



Engineering Construction
Industry Training Board
Blue Court
Church Lane
Kings Langley
Hertfordshire
WD4 8JP

Main Switchboard:
01923 260000

Fax:
01923 270969

E-mail:
ECITB@ecitb.org.uk

2008 Skills Demand, Supply and Gaps:

Executive Summary

ECITB

August 2008

Contents

EXECUTIVE

SUMMARY..... 3
..... 3

1: SKILLS DEMAND ASSESSMENT 4

- Footprint 4
- Drivers of Skill Demand 4
- Skills Demand Online Survey 6
- Skills Needs 7

2: SKILLS SUPPLY ASSESSMENT 8

- of Funding for Training 8
- by Qualification Type 8
- and Type of Training Required 9

3: SKILLS GAPS ANALYSIS..... 10

- Term Priorities 10
- Term Priorities 10
- Term Priorities 11
- Action Plan 11

Executive Summary

Overview

The Government has initiated a fundamental review of National Occupational Standards (NOS) and Vocational Qualifications (VQs) and this is known as the Vocational Qualifications Reform Programme (VQRP). It is an extremely important and in-depth piece of work for the ECITB and the engineering construction industry, and is designed to ensure that qualifications meet specific employer needs. The project is of critical importance to the industry as all future central funding of ECITB qualifications and apprenticeships will be dependent upon its satisfactory completion.

The labour market study into skills demand, supply and gaps to support this process was carried out earlier this year. The external consultants enlisted to conduct this research were the Institute for Employment Studies (IES). This summary contains extracts from the three full labour market intelligence (LMI) reports.

Since the ECITB is responsible for some sector specific qualifications and their underlying NOS, it is required to produce a Qualification Strategy (QS). The LMI findings will feed directly into this development to ensure that the QS outcomes are clearly based upon robust, credible data supplied by ECI employers.

The QS is intended to ensure that the qualifications offered by the UK education and training system are appropriate to the needs of employers and that employers are involved in the development of new qualifications. It aims to focus on:

- skill shortages: when there are insufficient numbers of people available in the labour pool that have the specific skills in demand
- skills gaps: when a worker does not have all the skills necessary to do the job effectively and, although historically skills gaps are rare in the industry due to the high quality training that is considered the norm, skills gaps are increasing¹ due to changes in health and safety procedures, legislation, technology, training capacity and working practices.

The clearly defined scope of the ECITB is determined by a Statutory Instrument does not map on to standard industrial and occupational classifications. ECITB is unable draw upon standard statistical data sources similar to those used to produce Sector Skill Agreement (SSA) reports by Sector Skill Councils (SSC), such as the Labour Force Survey (LFS). Instead, a range of administrative data sources and other materials are used to meet the UK Commission of Employment and Skills (UKCES) requirements to deliver the labour market information reports.

Combined, these three reports will be used by national governments and (within England) by the Regional Development Agencies (RDAs) to help facilitate their understanding about how ECITB's activities fit with their regional development plans and whether they able to provide additional support to develop ECI training provision.

¹ BERR, Energy White Paper, 2008

Stage 1: Skills Demand Assessment

Occupational Footprint

The relationship between Standard Occupational Classification (SOC) codes and the occupational groupings used by the ECITB as part of the statutory returns (S1M) exercise suggests that only a minority of each of these groups represent ECI in national data sources since other sectors, which may cover those employed in these occupations, are also included. Using LFS data as an example indicates that there may be greater recruitment difficulties for the following ECI occupational groups:

- *platers, insulators and sheet metal workers*: where the ECI appears to represent 13.4% of the national working population
- *pipefitters*: where the ECI appears to account for 20.0% of the national total pipefitters
- *erectors and asbestos removers*: where the ECI appears to account for 9.6% of those recorded in Great Britain.

The relative supply of these occupations outside of the ECI scope will impact the ease at which replacements may be recruited and the demand for training in each area.

Key Drivers of Skill Demand

Cyclical Demand

The cyclical nature of the pattern of demand for skills in response to the activity levels are highly sensitive to capital plant investment levels and influenced by business cycles.

Revival of New Build

Downturn in ECI activity has historically seen a growth in the proportion of activity attributed to maintenance rather than new build. A feature of these contracts is that they are completed by smaller contractors and this trend has accelerated the inclination towards a more fragmented industry with a multitude of sub-contractors. In 2007, the revival of the ECI has a greater emphasis on the growth in demand and this is driven by new build.

Contract Driven

The ECI is contract driven and places particular pressures on training decisions, adding a premium to contract and project management skills. A number of interviews and survey comments suggest that there are growing offsite skills gaps, such as project management and estimating.

Labour Only Sub-Contracting

The high upswing in ECI activity, where the percentage of all headcount accounted for is labour only staff, may have a perverse impact on the demand for training by inscope companies because training is usually offered more to permanent employees rather than labour only staff. Providers of labour only contractors are likely to try and poach, via higher payments, existing trained staff from competing ECI companies. This means using labour only contractors is a useful short term response to skills shortages in the long term, but is ultimately ineffective.

Revival in Offsite Occupations

The growth of new build requires greater offsite design work and increased offsite preparation of modules. This is an important consideration for the ECITB because the levy payment calculated that covers offsite employment is much smaller compared with the levy payment determined using onsite

employees. If this trend continues, it suggests that the ECITB will require additional non-levy derived income to pay for future training. The offsite occupational trends apparent from the statutory returns between 1996 and 2007 indicate that:

- *managers*: increased by 16.8%
- *professional engineers*: represent the largest single occupational group, with the proportion increasing from 30.0% in 1996 to 32.8% in 2007
- *incorporated engineers*: increased by 27.1%
- *administrators and clerks*: within the ECI, this period experienced an increase in repair contracts that tend to be smaller and the extra administrative burden created by a greater number of contracts may explain the rise of this group.
- *supervisors*: this group has not expanded in line with the numbers of those that they supervise
- *craft and other staff*: has the largest increase in absolute and relative numbers.

Onsite Occupational Change

By comparing the occupational profile from the statutory returns for 1996 and 2007, the pattern of onsite occupational change over this period can be examined:

- *non destructive testers*: has experienced the greatest growth, reflecting a greater emphasis on safety critical construction and meeting these safety standards, and is likely to continue to grow in importance.
- *electricians*: have doubled to 128.3%
- *mechanical technicians*: there has been a relative increase in the skills levels with technicians replacing unskilled staff.
- *managers and supervisors*: increased by 89.9% and by 83.0%, respectively, and growth of both of these groups reflects a greater fragmentation of the industry into sub-sub-contractors.
- *electrical and instrument technicians*: increased by 81.6 and 81.4%, respectively, and is driven by the increase in monitoring and control systems as part of ECI contracts.
- *mechanical fitters*: has increased by 71.4% and can be explained by the growth in repair work over new build.
- *platers*: increased by 49.8% and suggests that, although there has been an increase in platers, their relative importance within the ECI workforce has slightly declined, which may be explained as a result of the decrease in new build, such as the offshore new build area.
- *professional engineers*: increased by 15.7%
- *welders and pipefitters*: both this groups have declined in absolute terms, by 2.9% and 12%, respectively, and reflects an overall reduction in new build. However, with the revival of new build, this may represent a capacity problem.

Developments within Engineering Construction

The range of factors influencing the number and type of the ECI new builds are:

- *changes to the UK offshore sector*: repair contracts are numerous and tend to be smaller than new build projects
- *liquefied gas terminals and gas storage*: some major facilities are reaching completion
- *nuclear power new build*: any decision to build another generation of nuclear reactors will clearly have a significant impact on activity and the corresponding training provision
- *nuclear decommissioning*: this is the responsibility of the Nuclear Decommissioning Authority (NDA), which will publish its Skills Strategy in early 2008. The ECITB does not appear to be part of the NDA's National Stakeholder Group and the ECITB should liaise with the Nuclear Skills Academy over the content of VQs in decommissioning.
- *renewables*: the companies engaged, and the skills required, are likely to come from those employed by ECI companies and this will pull labour and skills away from the ECI.
- *co-generation*: if not all the co-generation projects are within scope, they will pull skilled labour away from normal inscope activities.

- *carbon sequestration and desulphurisation*: if the UK's current climate change obligations are to be met, then there is an implication of earlier retirement and replacement of some existing generating plant or the retrofitting of carbon sequestration technology to existing plant.
- *export growth*: as the structure of the industry increasingly fragments, there may be less capacity to move into these new markets.

Replacement, Expansion and Occupational Demand

- *replacement demand*: includes the demand caused by skilled workers leaving the industry, either as a result of retirement or due to them taking up work in an alternative sector. Given that the ECI workforce is aging, the demand generated through retirement will increase.
- *sector churn*: the evidence suggests that highly skilled workers are more attached to their skill and associated cards, rather than their employer, and will shop around for the best employment offer. The training offered becomes complicated as it may take longer to complete a NVQ when compared with the length of employment and site contracts. It is also difficult to distinguish between individuals leaving the industry or moving between employers or types of employment contracts. The high level of churn amongst some occupations means, in practice, that the ECITB is training a wider sector than the core ECI. Without a reliable measure of churn, the ECITB cannot know the extent to which those it trains are also working on out-of-scope activities during their career.
- *expansion demand*: the central business planning model used by the ECITB expects on average a five per cent per annum increase in activity and staffing levels.
- *occupational demand*: new build growth will increase the demand for pipefitters, welders, and erectors, which are particularly specific to the ECI, and smaller numbers of Non Destructive Testers to meet safety critical requirements as there are fewer NDT personnel outside of the ECI area.
- *consequent demand for qualifications*: there is demand with particular focus on the offsite industry for higher level project control, project management skills, Level 3 cost estimation qualifications to support Quantity Surveyors and specific support for three dimensional pipework design skills.

Current Skills Demand Online Survey

The response rate to the online survey of inscope companies represents a minimum 25% of the ECI workforce (including the average employment of those companies that wished to remain anonymous).

- *hard to fill vacancies*: 62.6% reported difficulties recruiting professional engineers, scientists or technologists; 62.5% reported difficulties recruiting managers and 52.1% reported difficulties recruiting supervisors. Over ten per cent of the respondents have major recruiting problems with welders (coded and otherwise); pipefitters; instrument technicians; and electrical technicians.
- *full competence*: over a half of the respondents felt professional engineers, scientists or technicians, were fully competent. Although not one of the respondents felt that there were major competency problems overall, the most problematic group, with 16.7% of respondents reporting major problems, were supervisors.
- *causes of lack of skills*: there are diverse views about whether a lack of training drives a lack of skills, with 18.8% seeing this as not a problem, whilst another 16.7% see this as a major problem. Interesting, the inverse of recruitment, high staff turnover, is not generally seen as a concern since 37.5% reported this as not a problem.
- *importance of skills areas*: the greatest importance is attached to health and safety training, followed by apprenticeship and new entrant training, and this is consistent with much other evidence.

- *ease of finding training solutions*: skills shortages are not much of a problem as it is easier to find training to address the skills deficiency. However, a skills deficiency becomes more important when it is difficult to find training that addresses the specifics of that deficiency. Multi-skill training is the most difficult to obtain, although little importance was attached to this type of training. In contrast, the problem is apprenticeship training where 8.3% felt this was a major concern and the previous question indicated that a high level of importance was attached to this training scheme.
- *foreseen activity levels*: overall, where respondents had previously worked in that area, the balance of expectations was positive and in almost every case more respondents predicted industry growth rather than contraction. This indicates a generally buoyant future for the ECI, with greater recruitment and training required to meet employer increasing needs.

Future Skills Needs

Anticipated Changes to Skills Demand

- *nuclear power plant construction*: the main issue is the location, which is likely to be in regions with less populated head offices than those that are engaged in mainly ECI activities. There is a case for the ECITB to lobby BERR and ensure that a condition when permitting nuclear new build is to include associated training commitments so that some of the additional skills demand generated is met by the asset owners.
- *nuclear decommissioning*: currently this is the responsibility of the Nuclear Decommissioning Authority (NDA) in partnership with Cogent and the Nuclear Skills Academy. The ECITB needs to establish the extent to which their input will be required.
- *multi-skilling*: for a variety reasons, ECI contractors are often on site longer than intended or longer than necessary, which leads to the training of multi-skilled craft and trade workers that are able to undertake tasks, which may fall outside of their core skill area.
- *higher level skills*: increasingly, the basic level of training required by the industry is moving from Level 2 to Level 3 and there is a growth in demand for Level 4 and Level 5 vocational skills.
- *overlap between ECI skills and the wider sector*: much of the doubt about future training requirements are driven by uncertainties over the extent of intra industry churn. With skills that are transferable, and since ECI companies often operate in other parallel areas, there is some pressure for qualifications to be applicable outside of the ECI area as well as within it.
- *overseas recruitment*: skilled labour from Europe generally has high levels of vocational training, but there is some evidence that it is becoming increasingly difficult to recruit from overseas and especially as domestic capital investment intensifies in Eastern Europe.
- *impact from Train to Gain developments*: the availability is expected to broaden to include those with Level 2 vocational qualifications and potentially those without similar Level 3 qualifications, and the ECITB needs to develop contingency plans for this eventuality.
- *other responses to shortages*: an innovative example is to recruitment and train ex-army personnel.
- *size of the skills gap*: the level of skills required by the ECI means that the bulk of this shortfall will have to be filled by those qualified to Level 3.

Stage 2: Skills Supply Assessment

Provider of Funding for Training

The ECITB is responsible for a range of training provision:

- *training grants*: these either directly support in-scope companies' in-house training schemes or provide funds to use ECITB approved training providers
- *apprenticeships*: more than 50% growth in the numbers of welding apprenticeships, which matches new build demand; a 460% increase from 15 to 84 in design and draughting, and an increase of Non Destructive Testing apprenticeships, from 0 reported in 2005 to 16 in 2007, and the demand is expected to grow
- *safety passport*: there are about 150,000 valid safety passports, but the data suggests that only around one third of holders renew their safety passport
- *Assuring Competence in Engineering Construction (ACE)*: completions increased from 77 in 2004 to 2,146 in 2007, a rise of 96% during this period
- *TECSkills*: the bulk of these qualifications are Level 3 qualifications, which is consistent with the ACE scheme and the requirements for relatively high levels of competence in the ECI
- *technical supervisory and management*: these include SMTD, degree level training, strategic project management; ECITB ACTIVE Cup; project management master classes; technical courses; management courses; one day training events; and courses covering interpersonal skills

Demand by Qualification Type

- *apprenticeships*: online survey returns and employer interviews acknowledge that the best long term solution is a greater number of apprenticeships, aimed both at the youth and adult populations
- *vocational qualifications*: these are generally well received and they are considered to be clearly focused on the requirements of the ECI.
- *new qualifications and NOS*: ECITB already has Level 3 and Level 4 qualifications in project control and is currently piloting a Level 2 qualification in the area of project control support. There may be a requirement for a higher (Level 5) qualification in project control and a qualification in estimating at Level 3.
- *supervisory, design, estimating and management training*: the online survey returns and employer interviews identify shortages and problems with qualifications at the supervisory, design, estimating and management levels.
- *graduates*: the mix of provision appears slightly add-hoc and developed in response to specific company requirements, rather than the requirements of broad sub-sectors, and it is recommended to pursue a more coherent offer.
- *developing links to professional bodies*: as the ECITB continues to move into the area of higher level engineering skills, further work will be required to encourage the process of obtaining Chartered Engineer status for those graduates who have the necessary pre-qualifications and develop discussions with the relevant bodies.

Level and Type of Training Required

- *apprenticeships*: the main obstacle is the number of available industry placements with employers.
- *offshore apprenticeships*: interviewees suggested that the ECITB explores with the offshore industry to have available a redundant rig alongside a wharf as an 'offshore' training facility.
- *Level 2 Work Based Learning (WBL)*: there is little demand because safety critical environments require Level 3
- *Level 3 training*: the ACE scheme qualifies craft workers to Level 3 and apprenticeships should aim at the Level 3 Advanced Modern Apprentice (AMA)
- *Level 4 and 5 training*: required mainly by the offsite industry
- *union involvement*: direct influence is obtained through their ECITB Board representation.

Stage 3: Skills Gaps Analysis

Mainly due to an expansion of new build (and especially nuclear new build), the ECI is projected to face a skills shortfall of 17,000 by 2014. This represents an approximate five per cent per annum increase in demand and is consistent with the rate of growth over the last two years. From a current ECI workforce of about 72,000, this represents a serious problem. The existing ECITB qualifications are seen as fit for purpose and the issue is ensuring that sufficient people are available with the required levels of competence.

Short Term Priorities

The short term priority is for action to be taken to ensure that the necessary funds and administrative systems are in place to enable the ECITB to respond to the pattern of growing skills demand:

- *financial*: such as the use of the reserves and increasing the levy contribution by raising the percentage of the onsite and offsite annual wage bills
- *alternative sources of funding*: including Train to Gain, the European Social Fund (ESF) from the European Commission and an ECITB adult apprentice scheme, which could fast track ex-service personnel into skilled positions and be potentially part funded by the MoD.
- *using planning controls*: such as lobbying the Department for Business Enterprise and Regulatory Reform (BERR) to make it a condition when obtaining planning permission for nuclear new builds that the lead contractor funds an appropriate number of apprenticeships.
- *capital grants*: providers, both commercial and college, can obtain capital grants for specialised training equipment.
- *administrative*: external bodies are likely to provide an additional source of funding and liaison may be eased with these organisations to support ECITB's training schemes if unified geographies are developed using GOR and, rather than to collect a separate and different data stream, data systems are integrated with the LSC's and other funding bodies' systems.

Medium Term Priorities

A wide range of medium term responses include:

- *using various skills pledges and charters to mutually re-inforce each other*: the range of overlapping pledges and charters covers employers' commitments to training and development, including ACE Skills Charter; the Skills Pledge, and Investors in People (IiP)
- *qualification development*: maintaining the relevance of NOS and qualifications; building the idea of craft Continuing Professional Development (CPD); developing skill updating and confirming tests; developing links with professional bodies; and developing a fast track adult apprentice scheme
- *developing provision*: regional training champions for each of the available ECITB qualifications and developing links with universities.
- *expanding current skill delivery routes*: since the expanded apprenticeship scheme cannot deliver the skills over the timescales in which demand is expected to grow, the need arises for new skills development schemes.
- *developing new skill delivery routes*: either further funding must be identified or employers will have to take responsibility for additional training and this commitment could involve locally training a number of apprentices with the requirement of skills determined as a percentage of the expected maximum number of craft workers onsite.

- *responding to the low carbon agenda:*
 - renewables, except biofuel powered generation plants, are out of scope and, since the technology and construction methods are similar to those covered by the ECITB, this is likely to draw skilled labour from the ECI labour pool;
 - the new nuclear plant sites earmarked are all in areas with low representation of ECI head offices and low nuclear activity, which indicates that there may be a localised shortage of skills in these regions;
 - the Nuclear Decommissioning Authority (NDA) is tasked with decommissioning the UK's nuclear legacy and urgent discussions with the NDA appear necessary;
 - earlier thermal power plant retirement and replacement of those generating plants that are less efficient or more polluting, which would lead to an increase in dismantling contracts and an increase in new build as replacement capacity comes on line; and
 - discussions about co-generation with the appropriate trade body, the Combined Heat and Power Association (CHPA), will help define the scale of the potential drain on the ECI pool and the potential increase inscope activity that is likely result.
- *developing accurate intelligence:* in conjunction with the ECIA and Cogent, monitor planning applications for new build of inscope types of plant and improve data collected as a by product of administrative data management to better understand the extent of replacement demand.

Longer Term Priorities

At this stage, it is difficult to fully articulate the longer term priorities, but these are likely involve:

- building on the safety passport system to improve intelligence about turnover and movements into and out of the ECI;
- developing an integrated Continuing Professional Development (CPD) and training record to encourage CPD within the ECI; and
- encouraging multi-skilling through the acquisition of additional skills and the broadening the individual's skills to develop a single training record, including any associated cards, that would facilitate CPD with the ECITB paperless portfolio, and provide evidence that the skills were up to date, which in turn allows better monitoring of the rate of transfer in and out of the industry.

Provisional Action Plan

The ECI recognises that a skills gap is developing, driven by new build and especially by nuclear new build. It is also recognised that the ECITB, as currently funded, will not be able to satisfy all the training requirements implied by this skills gap. There is also great reluctance to see the levy increase or its scope increase. The first priorities for the ECITB must be to obtain extra funding from the government or other sources. It is also clear that these additional sources of funding are unlikely to fully meet the extent of the projected demand in ECI labour. As a priority, the ECITB should be exploring all other potential sources of funding or support to facilitate training provision that offers a highly skilled and qualified workforce within the engineering construction industry.

*

Engineering Construction Industry Training Board

Blue Court

Church Lane

Kings Langley

Herts

WD4 8JP

Tel: 01923 260000

Fax: 01923 270969

www.ecitb.org.uk

August 2008