0.1	0.0	0.0	-0.6
Road construction & maintenance workers	-0.3	0.1	-0.2	0.5	0.1	Road construction & maintenance workers	-0.4	0.1	0.0	0.1	-0.2
Other building & civil engineering labourers	-11.8	3.5	-0.9	2.6	-6.6	Other building & civil engineering labourers	-14.8	2.2	-0.1	0.8	-11.8
All other labourers & related workers	-0.9	0.3	-0.1	0.5	-0.2	All other labourers & related workers	-1.2	0.2	0.0	0.2	-0.8
All other managers	-1.3	0.4	0.2	0.5	-0.2	All other managers	-1.6	0.2	0.2	0.2	-1.1
All other professionals	-0.7	0.2	0.3	0.5	0.3	All other professionals	-0.9	0.1	0.2	0.2	-0.4
All other associate professionals	-0.7	0.2	0.1	0.3	-0.1	All other associate professionals	-0.9	0.1	0.1	0.1	-0.6
All clerical	-1.9	0.6	0.3	0.6	-0.4	All clerical	-2.4	0.4	0.2	0.2	-1.7
All other craft	-1.3	0.4	0.2	0.5	-0.2	All other craft	-1.6	0.2	0.2	0.1	-1.1
All services	-0.1	0.0	0.0	0.0	0.0	All services	-0.1	0.0	0.0	0.0	-0.1
All sales	-0.3	0.1	0.1	0.2	0.1	All sales	-0.4	0.1	0.1	0.1	-0.2
All other operatives	-0.7	0.2	0.1	0.3	0.0	All other operatives	-0.9	0.1	0.1	0.1	-0.5
All other labourers	-0.7	0.2	0.1	0.2	-0.2	All other labourers	-0.9	0.1	0.1	0.1	-0.6
<b>Total</b>	<b>-84.9</b>	<b>25.1</b>	<b>4.6</b>	<b>17.3</b>	<b>-37.8</b>	<b>Total</b>	<b>-106.5</b>	<b>16.1</b>	<b>4.1</b>	<b>5.4</b>	<b>-80.9</b>

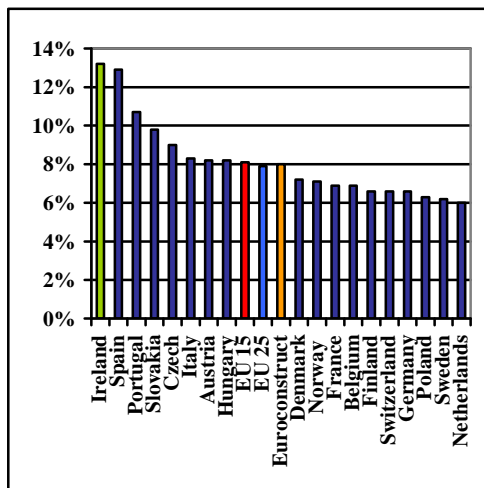
## Chapter 1: Profile of the Construction Industry 1998-2006

### *The construction industry in Ireland accounted for 13% of employment and a substantial proportion of GDP*

The Irish construction industry is producing output valued at €36 billion, and gross value-added at factor cost of over €15 billion. This represents 10% and 24% of GNP depending on the measure used.<sup>12</sup> It provides direct employment for roughly 280,000 persons – equivalent to 13% of total employment.

This is much higher than the corresponding share of output or employment in comparable European economies. In general, construction employment accounted for between 6% and 8% of total employment. Spain is an exception – its share was broadly equivalent to Ireland's.

**Figure 1.1**  
Share of Construction Employment of Total Employment in European Countries, 2006



Source: Eurostat

*The industry is even larger when account is taken of those who are employed exclusively in construction activity but who are classified elsewhere*

Many people who are employed exclusively in the industry are nevertheless classified as working in the business services sector and they are not counted among those employed in construction. These people include most architects, planners, civil and structural engineers and quantity surveyors. If those employed in these professions were included in the figures, they would add roughly another 10,000 to direct employment.

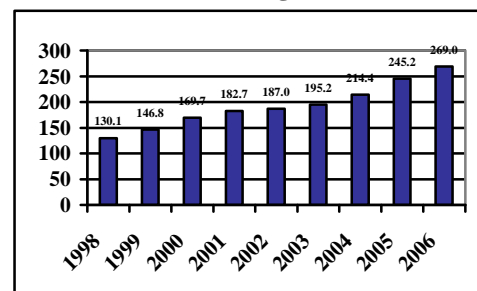
In addition, there are a large number of persons employed in ancillary activities such as building merchants.

The ESRI estimated that indirect employment in the industry accounts for approximately 40% of direct construction employment. This is equivalent to an additional 107,600 jobs. Combining direct and indirect employment, total employment in the industry is 376,600 and accounts for over 18% of total employment in the economy.<sup>13</sup>

### *The last decade has witnessed explosive growth in the industry*

The current scale of the industry is of relatively recent origin. In 1998, the industry generated €20.2 billion in output which, even allowing for construction price inflation over the period, was 66% below current output levels.

**Figure 1.2**  
Numbers Employed in the Construction Sector, 1998-2006  
(Annual Averages – '000s)



Source: CSO, QNHS

<sup>12</sup> The expenditure approach favoured by the DoEHG gives a figure of 24% while the value-added approach gives 10%.

<sup>13</sup> These calculations relate to 2006.

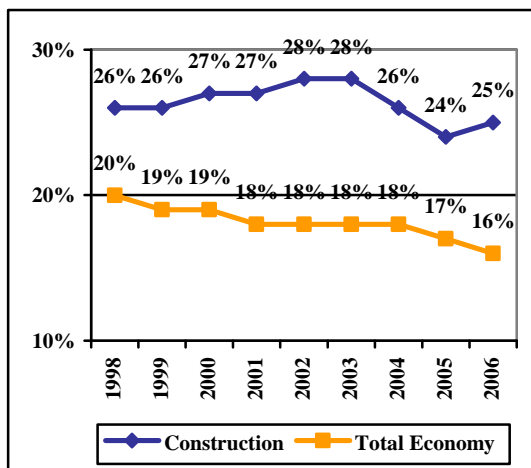
Direct construction employment was only 8.6% of total employment in 1998 – much closer to the European average of 7.7%.

***Significantly more workers classify themselves as self-employed in this industry than in the economy as a whole***

The proportion of self-employed persons in the construction sector is much greater than that registered in the economy as a whole. In 2006, 25% of those employed in construction were self-employed, compared with 16% in the economy as a whole. The corresponding figures in 1998 were 26% and 20% respectively. There has, however, been a decline in the proportion of self-employed persons in construction and across the economy in recent years.

Over four in ten (43%) of qualified construction craftspersons were either self-employed or owned their own business, according to a recent apprenticeship follow-up survey conducted by FÁS on the views and experiences of apprentices who entered the system in 1999.

**Figure 1.3**  
**Percentage of Self-Employed Persons in Construction and Nationally**



Source: CSO, QNHS

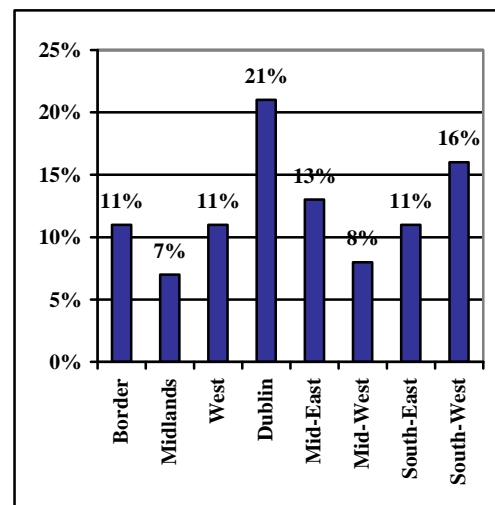
***The Dublin region remains the hub of construction employment***

One-fifth of those employed in the construction sector were located in the

Dublin region in 2006. However, it should be borne in mind that many individuals commute long distances and may live in different regions when compared to their location of employment. The next highest proportion of those employed in the sector were located in the South-West (16%), followed by the Mid-East (13%) and the Border and West regions (11% each respectively).

Over the period 1998 to 2006, all regions recorded significant increases in the numbers employed in the construction sector. In percentage terms, the highest percentage increase was recorded in the Midlands region over this period. This was followed by the South-West region (133%) and the South-East region (130%). At the other end of the spectrum, the smallest percentage increase was recorded in the Dublin region, and in this region the highest absolute numbers were employed.

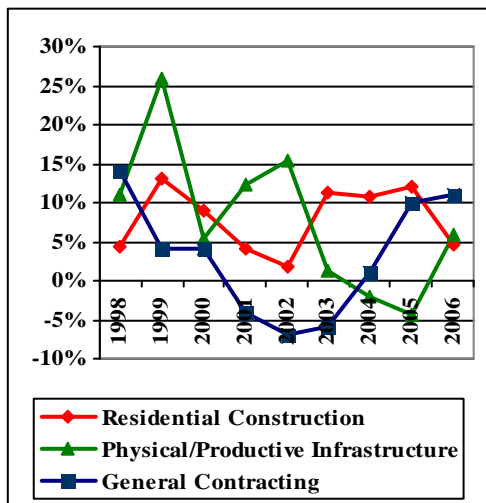
**Figure 1.4**  
**Regional Breakdown of Construction Employment, 2006**



Source: CSO, QNHS

The construction industry includes productive infrastructure/civil engineering, private non-residential construction and social infrastructure. The latter two segments combined form the general contracting sub-sector of the industry.

**Figure 1.11**  
**Construction Output, 1998-2006**  
**(Annual % Volume Changes)**



Source: DKM Economic Consultants

Both general contracting and physical infrastructure experienced some negative growth since 2001 but both market segments have recovered strongly in 2006. Residential construction, however, experienced strong, positive growth throughout the period.

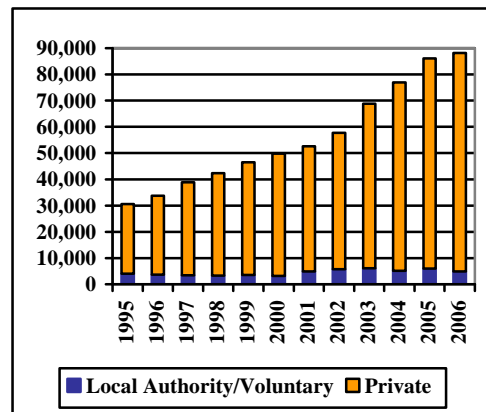
*The driver of this exceptional level of sustained employment growth was new house building*

The gross value of residential construction output reached €24 billion in 2006, compared with €6.2 billion in 1998. This represents an increase of 291% in the value of output or 88% in volume terms, after allowing for construction inflation. The share of this segment of the market in the value of total construction output increased from 52% in 1998 to 68% by the end of 2006.

The number of house completions has grown exponentially in the last decade. There were 88,200<sup>14</sup> units completed in 2006 which compares with 42,349 units in 1998.

<sup>14</sup> The original estimate was 93,419 but this was revised downwards since it included some houses which were built in 2005 but were not connected to the ESB network until 2006.

**Figure 1.5**  
**House Completions**  
**1995-2006 (Number '000s)**

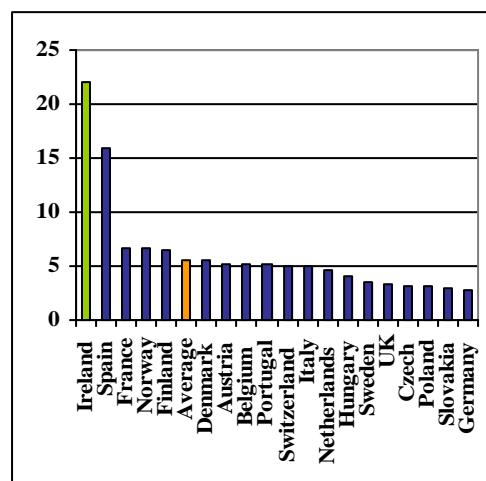


Source: DoEHLG, Housing Statistics Database

*This is a very high level of completions by European standards relative to the size of our population*

This level of activity is very high by European standards. In 2006, the rate of house completions in Ireland – at 22 per 1,000 capita – was almost four times the European average of 5.6 completions per 1,000 capita.

**Figure 1.6**  
**House Completions per 1,000 of the Population in Euroconstruct Countries, 2006**



Source: Euroconstruct

Indeed, it is important to note that Ireland's closest neighbour, the UK, was only producing 3.3 completions per 1,000 capita in 2006.

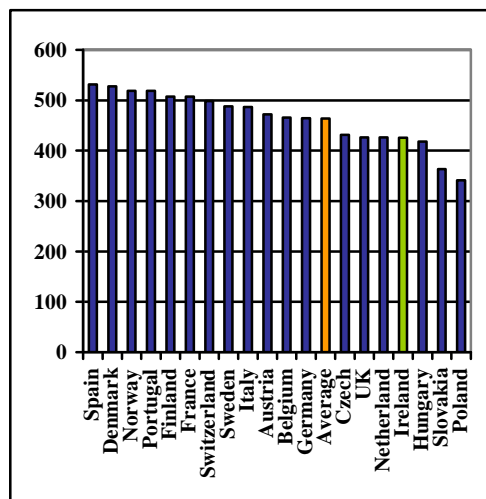
*However, we are emerging from a relatively low housing per capita ratio, but this is no longer the case*

The stock of dwellings in Ireland reached 1,804,000 units in 2006. This figure expressed in units per 1,000 capita is equivalent to 425. This compares to a housing stock of 1,329,000 units in 1998, which was equivalent to 359 units per 1,000 capita at that time.

Thus, there has been a significant increase in the size of the relative housing stock in recent years. Nevertheless, as the graph shows, there is still a considerable distance to travel before the relative housing stock reaches the European norm of 464 units per 1,000 capita.

Interestingly, the ratio in the UK is similar to Ireland's. Spain achieved the highest ratio, with 532 units per 1,000 capita. This was followed by Denmark and Norway, with 530 and 519 units per 1,000 capita respectively. In contrast, Poland had the lowest ratio, with 341 units per 1,000 capita.

**Figure 1.7**  
**Housing Stock per 1,000 of the Population, 2006**



Source: Euroconstruct

*Playing 'catch-up' was not the only factor driving housing demand*

The relatively low housing stock did not produce a similar house purchasing spree

in the UK. The difference is that Ireland had low interest rates, rising levels of disposable income, an expanding young population due to immigration, the confidence generated by a booming economy and, more recently, relatively high returns from investing in housing.

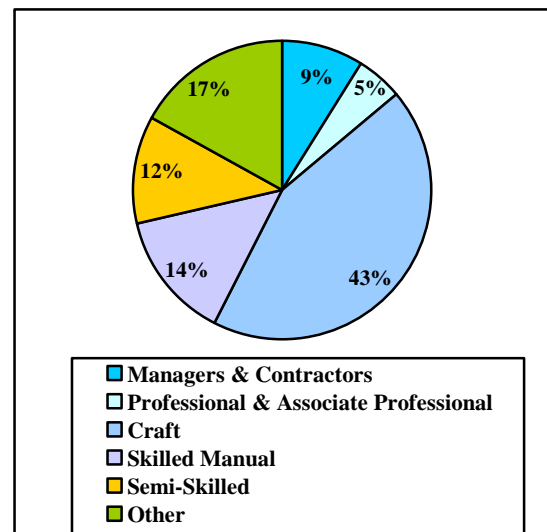
*The surge in house building has created many employment opportunities for workers qualified in the skilled trades*

The high level of new house building is reflected in the composition of the workforce. Thus, the majority (43%) were employed in skilled craft occupations in 2006.

This was followed by those employed in skilled manual and semi-skilled manual occupations – a total of 14% and 12% respectively.

Professional and associate professional occupations accounted for the lowest share of total construction employment (5%) for reasons stated earlier.

**Figure 1.8**  
**Employment in the Construction Sector by Broad Occupational Group, 2006**



Source: CSO, QNHS

There are a considerable number of people employed in the industry who are not working on-site as such. These include, for example, software engineers, financial and

marketing managers, sales assistants, accountants and clerical staff and account in total for 17% of the workforce of the industry.

***The number of apprentices has more than doubled over the decade***

The rapid expansion in new house building has had a dramatic impact on the numbers entering the construction trades. The 24,164 apprentices, registered across the eight construction trades in 2006 represented a remarkable increase of 14,043 or almost two and a half times the total number of apprenticeship registrations recorded in 1998.

The three largest trades – electrician, plumber and carpenter/joiner, collectively accounted for over 80% of the total number registered in construction apprenticeships in 2006 and for over 80% of the net increase in total registrations between 1998 and 2006.

**Table 1.1  
Construction Apprenticeship Registrations  
by Trade, 1998 and 2006**

Trade	1998	2006
Bricklayer	823	1,976
Carpenter/Joiner	2,730	7,280
Construction Plant Fitter	264	344
Electrician	3,996	7,968
Floor/Wall Tiler	35	124
Painter/Decorator	328	496
Plasterer	403	987
Plumber	1,542	4,989
<b>Total</b>	<b>10,121</b>	<b>24,164</b>

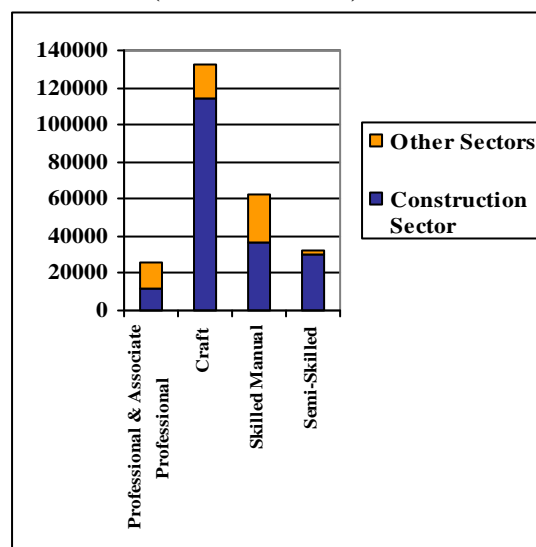
Source: FÁS, *Apprenticeship Registration Statistics Database*

***Almost all those working in craft occupations are employed in the construction sector***

In view of the fact that a very high proportion of all craft workers – almost 90% or 114,600 persons in 2006 – work in the construction industry, any slowdown in the sector will have an adverse impact on those working in craft occupations.

The construction sector was also the predominant sector of employment for those working in semi-skilled occupations in 2006, with over 90% employed in the sector.

**Figure 1.9  
Employment in Construction Occupations  
in the Construction Sector and Other  
Sectors of the Economy by Broad  
Occupational Group, 2006  
(Numbers – ‘000s)**



Source: CSO, *QNHS*

In the case of those working in professional and associate occupations, a higher proportion was employed in non-construction sectors in 2006, with a total of 54%.

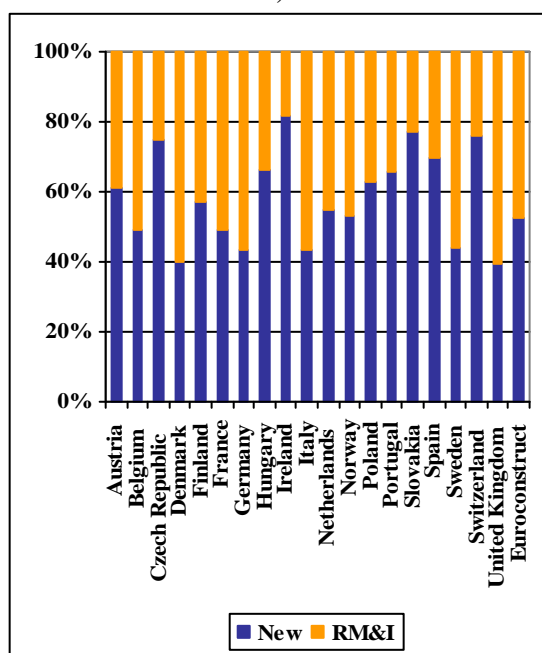
***The level of residential repair, maintenance and improvements has been relatively low by European standards***

Output from the residential repair, maintenance and improvements (RM&I) sub-sector has increased by 125% from €2 billion in 1998 to €4.5 billion in 2006.

In 2006, this component of the sub-sector accounted for 19% of total residential output which is relatively low by European standards. The share of output from new construction and repairs and improvements on existing buildings in the residential sub-sector was roughly evenly split across European countries in 2006. In most

comparable economies, the proportion of output from the residential sector which is attributable to improvements or repairs on existing buildings is almost as high as the total output from new housing.

**Figure 1.10**  
Share of Residential RM&I and New Residential Construction of Total Residential Construction in European Countries, 2006



Source: Euroconstruct, 63<sup>rd</sup> Euroconstruct Conference Summary Report, June 2007

The non-residential market continued to perform strongly boosted by a significant capital investment provision for public sector non-residential buildings (hospitals, educational and Government buildings) as well as a strong pipeline of planning permissions for private commercial, industrial and agricultural buildings.

The value of non-residential construction output increased to €11.4 billion in 2006, compared with €5.7 billion in 1998. This represents an increase of 102% in the value of output or 33% in volume terms, after allowing for construction inflation.

Strong growth in the general contracting sector was recorded over the period 1998-2006. The value of output in general contracting reached €6.2 billion in 2006, compared with €3.8 billion in 1998. This

represents an annual average increase of 3.7% in volume terms over the period.

The sub-sector accounted for 32% of the total value of construction output in 2006, which is two percentage points below the 1998 share.

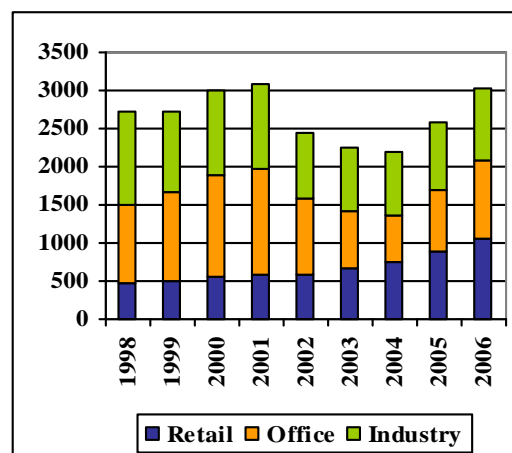
***The level of activity in market segments other than housing expanded strongly in recent years***

Excluding housing, the construction industry also includes private commercial development, and public investment in social and physical infrastructure.

Private commercial development includes agriculture and tourism, but it is dominated by three market segments in particular, office, retail and industrial property. These segments accounted for 73% of the total value of output in the private non-residential sector in 2006, compared with 65% in 1998.

These market segments are highly sensitive to the performance of the economy. Consequently, as shown in Figure 1.14 when the economy slowed from 2002 to 2004, activity in these markets contracted quite significantly.

**Figure 1.14**  
Commercial Building Volumes, 1998-2006  
(Constant 2005 prices – €million)



Source: DKM

There has, however, been a strong recovery in this sector in recent years and

the losses experienced during the economic slowdown have been recuperated, although the extent of the recovery has varied between the different market segments.

The value of output from the office market fell to €0.6 billion in 2004, representing a 55% decline below its 2001 peak output value of €1.3 billion in volume terms. Since 2004, the sector's output began to increase, reaching €1 billion by 2006. The sector accounted for 25% of all commercial construction in 2006, compared with its 36% peak during 2001.

The retail sector did pick up some of the slack experienced in the office market during the period 2002-2003. The stock of retail shopping space has increased substantially in Ireland over the past number of years. This trend is reflected in the significant increase in the volume of construction output from retail building activity. The value of output from this sector increased from €0.56 billion in 2002 to €1.1 billion in 2006, representing an increase of 85% in volume terms.

The retail sector accounted for 26% of the total value of commercial output in 2006 compared with 19% in 2002.

The key factors driving retail development have been a very buoyant economy, rising disposable incomes which in turn have fuelled consumer spending growth, and the demand from Irish retailers looking to expand and from the UK and Europe.

The remaining segment of the commercial market is the industrial sector. The volume of new construction in this market increased by 5% in 2006 while investment in construction by the semi-state agencies, declined following two exceptional years of growth. Employment growth is a key factor driving the demand for space, especially from indigenous small and medium sized enterprises.

***Social infrastructure spending is the smallest sub-component of the construction industry, accounting for just over 5% of the total value of construction output in 2006***

Social infrastructure is the smallest market segment of the construction industry, accounting for 5.4% of the total value of construction output in 2006. The corresponding figure in 1998 were 7%..

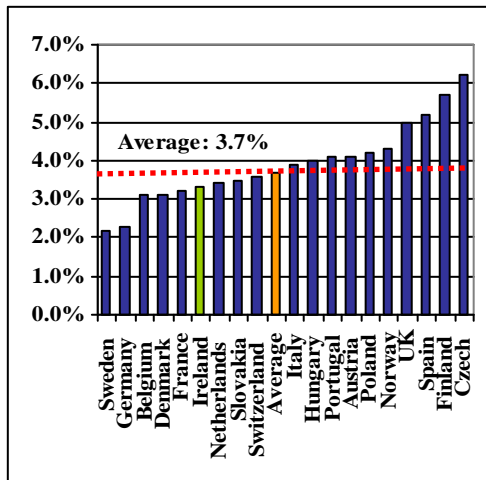
The value of output in this sub-sector was €1.9 billion in 2006, compared with €0.8 billion in 1998, representing an increase of 131%, or an increase of 53% in volume terms. The value of output in this sub-sector peaked in 2002 at €1.8 billion, largely due to an exceptional increase in the level of investment in education.

Activity in social infrastructure is also determined by the PCP, and includes capital investment in areas such as education, hospitals, public buildings, local authority services and public sporting facilities. The current NDP 2007-2013, envisages capital investment of some €33 billion in construction related social infrastructure projects over the seven year period. This significant level of capital spend should underpin strong construction output growth in this sub-sector in the coming years.

***Ireland's share of non-residential construction output in real GDP exceeds the EU average***

Ireland's share of non-residential construction output accounted for 3.3% of real GDP over the period 2003-2006. This compares relatively favourably across other European countries which recorded an average of 3.7%.

**Figure 1.12**  
**Total Non-Residential Construction as a %**  
**of Real GDP (2003-2006)**



Source: Euroconstruct

***But civil engineering was also strong, driven by investment under the National Development Plan***

Investment in productive infrastructure captures total output from all civil engineering projects, both in the public and private sectors. This includes public investment spending on roads, airports, seaports and harbours, water services, as well as investment by the respective Semi-State organisations responsible for transport, energy and telecommunications. Output in this sub-sector also includes capital investment by private sector companies involved in the energy and telecommunications sectors and in public private partnerships (PPP's) in physical infrastructure projects.

The value of output in this sub-sector amounted to €5.3 billion in 2006, representing an increase from €1.9 billion in 1998. This represents an increase of 183% or 74% in volume terms, after allowing for construction inflation.

Productive infrastructure accounted for 15% of the value of total construction output in 2006, compared with 21.5% in 2002 and 16% in 1998.

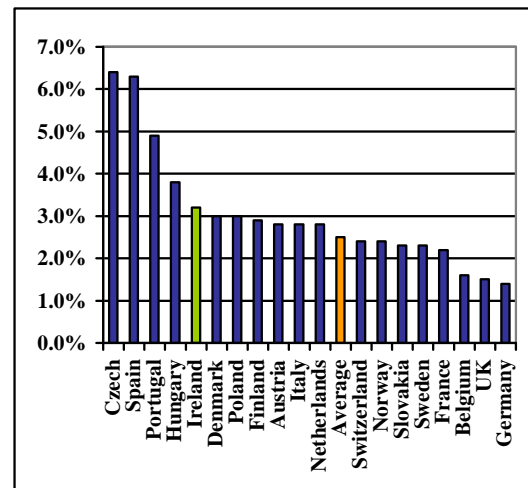
The level of productive infrastructure activity is driven by the value of capital

investment provisions both in the Public Capital Programme (PCP) and the NDP. The sector is set to benefit from the unprecedented multi-annual commitment to investment in productive infrastructure under the current NDP 2007-2013. A total of €45 billion has been allocated to capital investment projects for the improvement of Ireland's physical infrastructure over the next seven years. The sector will also benefit from the substantial allocation for public transport projects within this commitment – nearly €33 billion – over the seven year period.

***The share of Irish civil engineering output in GDP was higher than the European average.***

Ireland's share of civil engineering output in GDP over the period 2003-2006 was 3.2%, which exceeds the EU average of 2.5%. This places Ireland in fifth position in the relative ranking, indicating that Ireland compares quite favourably in terms of spending in this sector in a European context.

**Figure 1.13**  
**Civil Engineering Output as a Percentage of**  
**Real GDP by European Country, 2003-2006**



Source: Euroconstruct

In contrast, the share of this segment of the construction industry in GDP was below the EU average in some of the largest European economies – France, the UK and Germany.

*A number of key points emerge from the analysis*

The new residential was responsible for most of the output and employment growth experienced over the period 1998-2006.

The volume of housing was relatively low by European standards at the beginning of the period but by 2006 it was approaching the European average.

The level of house building was exceptional by European standards but there was not a notable difference between the levels of activity in Ireland and Europe in the other markets in the industry.

Thus, it is the house-building sector which is largely responsible for the relatively high share of national output and employment accounted for by the industry in Ireland and in the long-term, it is inevitable that the share of both output and employment will move closer to the European average.

## Chapter 2: The Impact of ‘Sustainability’ on Activity and Skills

### *Ireland is committed to the concept of sustainable development in construction*

Sustainable development is one of the Government’s key top priorities. The national strategy entitled ‘Sustainable Development – A Strategy for Ireland’ states that “we should not tolerate development that is inefficient, that is excessive in its consumption of natural resources or that unduly pressurises the environment”.

### *The State is legally committed to limiting the growth in its green house gas emissions to 13% above 1990 levels by 2012*

Under the Kyoto Protocol, Ireland has committed to limit its growth in annual greenhouse gas emissions to 13% above its 1990 levels over the five year period 2008-2012. For Ireland, this translates into an annual emissions target of approximately 63 million tonnes of CO<sub>2</sub> per annum.

The 2008-2012 emissions target can be achieved through an emissions reduction programme, and/or emissions allowances that can be purchased from countries that have successfully lowered emissions.

The most recent data show that Ireland’s greenhouse gas emissions were 26% above 1990 levels<sup>15</sup> (the base-year level) in 2005, or 12 percentage points above the 13% target which must be reached over the 2008-2012 period.<sup>16</sup> The 2005 figure represents a decline when compared with peak levels in 2001. In 2001, emissions reached a peak of 28% above 1990 levels. In absolute terms, emissions in 2005 were 70 Mt in excess of Ireland’s Kyoto Protocol target of 63 Mt per annum.

<sup>15</sup> The year 1990 is the reference year on which Kyoto Protocol commitments are based.

<sup>16</sup> National Inventory Report 2007, Greenhouse Gas Emissions 1990-2005, Environmental Protection Agency.

### *Buildings in Ireland account for over 40% of energy-related CO<sub>2</sub> emissions*

Energy consumption for heating, cooling, lighting and other services in buildings accounted for over 40% of Ireland’s energy-related CO<sub>2</sub> emissions in 2005. This represents nearly one-third of total greenhouse gas emissions associated with global warming. CO<sub>2</sub> arises mainly from the combustion of fossil fuels for space and water heating in buildings.

The residential sector alone, accounted for 27% of energy related CO<sub>2</sub> emissions in 2005 – this sector accounted for the largest share of total energy-related CO<sub>2</sub> emissions after transport – which was responsible for 32% of emissions. Final energy use in the sector increased by 27% over the period 1990 to 2005, mainly due to a 35% increase in the number of private households in permanent housing in the State from approximately 1.01 million in 1990 to 1.5 million in 2005.

Although residential energy consumption increased by about 17% from 1990 to 2005, CO<sub>2</sub> emissions in this sub-sector decreased by 3% due to the decline in the use of carbon-intensive fuels such as peat and coal, and greater use of oil and natural gas.

### *European Union has identified improved energy efficiency of buildings as a top priority*

The European Commission’s Action Plan for Energy Efficiency: Realising the Potential (2006) states that it is “technically and economically feasible to save 20% of total primary energy by 2020 on top of what could be achieved by price effects and structural changes in the economy, natural replacement of technology and measures already in place”.

The Plan highlights that the largest cost-effective savings potential lies in the residential (households) and commercial buildings (tertiary sector), where the full potential is now estimated to be around 27% and 30% of energy use, respectively.

***There are a number of ways in which the industry can contribute to the development of sustainability***

Sustainability in building and construction can be enhanced in a number of ways;

- Optimising energy efficiency and reducing CO<sub>2</sub> emissions (for example, location to maximise use of natural light and heat, good thermal insulation, and energy-efficient space and water heating);
- Using renewable materials, reducing use of non-renewable materials, and avoiding use of synthetic materials which affect indoor air quality or comfort;
- Reducing undue consumption through the use of efficient components and fittings such as low water consuming flush toilets, and water recycling systems in industrial premises;
- Using low-embodied energy materials;
- Waste prevention;
- Reuse of existing buildings, and of demolition spoil;
- Minimising water consumption;
- Reducing transportation requirements and pollution prevention

***The State has implemented a series of legislative measures to encourage the industry to become more involved in these activities***

Part L of the Building Regulations relates to the conservation of fuel and energy in buildings in Ireland.

The first energy conservation requirements in national Building Regulations came into force in 1992 and these were improved and updated in 1998, 2003 and again in

2006 to improve energy efficiency through introducing improved thermal performance requirements into the Building Regulations.

The current standards are expected to achieve an annual emissions saving of 360,000 tonnes in the period 2008 to 2012.

***The Government is currently holding a public consultation on recently published revised draft amendments to Part L of the current building regulations***

The Department of the Environment, Heritage and Local Government published revised draft Regulations under Part L of the building code in September 2007. The proposed amendments to Part L of the Building Regulations are currently undergoing a period of consultation – providing a window of opportunity for relevant bodies to make submissions of their views on the draft regulations to the Department of the Environment, Heritage and Local Government.

The new draft regulations are the most ambitious to date and provide for a dramatic improvement in energy performance standards in new Irish homes. These Regulations are aimed at ensuring that new housing stock in Ireland is built to the highest international standards, where they will be cheaper to run and will have a much lower impact on the environment.

The draft regulations provide for inter alia:

- A 40% improvement in energy efficiency for new homes in 2008;
- A 40% reduction in CO<sub>2</sub> emissions for new homes;
- A mandatory minimum renewable energy requirement in all new homes, such as solar heating systems or biomass systems (for example, wood pellet);
- Mandatory levels of energy efficient fixed light fittings;
- Minimum standards of heating systems to ensure they are highly energy efficient;

- Minimum requirements for heating system controls to minimise energy waste through excessive heating;
- Air tightness testing, to ensure the homes are not leaking heat excessively;
- Guidance on ensuring a minimum quality of workmanship and construction;
- Consumer information on the efficient operation of the homeowner's dwelling as a minimum requirement;
- Commitment in the guidelines to review and improve regulations to 60% in 2010 with the ultimate aim of achieving a zero carbon standard for new houses in the medium to long term; and
- New buildings should also be future-proofed to be easily upgraded to higher energy and CO<sub>2</sub> standards in the future.

***Timeframe for revised Part L standards to come into force***

The draft Regulations have been sent to the European Commission for consideration, as required under Competition law. The Minister of the Environment, Heritage and Local Government may choose to amend parts of the Regulations and Guidance following public consultation.

The Minister intends to sign the Regulations in December 2007. There will be a phasing-in period for the Regulations in order to provide time for the industry to adjust. The intention is that the new rules will apply to all new housing planning applications after 1 July 2008. From 1 July 2009 they will apply to all new homes that have not been substantially completed at that stage, regardless of when planning permission was sought.

***The draft regulations are the first step in the process of achieving carbon zero housing***

Irish building controls legislation follows closely developments in the United Kingdom where the focus now is on achieving zero carbon housing from 2016.

The new draft Regulations are the first dramatic step in the process of achieving carbon zero housing. These higher standards are expected to achieve additional emissions savings of up to 120,000 tonnes per annum in the period 2008-2012.

***These changes in building energy standards could significantly address the high levels of CO<sub>2</sub> emissions from the typical Irish new home***

The typical Irish new home produces, in some cases, up to 200% more CO<sub>2</sub> emissions than its UK equivalent, according to recent research. This finding was concluded after a leading energy expert compared the current Part L of the Irish Building Regulations, which sets standards for energy efficiency in homes, to the UK equivalent. The recently published proposed changes in building energy standards could greatly help to address this imbalance.

***A review of the regulations is 'on the cards' for 2010, with a further tightening of standards so as to achieve zero carbon housing in the future***

The Government intends to review the regulations in 2010 and achieve a 60% energy efficiency target above current levels in future years. The objective is to achieve zero carbon emissions associated with the operation and use of buildings, at the earliest date practicable.

The guidelines also advise that new homes should be future energy-proofed. It recommends that the design and construction of new dwellings should be carried out with due regard to the likely need to upgrade the building fabric and fixed services in the future so as to reduce further carbon emissions associated with the operation and use of these dwellings.

***The UK is committed to ensuring that all new homes produce zero carbon emissions by 2016***

In the UK's Energy White Paper, the Government has signalled its intention to

significantly reduce energy use in buildings as an important element in its climate change strategy.

Energy use in buildings in the UK accounted for nearly half of total CO<sub>2</sub> emissions (152.5 million tonnes) in 2004. Emissions from domestic housing represent around 27% of total CO<sub>2</sub> emissions for 2004.

In a drive to reduce CO<sub>2</sub> emissions from energy use in buildings, the UK Government is committed to ensuring that all new homes produce zero carbon emissions by 2016 – a home with ‘zero net emissions of CO<sub>2</sub> from all energy use in the home’.<sup>17</sup>

***Improvement in the energy/carbon performance standards set in the UK’s building regulations is one of the mechanisms that the UK government is adopting in order to achieve zero carbon homes by 2016***

The minimum energy/carbon performance requirements set in Part L of the UK’s Building Regulations are one of the mechanisms through which reductions in CO<sub>2</sub> emissions are to be achieved<sup>18</sup> – moving towards zero carbon homes in 2016. The UK Government is aiming to achieve a 25% improvement in the carbon/energy performance standard set in the 2006 Building Regulations in 2010; a 44% improvement by 2013; and, to zero carbon housing in 2016.

***The UK Government is focusing in particular on the new homes market due to a significant shortage of housing***

The UK Government is focusing on the new homes market as there will be a

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<sup>17</sup> This includes energy use from cooking, washing and electronic entertainment appliances as well as space heating, cooling, ventilation, lighting and hot water.

<sup>18</sup> This will be supported by the Code for Sustainable Homes, the Planning Policy Statement on Climate Change and stamp duty relief for new zero carbon homes from 1 October 2007.

significant number of new homes built in the coming years to meet housing demand. The Government has set a target of building three million houses by 2020, two million of them by 2016. These new targets are assumed to meet the estimated need of 240,000 additional households per annum.

***Energy Performance of Buildings Directive (EPBD) – the most powerful instrument developed to date for improving the energy efficiency of the buildings sector***

Given that buildings account for a significant share of Europe’s energy use and CO<sub>2</sub> emissions, the EU Commission’s Action Plan to Improve Energy Efficiency (2000) indicated the need for the introduction of specific measures to improve energy efficiency in buildings. In response, the Commission published the proposed Energy Performance of Buildings Directive in May 2001. It was adopted by the European Parliament and Council on 16 December 2002, and upon its publication in the EU Official Journal on 4 January 2003, the Directive became European Law.

***The scope and requirements of the Directive***

The Directive applies to virtually all buildings, residential and non-residential to listed buildings of architectural or historical importance, religious buildings and buildings of low occupancy or size.

The main elements of the Directive are:

- A method for calculating the energy performance of buildings;
- Application of minimum standards for the energy performance for new buildings and for large existing buildings that are subject to major renovation;
- Certification schemes for energy performance in new and existing buildings and the public display of these certificates; and

- Regular inspection of boilers, heating and cooling systems.

The Directive requires that when a building is constructed (both residential and non-residential), sold or rented out, the owner is required to have a building energy rating (BER) carried out by an accredited assessor<sup>19</sup> and must provide the BER Certificate to the prospective buyer/tenant. The rating gives an objective scale of comparison for energy demand and performance of a building and is similar to the energy rating scale for household appliances. Ratings range from “A1 (most energy efficient) to “G” (least energy efficient).

The BER Certificate will be valid for ten years and be accompanied by an advisory report setting out options on how the energy performance of a particular building could be improved in the future. However, there will be no legal obligation on vendors or prospective purchasers to carry out the recommended improvements.

***Ireland is implementing the core aspects of this Directive in phases***

The EPBD was transposed into national legislation on the 4 January 2006 in Ireland, in compliance with the EU Directive; however, provision is made to allow for a longer time period – up to 4 January 2009 – for full implementation of more the complex requirements relating to energy certificates, promoting improved energy efficiency of boilers and inspection of air conditioning systems.

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<sup>19</sup> All assessors are required to use the Dwellings Energy Assessment Procedure (DEAP) for assessing the energy performance of new buildings, for the purpose of demonstrating compliance with Part L (Conservation of Fuel and Energy) of the national Building Regulations. This procedure is also recognised by Technical Guidance Document L (May 2006) published by the Department of the Environment, Heritage and Local Government.

***BER certification for new domestic dwellings was rolled out from January 2007 and this will be extended to existing dwellings from 2009***

The new system of BER, commenced with new dwellings for which planning permission was applied for on or after 1 January 2007.<sup>20</sup> Energy ratings will be introduced for new non-domestic buildings for which planning permission is applied for on or after 1 July 2008<sup>21</sup> and finally for all existing buildings (dwellings and other buildings), when being let or sold from 1 January 2009.

***The requirement for a feasibility assessment of alternative energy systems for large new buildings over 1,000m<sup>2</sup> before construction starts came into force on 1 January 2007***

Another aspect of the Directive became effective from 1 January 2007 – the requirement that anyone commissioning the construction of a large new building (total useful floor area over 1,000m<sup>2</sup>) must consider the technical, environmental and economic feasibility of installing alternative energy systems<sup>22</sup> before construction starts (i.e. at the design stage).

***Regular inspection and assessment of certain air-conditioning systems will become mandatory from 1 January 2008***

In line with the requirements of article 9 of the EPBD, from January 1 2008, the owner of an air conditioning system with an effective rated output of more than 12

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<sup>20</sup> Transitional BER exemptions will apply to new dwellings for which planning permission is applied for on or before 31 December 2006, where the new dwellings involved are substantially completed on or before 30 June 2006.

<sup>21</sup> Transitional BER exemptions will apply to new non-domestic buildings for which planning permission is applied for on or before 30 June 2008 provided the new non-domestic buildings involved are substantially completed by 30 June 2010.

<sup>22</sup> For example, CHP, district or block heating, heat, heat pumps).

kW (this will be almost exclusively relevant to non-residential buildings only) will be required to have the system inspected by a trained inspector in order to ensure energy efficient usage by the system. Accompanying advice on possible improvements or alternatives will also be mandatory. This mandatory requirement will be almost exclusively relevant to non-residential buildings only).

It has been estimated that this action will affect an estimated 30,000 air conditioning systems on 14,000 different sites in Ireland that consume nearly 20,000 MWh of electricity per annum.

#### ***Energy efficiency scheme for boiler/heating systems***

In compliance with article 8 of the EPBD – improvement of energy efficiency of larger boiler systems with effective rated output of more than 20kW – SEI will launch an awareness campaign in 2008 to encourage householders and other building owners to maximise the energy efficiency of their boilers through regular servicing and where necessary replacement.

#### ***Energy rating certificates will allow individuals to compare and benchmark the energy efficiency of buildings, and estimated annual running costs***

The energy auditing aspect of the Directive means that for the first time it will allow prospective buyers or tenants to factor energy performance and costs into their comparison of different properties and into their ultimate property decision. Furthermore, it is destined to convert a building's energy performance into a factor that significantly affects its value.

With buyers and prospective tenants better informed on the running costs of a building, builders and landlords will have a greater incentive to incorporate energy-efficient technologies and designs into their buildings. The energy rating should encourage builders and developers to build more energy efficient new dwellings in order to merit an "A" or "B" rating, which

will improve the marketability of new dwellings offered for sale or letting.

#### ***A number of factors will drive house owners to upgrade the energy and thermal performance of their homes***

There is no mandatory requirement for owners of houses built to pre-1991 building energy conservation regulations to comply with the current mandatory regulations. Nevertheless, it is reasonable to anticipate that most of those who own houses that were built prior to the 1991 building regulations will seek to significantly improve the energy conservation and thermal performance of their houses over the next few years. Factors driving this expected trend are:

- Building energy rating certification – a high grade of energy rating will result in lower bills for householders;
- Reducing their dependence on imported fossil fuels, which are expected to continually rise in prices; and
- Good citizens may wish to reduce their own 'carbon footprint'.

#### ***By far, the most significant driver will be building energy rating certification***

Building energy rating certification is expected to be by far the most significant driver of improvements in the pre-1991 building regulations housing stock. It is anticipated that owners of buildings built before that year are likely to upgrade the energy efficiency and thermal performance of their properties to a high rating (i.e. an "A" or "B" rating) as the market price or rental of a property is likely to be reflected by the energy rating grade that the owner has secured for the property.

#### ***Around 60% of the occupied housing stock in 2006 remains of the pre-1991 building regulations era***

Despite the fact that Ireland has one of the youngest housing stocks in Europe, a significant proportion of the current stock was built prior to the introduction of



























































































































































































