



Energy Training for Building Construction Workers for Low Energy Buildings

BUILD Up Skills QualiBuild



Report Title: Roadmap Implementation and National Roll-Out: Other Roadmap Training Actions

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Executive Summary

The QualiBuild project is part of the EU's Build Up Skills programme which is aimed at upskilling the construction workforce across Europe, particularly with regard to energy efficiency in building construction. The Build Up Skills Ireland (BUSI) project which preceded the QualiBuild Project identified the need for enhancing the knowledge of construction workers in Ireland and of those who train them. It also identified the need to develop a mechanism or register, through which those with the required knowledge and skills could be identified and acknowledged by others in the construction sector, or those who would require their services.

The QualiBuild project which was a response to the BUSI review, was, therefore, primarily focused on three key areas.

1. First, the design and piloting of a training programme – Foundation Energy Skills (FES) - for construction workers to upskill their knowledge in energy efficiency and associated construction techniques.
2. Second, the development of a course to train-the-trainer and upskill those charged with delivering the FES programme.
3. Finally, the development and piloting of a skills register for construction workers.

While these were the three key elements of the project, however, another important element of the project was to examine how the programmes developed and piloted during the project would be rolled out at a national level. A summary of the approach to this roll-out and of the responses received is set out below.

The successful rollout of the training programmes requires a number of key things –

- 1) An organisation willing and able to take on the responsibility and coordination function for the roll-out
- 2) Finance to pay for the programme delivery
- 3) Organisations willing to deliver the training courses

- 4) The development of a mechanism, such as the Construction Worker Skills Register, which would make it worth the while of construction workers participating in the courses and
- 5) The continuous promotion and highlighting of the programme and the register and of their importance.

An investigation was also carried out of other training programmes which are currently available for Construction Staff and Workers and how participation in them might build on the knowledge gained from the FES course. This report details the outcome of that investigation.

In summary, the investigation found that there is a wide range of courses available that would suitably build on the FES introductory course. In the main, new courses would not need to be developed to provide for progression from the FES course but issues around course availability, training locations and course costs would need to be addressed. In the long-term it would be hoped that SOLAS would oversee the National Roll-Out of Specialist Courses such as those that are already developed and identified in this report.

A desktop study was conducted to compare the learning outcomes of the apprentice curricula of the five core construction trades with the learning outcomes from the FES course. This review suggests that there is no clear and obvious alignment between the curricula and the topics detailed in the FES Learner's Handbook. However, SOLAS on page 85 of their document Further Education and Training Strategy 2014-2019 acknowledged that "...the curriculum for trades should be examined and updated as a matter of urgency" which suggests that future curricula would contain learning outcomes more closely aligned with those in the FES programme. It is acknowledged that this is a complex matter but, given the greater strategic importance being assigned to apprenticeships it is important that the inclusion of content regarding such a strategic area is given serious consideration.

REPORT 6.2

OTHER ROADMAP TRAINING ACTIONS

Report 6.2 Other Roadmap Training Actions

1.1 Introduction

Although QualiBuild concerned itself primarily with developing and producing learning materials for the FES and Train the Trainer courses the need for additional training at levels above the basic FES course was acknowledged in the BUSI Roadmap, as was the need for apprentice curricula to reflect the current Building Regulations and Standards in the area of low energy buildings. No training materials were developed for these levels but an investigation was carried out to ascertain if there were courses available of the kind that would provide a logical progression for those who had completed the basic foundation energy course.

The learning outputs of the current apprentice curricula were scrutinized to see how they aligned with the learning outcomes from the FES course.

The BUSI Roadmap referred to FES and Train the Trainer as Training Actions T1 and T6. This review now looks at Training Actions T2-T5.

1.2 T.2 Review apprentice curricula for construction crafts to incorporate knowledge and new skills related to low energy buildings.

1.2.1 Background

Apprenticeship is the recognised means by which people are trained to become craftspeople in Ireland. In recent years the potential role and scope of apprenticeships has been seen as being much wider so that the apprenticeship route to qualification is regularly enhanced. Since the apprenticeship approach is so important to the knowledge and skills of the construction sector, it is important that the syllabuses for such courses include a focus on energy efficiency in buildings. This is important in order that the knowledge gap identified in the BUSI project does not re-emerge. A review such as that proposed in the BUSI Roadmap would ensure that future workers have the core knowledge in relation to low-energy buildings and also would address the current gaps in relation to knowledge and training within the relevant curricula. An investigation was undertaken as part of the Build Up Skills Ireland (BUSI)

project and published in the Analysis of The National Status Quo Report¹. Appendix A2 of that report sets out the investigation findings in relation to Carpentry and Joinery, Brick and Stone-Laying, Plumbing, Plastering and Electrical curricula. The review noted that there were substantial omissions/gaps such as lack of references to air tightness, thermal bridging, external insulation, insulation continuity, acceptable construction details etc.

A number of these curricula were again examined in the context of the QualiBuild project and similar gaps were still noted as being present. It is acknowledged that this is a complex matter but, given the greater strategic importance being assigned to apprenticeships it is important that the inclusion of content regarding such a strategic area is given serious consideration.

1.2.2 The Role of SOLAS

SOLAS (An tSeirbhis Oideachais Leanunaigh agus Scileanna) was formally established on 27th October 2013 by the Minister for Education and Skills, Ruairi Quinn T.D. SOLAS is responsible for funding, planning and co-ordinating the wide range of training and further education programmes in Ireland. SOLAS is a statutory agency and operates under the aegis of the Department of Education and Skills. SOLAS is responsible, in partnership with the 16 Education and Training Boards for the integration, co-ordination and funding of the wide range of training and further education programmes around the country. The main craft trades have been designated by SOLAS and come within the scope of the Statutory Apprenticeship System, which is organized in Ireland by SOLAS in co-operation with the Department of Education and Skills, employers and unions. SOLAS is, therefore, the key agency which can influence the nature of the skills and knowledge developed during apprenticeship training.

1.2.3 Training Action

SOLAS were represented on the QualiBuild Project Steering Committee and attended the scheduled Project Steering Committee meetings. They were appraised of the project status and their input was sought at these meetings and in reviewing documents generated as part

¹BUILD UP Skills - IRELAND
Energy Training for Builders
AUGUST 2012
IEE/11/BWI/460/S12-604350
ANALYSIS OF THE
NATIONAL STATUS QUO

of the project work package deliverables. In addition, meetings were held at SOLAS' premises between their Development Officers and QualiBuild Project Team members to ascertain what the status was of curricula reviews. It was stated that the new Plumbing, Electrical and Carpentry Apprentice Curricula would be rolled-out this April 25th (2016). The Project Team delegation was also advised that the new curricula for Bricklaying and Plastering were currently in draft form.

The new curricula are/will be a revision of the original SOLAS standards-based programme. In 2012, the National Apprenticeship Advisory Committee (NAAC) initiated a major review of the apprenticeship programme and respective curricula. The aim of this review was to ensure that apprenticeship programmes remained up-to-date, relevant and met the emerging needs of learners, the workplace and the economy.

Curricula for all apprenticeships are revised within the parameters of the NAAC reports, the National Framework of Qualifications and QQI requirements.

1.2.4 Conclusions

As already stated, the review was to examine and compare the Learning Outcomes from the revised and the existing curricula with the Learning Outcomes from FES. The review suggested that, in fact, there was little convergence between them. Although the Electrical and Plumbing Curricula were very strong on renewable technologies and the Carpentry and Joinery Curriculum does acknowledge sustainability; no specific references could be found to: - Air Tightness, Thermal Bridging, Insulation Continuity or Systems Thinking. Hopefully, the forthcoming revised curricula for Plastering and Brick and Stone Laying will address these omissions and future revisions of the other curricula will also address these topics. It is acknowledged that it is very difficult to find time for all relevant topics within a crowded curriculum. However, given the importance of energy efficiency and the reduction in the use of fossil fuels, learning elements which will facilitate future craft workers in building near-zero energy buildings are particularly important.

Whilst reviewing the curricula an attempt was made to identify the Modules which most lent themselves to being potential areas of study where Near Zero Energy Building knowledge could be introduced. For example, the Generic Components Modules of Plumbing and Electrical (under the topic of Communications) would seem the obvious place to introduce

concepts such as Systems Thinking (and by default the other FES learning outcomes). Also, the 1st Fixing Module of Carpentry and Joinery would seem the obvious place to reference Learning Outcomes from FES.

Appendix A of this report contains extracts from the curricula of the Learning Outcomes which could (at the discretion of the individual tutors) include FES learning outcomes. Whilst it is acknowledged that tutors have an already considerable amount of learning content to cover within very tight time constraints, an alternative pedagogical approach for the short-term such as the use of the QualiBuild Videos might be an expedient way of getting the Near Zero Energy message across to the apprentices whilst waiting for curricula to be updated with Near Zero Energy Building knowledge and techniques.

SOLAS in their Further Education and Training Strategy 2014-2019 state that one of their strategic goals is: Skills for the Economy. The aim of this goal is that FET will address current and future needs of learners, jobseekers, employers and employees and will contribute to national economic development. Ultimately it the responsibility of SOLAS to ensure that Apprentice Curricula are brought in line with the latest Building Regulations and Standards and therefore it is a matter of urgency for them to incorporate knowledge and new skills related to low energy buildings in these curricula.

1.3 T.3 Develop specialist training for each relevant craft (FES+).

1.3.1 Background/Introduction

While the FES course is proposed as the basic minimum education which should be undertaken by all building construction workers, it would be desirable that those workers would undertake additional training to build on the skills and knowledge developed through the FES course.

A review was carried out to ascertain if there were specialist courses available for craftspersons that would be at a level more advanced and would supplement the knowledge gained from FES. The crafts that were of most interest were: - Carpentry, Bricklaying, Plastering, Plumbing and Electrical. The review could have included other skilled construction

workers such as glazing/window fitters and groundworker/floor slab insulation installers but the intent was to keep the focus on the core building trades and not on semi-skilled labour. That is not to diminish in any way the importance of the roles that these individuals play on site and it is acknowledged that all involved in the construction of a building need to be working to the same standards.

1.3.2 Available Training

Normally it is the bricklayers, plasterers and carpenters who are tasked with insulation installation in the walls and roofs of traditional masonry and timber-frame houses. Specialist training in the area of thermal bridging and the correct installation of insulation would be beneficial to these trades and would be a natural follow on from knowledge gained in FES. A training programme such as METAC's Thermal Insulation Course² would be a natural progression from FES. Other specialist courses in the area of Air Tightness such as CDETB's Air Tightness and Measurement³ would also be a logical progression from FES.

Training in the area of ventilation and renewable heating systems for plumbers would allow them build on the skills learned during their apprenticeships and knowledge gained in FES. A course such as CDETB's Domestic Heat Pump Installation⁴ would be a natural progression and would supplement the apprenticeship training and build on FES. Another course which would also be a good fit for plumbers is METAC's Mechanical Ventilation Heat Recovery Installer⁵ course. A course such as CDETB's Domestic Solar Hot Water Systems would also build on knowledge gained during FES⁶. Another course which would be at a FES+ standard is CDETB's Domestic Biomass Heating Installation⁷

Specialist training in the areas of Photovoltaics and Smart Controls would be a natural progression for electricians to build on the fundamentals learned in FES. A course such as METAC's Micro Solar Photovoltaic Systems Implementation⁸ would build on the skills learned during apprenticeship training and knowledge learned from FES.

² <http://metac.ie/thermal-insulation-course/>

³ <http://www.qualifax.ie/index.php?Itemid=15>

⁴ <http://www.qualifax.ie/index.php?Itemid=15>

<http://metac.ie/heat-recovery-ventilation-systems/>⁵

⁶ <http://www.qualifax.ie/index.php?Itemid=15>

⁷

⁸ <http://metac.ie/micro-solar-photovoltaic-systems-implementation/>

One area where there appears to be a lack of provision is of courses for electricians in the area of smart lighting and energy management systems (though such training may be available from product manufacturers in the U.K. and overseas). Training courses in this specialist area might be developed and made available in the future for upskilling electricians.

1.3.3 Conclusions/Recommendations

It can be seen from the foregoing that there are a range of FES+ type training programmes that already exist. Programmes have been devised and learning materials developed and trainers are in place. At first glance, therefore, there seems to be adequate provision for those wishing to engage in such courses. However, these courses appear to be quite costly and only run in a few select locations. Also the scheduling of the courses might be problematic especially for the self-employed and those who cannot take time off because of workload.

CDETB did state that if there was sufficient demand for these courses in the future there was a possibility that they could be spread over longer durations (say one day a week which employers might be more amenable to) and even run at night (which would probably suit the self-employed subcontractors).

The main issues around these courses are availability, accessibility and cost. While subsidisation of course costs is available to employers through Skillnets, more would need to be done to promote them and have them delivered over a wider area. As the body responsible for training of this type, SOLAS might take the lead role in the future National Roll-Out of these FES+ type courses.

1.4 T.4 Develop a specialist training for arising technician roles (FES++).

1.4.1 Background/Introduction

The construction personnel who would be targeted by these courses are senior tradesmen and trades foremen/supervisors. These individuals would be highly skilled and experienced tradespeople. They would be responsible for the less experienced tradesmen and apprentices on site. They would be expected to delegate tasks to their team and to demonstrate correct work procedures. Setting out of works would also be one of their responsibilities. Normally the more menial and repetitive tasks would be carried out by the less experienced tradesmen and apprentices and the more complex tasks involving testing/commissioning and quality

control would be carried out by this cohort. These supervising tradespeople would often be their company's representatives on site and would be the main interface between the Construction/Site Management staff and the other subcontractors. As a result they would be expected to have good all-round communication skills, with some IT skills and be technically well versed in the materials or plant they were installing. They would also be expected to sometimes communicate with end users and members of the design team. There would be an expectation that they possess Project Management Skills such as understanding task interdependencies, task durations and scheduling of events such as milestones.

1.4.2 Available Training

The Passive House Envelope and Services Specialist Course⁹ run by METAC would seem like a logical step-up from the FES+ type courses. Another course which would supplement and complement FES+ knowledge is CDETB's Certificate in Sustainable Construction¹⁰. CDETB's Diploma in Sustainable Construction¹¹ would seem like a natural fit to build-on either of these courses and would be to the FES++ level envisaged by the BUSI Roadmap. METAC's Micro-Generator Electrical Installations¹² course would also provide knowledge to FES++ standard. Another course that would be a good fit for these personnel would be DIT's CPD Certificate in Information Technology for Site Workers¹³.

1.4.3 Conclusion

It is apparent that there are a number of training programmes to FES++ level already developed. Like their counterparts at FES+ level: issues of cost, the limited number of available venues and scheduling of courses to suit employers and would-be trainees will need to be looked at if they are to become part of a future National Roll-Out. The recommendation would be that SOLAS take the lead role in the roll-out of these courses.

CDETB expressed that they could take a flexible approach to the scheduling of training days if there was a sudden surge in demand in the future.

Subsidization of course costs is available to employers through Skillnets.

⁹ <http://metac.ie/passive-house-envelope-services-specialist/>

¹⁰ <http://www.qualifax.ie/index.php?Itemid=15>

¹¹ <http://www.qualifax.ie/index.php?Itemid=15>

¹² <http://metac.ie/micro-generator-electrical-installations/>

¹³ <http://www.dit.ie/architecture/programmes/cpd/cpdcertificateinitskillsforsiteworkers/>

1.5 T.5 Review, update and develop if needed new programmes for construction managers and site supervisors (FES+++).

1.5.1 Background

The cohort being considered in this part of the report are Construction/Site Managers and Site Foremen. Most of these individuals would most probably be educated to degree level but a significant number could still come from trade backgrounds. Those with trade backgrounds would be highly skilled and would have been deemed to have the necessary project management skills to run sites based on their experience. Certain Project Management skills such as Communication Management would be seen as prerequisite for these roles. These individuals would be expected to communicate with clients, the design team, representatives of the local authority, utilities, the general public and also delegate tasks to their own staff (e.g. site engineers, foremen etc.) and trades supervisors. These managers would be required to monitor and ensure that projects were delivered on time, within budget and to the specified quality. Research would suggest that the area of Health and Safety appears to be well covered with a willingness on behalf of the employers to ensure that their staff are kept appraised and trained up on the latest legislation. Then again, it helps to have legislation drive training needs. Undoubtedly, knowledge of the latest Building Regulations and Standards as well as knowledge of new and evolving energy efficient technologies would be hugely beneficial in assisting these managers carry out their roles and fulfil their responsibilities.

1.5.2 Available Training

A FES+++ type course is The Building Regulations Course¹⁴ offered by the C.I.F. The module which would best supplement the knowledge gained from FES++ training is the Ventilation and Conservation Module which deals with Parts F and L of the Building Regulations. Another FES+++ type course which would ideally suit site managers/foremen with trade backgrounds is the BSc in Construction Management (Online)¹⁵ delivered by I.T. Sligo in conjunction with

¹⁴ <http://cif.ie/training-and-development/building-regulations-training-courses/item/93-building-regulations.html>

¹⁵ <http://cif.ie/training-and-development/site-management/item/110-bsc-construction-management-online.html>

the C.I.F. The course module that would build on knowledge gained from FES++ is most probably Building Technology. There are a number of evening and online (Flexible Learning) courses run by 3rd Level Institutions which focus on the area of Energy Efficiency and are ideally suited for upskilling Construction/Site Managers. An example of such a course is L.I.T.'s Near Zero Energy Buildings¹⁶. Another course which would be a good fit is DIT's CPD Certificate in Information Technology for Site Workers

1.5.3 Conclusions

There are a number of FES+++ training courses available to Construction Managers who want to upskill in the area of Energy Efficiency. Course fees vary but reduced fees are available to CIRI members on training programmes organized by the CIF. Training programmes that are flexible learning and have online content overcome geographical constraints present with many of the other courses and are ideally suited for candidates who have ICT skills.

The learners who would be expected to undergo this type of training would have a greater capacity to engage with on-line learning than would others in the construction industry. This is because of the level of education which they are already likely to have attained, the likelihood that they have been participating in CPD activities for some time and the likelihood that they will not have been absent from learning for as long as some other learners within the sector.

1.6 An overall role for the Construction Skillnet

It will be noted that there is a wide variety of training programmes available at the post-FES level, developed and provided by a range of providers both public and private. This may present employers with difficulties in identifying the most appropriate programme for their workers.

A potential role for the Construction Skillnet could be to help address this issue. It could be asked to conduct a training needs analysis in geographically discreet areas, and then tender for and coordinate the training provision.

¹⁶ <http://www.lit.ie/FlexibleLearning/Courses/Pages/108.aspx>

The advantages of using the Construction Skillnet in this way are that:

- I. It would raise visibility of programmes with employers
- II. It would coordinate training by liaising with construction sector employers and would be able to cluster employers geographically to get the 'critical mass' necessary for programme viability
- III. Employers would get a 25% reduction in training costs, which can be passed onto employees

1.7 Overall Conclusion to this part of the Roadmap

This part of the roadmap is essentially focused on learning other than that contained within the FES and Train the Trainer courses and is particularly focused on the opportunities for progression for those who have completed the FES course.

From this review it is clear that there is a significant supply of relevant courses, including those at apprenticeship level, which would enable such progression for FES course graduates. These programmes have been developed and delivered so that it is not considered necessary to develop new courses. The weakness of the courses which do exist, however, tend to be –

- Their limited number of locations
- The frequency with which they are offered
- Their cost
- Their structure
- Their capacity to accommodate large numbers
- Their visibility to the relevant potential learners

All of these issues are capable of being overcome and a number of mechanisms have been suggested. However, it would require a focused and co-ordinated approach by a specific organisation to enable this to happen. Such an organisation should be large enough to accommodate the work which would be involved; should have the training of construction workers as part of its remit; and should have access to a delivery network which would allow an integrated strategy to be put into effect.

SOLAS presents itself as the organisation which meets all these criteria and it is suggested that that organisation be provided with the ring-fenced resources necessary to enable it to

implement the programme of teaching and learning which has been identified here as being necessary.

Appendix A - Excerpts from Apprentice Curricula

1.8 Learning Outputs from Apprentice Curricula with potential to align with Learning Outputs from FES Learner Manual

1.8.1 Learning Outcomes Carpentry and Joinery Curriculum Revision 4.1¹⁷ (2015)

1st Fixing and Site Works¹⁸

Evaluate the properties of materials and methods of installation used to provide audio and thermal insulation in the build environment to include natural and man-made materials

2nd Fixing¹⁹

Critique the principles of sustainable building and its effect on the role of the carpenter/joiner

Generic Components

Communications

Specifically:- Learning Outcome 2 i.e. Evaluate in practical terms the elements of legislation that must be observed in a personal and or work context, to include health, safety and welfare

¹⁷ <http://cacms.solas.ie/lcms-live/servlet/ContentViewer?curlID=7CD6205241531D73292D130500025674&courseID=7CD6205241531D73292D130400025675&srclD=0&mode=1&otId=1&themeID=solas&templateID=3c082b6240bc287f48c8847729ada619&objectTypeID=4>

¹⁸ <http://cacms.solas.ie/lcms-live/servlet/ContentViewer?curlID=7CD6205241531D73292D130500025674&courseID=7CD6205241531D73292D130400025675&srclD=0&mode=1&otId=1&themeID=solas&templateID=3c082b6240bc287f48c8847729ada619&objectTypeID=4>

¹⁹ <http://cacms.solas.ie/lcms-live/servlet/ContentViewer?curlID=7CD6205241531D73292D130500025674&courseID=7CD6205241531D73292D130400025675&srclD=0&mode=1&otId=1&themeID=solas&templateID=3c082b6240bc287f48c8847729ada619&objectTypeID=4>

at work and communications-related legislation, and the responsibilities that apply when working in a supervisory capacity²⁰

Competence

Specifically: - Take initiative to identify and address self-development and training needs in both an employment and structured training environment

1.8.2 Learning Outcomes Plumbing Revision 4.1²¹

Generic Components

Communications

Competence

Specifically: - Take initiative to identify and address self-development and training needs in both an employment and structured training environment

1.8.3 Learning Outcomes Electrical Revision 4.1²²

Generic Components

Communications

Competence

²⁰<http://cacms.solas.ie/lcms-live/servlet/ContentViewer?curlID=60E3205241531CD48B7F130500002EE5&courseID=60E3205241531CD48B80130400002EE6&srcId=0&mode=1&otId=1&themeID=solas&objectTypeID=4#>

²¹ <http://cacms.solas.ie/lcms-live/servlet/ContentViewer?curlID=908E205241531CF1B75013050000E130&courseID=EA2B205241531DB3CFD013040002CF49&srcId=0&mode=1&otId=1&themeID=solas&templateID=3c082b6240bc287f48c8847729ada619&objectTypeID=4>

²² <http://cacms.solas.ie/lcms-live/servlet/ContentViewer?curlID=60E3205241531CD48B7F130500002EE5&courseID=60E3205241531CD48B80130400002EE6&srcId=0&mode=1&otId=1&themeID=solas&objectTypeID=4>

Specifically: - Take initiative to identify and address self-development and training needs in both an employment and structured training environment

1.8.4 Learning Outcomes Plastering Curriculum Revision 2.1 (31-07-09)

The theoretical underpinning and related knowledge necessary for the effective exercise of their craft.

The ability to take responsibility for their continuing learning in order to keep up to date with new regulations, materials and techniques relevant to their craft.

Specialised knowledge of a broad range of areas and theoretical concepts relevant to their craft and the ability to apply knowledge, skills and competences to familiar and unfamiliar contexts they encounter.

1.8.5 Learning Outcomes Brick and Stone Laying Curriculum Revision 2.1 (16-09-13)

The theoretical underpinning and related knowledge necessary for the effective exercise of their craft

The ability to take responsibility for their continuing learning in order to keep up to date with new regulations, materials and techniques relevant to their craft.

Specialised knowledge of a broad range of areas and theoretical concepts relevant to their craft and the ability to apply knowledge, skills and competences to familiar and unfamiliar contexts they encounter

Appendix B - ETB Locations



Appendix C - Training Centre Contact Details

City of Dublin ETB Ballyfermot Training Centre	City of Dublin ETB Finglas Training Centre
PH: 01 6055900	PH:01 8140200
Fax:01 6055960	Fax:01 8346336
HQ:Ballyfermot Hill,Ballyfermot,Dublin 10	HQ:Poppintree Industrial Estate,Jamestown Road, Finglas Village, Dublin 11
<u>Dublin & Dún Laoghaire ETB Training Centre, Loughlinstown</u>	<u>Dublin & Dún Laoghaire ETB Training Centre, Tallaght</u>
PH:01 2043600	PH:01 4275400
Fax:01 2821168	Fax:01 4275401
HQ:Wyattville Road,Loughlinstown, Dun Laoghaire,Co. Dublin	HQ:Cookstown Road,Cookstown Industrial Estate, Tallaght, Dublin 24
<u>Dublin & Dún Laoghaire ETB Training Centre, Baldoyle</u>	<u>Athlone Training Centre</u>
PH:01 8167400	PH:090 6474481
Fax:01 8167401	Fax:090 6474795
HQ:Baldoyle Industrial Estate,Baldoyle, Dublin 13	HQ:Longford and Westmeath Athlone,Co. Westmeath
National Construction Training Facility	<u>Limerick Training Centre</u>
PH:01 5332552	PH:061 487900
HQ:Mount Lucas,Daingean,Co. Offaly	Fax:061 228820
	HQ:Limerick and Clare ETB,Raheen Business Park, Raheen,Limerick

Shannon Training Centre Regional Skills and Training Centre

PH:061 706100 PH:042 9355700
 Fax:061 472613 Fax:042 9355777
 HQ:Limerick and Clare ETB,Shannon Industrial Estate,
 Shannon,Co. Clare HQ:Louth and Meath ETB,Coes Road
 Industrial Estate,
 Dundalk,Co. Louth

Ionad Oilúna Ghaith Dobhair Letterkenny Training Centre

PH:074 9560500 PH:074 9120500
 Fax:074 9531114 Fax:074 9124840
 HQ:Bord Oideachais and Oilúna Dhún Na HQ:Ballyraine Industrial Estate,Ramelton
 Ngall, Road,
 Letterkenny,Co. Donegal
 Leitir Ceanainn,Co. Dhun na nGall

Sligo Training Centre Waterford Training Centre

PH:071 9159500 PH:051 301500
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Wexford Training Centre

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 North Industrial Estate, HQ:Rossa Avenue,Bishopstown,Cork
 Wexford

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Kerry				Business		Park,
				Mervue,Galway		

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