European Commission

European Construction Sector Observatory

Policy fact sheet

Ireland

Traditional Building Skills Training Scheme

Thematic Objective 2

June 2019

In a nutshell

Implementing body	Department of Arts, Heritage and the Gaeltacht (DAHG)1
Key features & objectives	Government grant funding scheme to support specific training in traditional building skills in order to sustain the repair and maintenance sector of the construction industry, and built heritage in particular. The scheme was implemented in three local authorities – Fingal, Galway and Kilkenny – to enhance the capacity of some repair projects to include a skills training element.
Implementation date	August 2014 – January 2015
Targeted beneficiaries	Building, heritage and conservation contractors and craftspersons, as well as heritage building owners.
Targeted sub-sectors	Built heritage, repair and maintenance.
Budget (EUR)	80,000 (funding available) 41,442.34 (funding granted)
Good practice	★★★☆☆
Transferability	★★★★☆

Ireland's historic built environment consist of a wide range of assets that include two World Heritage Sites, more than 20 Historic National Properties, about 38,000 Protected Structures and over 120,000 monuments that are protected under the National Monuments Act. Architectural Conservation Areas (ACAs), which cover a number of historic townscapes, and about 175,000 pre-1919 buildings are also important heritage assets[2].

The Heritage Council of Ireland commissioned a study in 2011 to assess the economic value of Ireland's historic built environment, showing it to be an important contributor to the national economy. The historic environment contributes approximately EUR 1.5 billion annually to Ireland's Gross Added Value (GVA), as well as supporting almost 25,000 direct full-time employment (FTE) positions and almost 40,000 indirect FTE positions. Overall contribution equates to about 1% of Ireland's GVA and 2% of Irish employment[3].

Traditional building and conservation skills are essential to the on-going maintenance and repair of Ireland's built heritage. However, sustaining these specialised skills requires an ongoing commitment, especially in the face of the challenges and constraints that the construction sector as a whole has had to deal with over recent years, following the financial crisis in 2008.

There are relatively few traditional building and conservation skills training and accreditation schemes available in Ireland. Construction employment models, training delivery models and financial constraints have affected demand for, and access to, training schemes. Changes to government training and accreditation authorities have also limited the roll out of new schemes.

There is a real need to provide traditional skills training in order to conserve Irish heritage assets, create sustainable jobs and contribute to economic regeneration.

The Traditional Building Skills Training Scheme (TBSTS) was launched by the Department of Arts, Heritage and the Gaeltacht (DAHG) in 2014 to help address the skills gap in the built heritage sector. The scheme followed a commitment by the DAHG to support education and training for traditional building skills in the Action Plans for Jobs 2013 and 2014. Its purpose was to enhance the capacity of certain repair projects to include a skills training element. The scheme was introduced in three local authorities in 2014 with the support of grant funding from the DAHG. It was run in tandem with the Built Heritage Jobs Leverage Scheme[4], which focused on leveraging private capital for investment in built heritage, traditional building and conservation skills, and job creation.

Four pilot projects were successfully implemented in three local authorities – Fingal (1), Galway (1) and Kilkenny (2) – and all participating trainees broadly welcomed the training provided.

Overall, the trainees found the content of the different courses to be highly beneficial to their occupations or, in the case of university students, to their studies.

As part of their training programmes, the pilot projects provided the trainees with a blend of theoretical and practical training and a wide range of real examples of conservation and restoration.

The pilots now serve as examples for future traditional buildings skills training schemes, providing elements that can be considered as best practice and a wide range of lessons learned. The key barrier to this type of training however, according to local authorities, is the limited funding available to support it.

1. General description

The Traditional Building Skills Training Scheme (TBSTS) was designed as a capital incentive scheme[5] that formed part of the Action Plan for Jobs 2014. It aimed to support specific training in traditional building skills in order to sustain the repair and maintenance sector of the construction industry, and built heritage in particular.

The scheme was devised with two main purposes in mind. **The first** was to develop and pilot training models to upskill accredited and unaccredited construction operatives and craftspersons in conservation skills (both hand skills and 'head' or judgement skills). Construction employment models, training delivery models and financial constraints are examples of the types of barriers that make upskilling training difficult for craftspersons to access, especially in the current economic climate.

The second main purpose followed on from the first: to create networks between actors and organisations which could instigate further training links and associations beyond the life of the pilot, using the local authority as the coordinator. Such networks will be especially important to prepare for Rural Development Programme projects that may have a training element, and to unlock the potential of Education and Training Boards (ETBs) to devise locally-demanded training programmes.

A total of EUR 80,000 in DAHG funding was made available to supplement a number of conservation projects on historic structures whilst providing appropriately designed and supervised on-the-job building skills training.

The training aimed to assist trainees on an accredited traditional craft skills course or graduates of such a course, or time-served apprentices, who have gained up to level 6 in the National Framework of Qualifications[6] (NFQ) or equivalent.

The scheme was focused on providing practical traditional skills training for people in further education or on the live employment register managed by the Central Statistics Office (CSO).

As a result, local authorities were required to report to DAHG on the number and type of training places created under the scheme and to evaluate the progress of trainees after its completion.

The main objectives[7] of the scheme were to:

- Enhance skillsets in built heritage conservation within and around four pilot local authority areas by making trainees or qualified construction workers more capable of carrying out conservation and restoration projects and therefore improve their prospects of employment;
- Provide meaningful on-site training for trainees as part of capital conservation works projects;
- Identify training opportunities, trainees and a suitable historic structure for repair;
- Use competent conservation professionals and contractors to design and carry out eligible conservation works in line with statutory permissions / consents;
- Focus skills training on stone, carpentry, metal, roofing, lime, stained glass and thatch;
- Use an appropriately qualified trainer to deliver training and ensure supervision of trainees on-site by a conservation professional and contractor;
- Submit a training plan to DAHG, setting deliverables that can be used to evaluate outcomes upon completion;
- Preferably provide an accredited NFQ or equivalent training programme;
- Document and evaluate the training project.

The qualifying works for the purposes of the training scheme are outlined in Table 1.

Table 1: Qualifying works under the training scheme

Roofs	Repair (or renewal) of roof structures, coverings and features;
Rainwater disposal	Repair or replacement of rainwater goods, including the provision of overflows and weirs to rainwater disposal systems;
External walls	Repairs to external walls, including surfaces, decorative elements, coverings, claddings, foundations, issues of damp, and embedded elements (e.g. panels, ironworks, fixtures);
External joinery	Repairs to external joinery, including windows, doors and associated elements;
Interiors	Repair and conservation of internal structure and features, including floors, walls, staircases, partitions, plasterwork, interior joinery, fittings and decorative elements;
Historic ruins	Works to stabilise or protect masonry or other elements at risk;
Architectural Conservation Areas (ACAs)	Works to structures that contribute to the character of an ACA;
Temporary works	Works to reduce the risk to a structure from collapse or partial collapse, weather damage, fire, vandalism and unauthorised access;
Other works	Local authorities can make a case for other non-listed works which they deem to be of exceptional importance;
Professional fees	Fees incurred for the portion of works funded, including surveys and method statements, training plans, on-site supervision and monitoring of works and training, and sign-off report on project.

Source: TBSTS Evaluation Report 2015[8]

The DAHG allocated EUR 20,000 for capital expenditure per local authority or applicant on one or more conservation works projects during 2014 with a training element attached. Each local authority / applicant was permitted to use the capital allocation to pay for their training project workforce and consumables, but not existing or ongoing expenses. Each local authority / applicant was also required to cover at least 10% of the total training project cost. In the case of an applicant or structure owner being a commercial entity, matching funds were required[9].

2. Achieved or expected results

The scheme was implemented in 2014. The DAHG initially approached a number of local authorities with the aim of supporting projects in four local authorities. Initial interest from Sligo and Longford county councils was not ultimately translated into confirmed participation, mainly because the lead-in period was too short for a project that had to be completed by year end. As a result, two projects were funded in Kilkenny (rather than one), including one proposed by a private project promoter in response to the council advertising the scheme on its website.

The **Fingal County Council (FCC) Project** provided training on traditional joinery and carpentry skills and conservation theory to the local authority's direct workforce, as well as to students from Dublin Institute of Technology (DIT). The training sessions were designed to upskill the local authority workforce to enable them to dismantle, repair and rebuild an unstable nineteenth-century conservatory at Ardgillan Castle, County Dublin, and to impart the handskills necessary to work on other joinery in the care of the council.

The training provided to FCC trainees covered a comprehensive range of skills, methods and techniques for 18th and 19th century building conservation.

Subjects included health and safety, materials, joinery, handrails, doors, windows, panelling, carpentry and roof repairs. The training was provided by two instructors at the School of Trades, Dublin Institute of Technology (DIT) and it consisted of four full days of half-day theory lectures and half-day practical workshops[10].

Table 2: Final project results summary

Number & type of training places:	8 participants (direct workforce)	12 DIT wood technology students
Start/finish dates:	7-23 Oct 2014	14-23 Oct 2014
Training type:	4 one-day theory sessions and practical workshops on traditional joinery and carpentry skills	3 half-day theory sessions on traditional joinery and carpentry skills
TOTAL FUNDING GRANTED = EUR 5,995.34		

Source: TBSTS Evaluation Report 2015[11]

The FCC training project was unable to utilise the full allocation of funding available (EUR 20,000) due to a decision to postpone the capital project – the dismantling and reconstruction of the conservatory at Ardgillan Castle in Fingal.

Project timescales and health and safety issues were cited as the reasons for the postponement. The funding spent during the training project was therefore limited to covering the trainer's fee, room hire, catering and joinery tools and equipment. The dismantling of the conservatory took place during 2015. Reconstruction work is still ongoing in 2018 and seven of the FCC trainees are involved in the work[12].

The **Galway County Council (GCC) Project** provided training on masonry and plaster repair of elements of the mid-nineteenth-century Portumna Workhouse by trainees from the register and local building operatives, managed by a social enterprise. Six training modules were imparted to GCC trainees and the learning outcomes were recorded by the GCC. Unit 1 gave a practical overview of conservation, restoration and redevelopment of stone buildings. Unit 2 showed how to work in a safe manner. Unit 3 taught how to repair an external lime render and about lime in general. Unit 4 taught how to repair internal lime render, as well as lath and plaster ceiling, and how to mix and apply limewash. Unit 5 taught how to

build with stone using lime mortar and how to apply render using a compressor. Unit 6 taught how to do lime pargeting to the underside of slate. All trainees received a certification of course completion from the GCC[13].

Table 3: Galway project results summary

Number & type of training places:	10 trainees – plasterers (6) and stone/block/bricklayers (4)
Project start/finish dates:	3 Oct – 29 Nov 2014
Training type:	Four 2-day sessions each covering a Friday and Saturday with classroom, workshop and onsite components
TOTAL FUNDING GRANTED = EUR 20,000	

Source: TBSTS Evaluation Report 2015[14]

As a complement to the main training modules, the GCC project also provided some additional training to participants during the project implementation period. The Manager of the Irish Workhouse (Portumna) and a technical advisor gave an introduction to energy efficiency in traditional buildings from Ecological Building Solutions[15]. Two demonstrations were also provided by the GCC contractor-trainer: one on how to use hemp with lime; and another on repairing stone, after which the trainees took part in a workshop on basic stone carving[16].

Following completion of the GCC training programme, two participants gained employment in related work (plastering) – one in the private sector and the other at the Portumna Workhouse on the Rural Social Scheme[17].

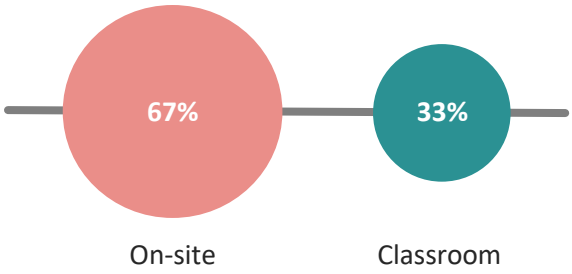
In **Kilkenny**, there were **two funded training projects**. The first featured a collaboration between Kilkenny County Council (KCC) and Waterford Institute of Technology (WIT) to give 15 WIT students doing a BSc Degree Course in Applied Conservation Skills a series of lectures and practical stone repair sessions at St Mary's Church, Kilkenny City. The second was a private sector project that was implemented to train contractors in practical stone conservation at the mediaeval St Nicholas's Church, Newtown, Jerpoint, County Kilkenny.

The **St. Mary's Church Training Programme** was intended to be run in conjunction with the delivery of a major restoration / extension project at St. Mary's. However, following delays to the start of the main contract work, the training programme was amended and training took place in the church graveyard in advance of the main building project, with the focus on the boundary walls[18].

The St Mary's Project provided a combination of on-site (67%) and classroom training (33%) to 15 WIT students. On-site training included workshops and demonstrations on the use of building limes and hot lime, building fabric examination, and assessment of materials and treatment, as well as practical on-site training on raking out and repointing a section of wall. Classroom training involved a combination of lectures given by members of the design team working on St Mary's and other professionals associated with the heritage site. Lecturers included architects, conservation and restoration specialists, and archaeological experts. Training modules covered:

- Material analysis of sand and lime
- Hot lime demonstration and use
- Wall preparation
- Cutting out of existing mortar
- Care of organic matter
- Different pointing styles and applications
- Application of new mortars
- Care and protection of finished applications
- Health and safety issues

Share of on-site and classroom trainings for St. Mary's project

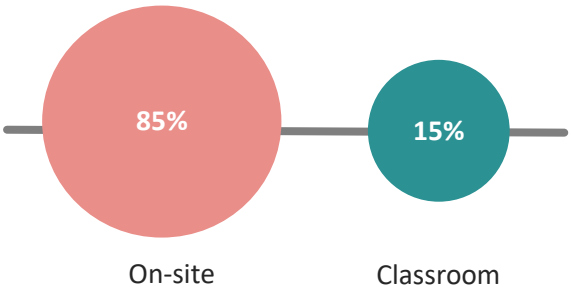


The **St. Nicholas's Church Training Programme** was opened to applicants that had qualified in a construction trade and/or had completed a course in traditional stonework skills (FETAC level 4 or VEC /ETB). Applicants were shortlisted and interviewed by the private sector contractor delivering the conservation project, in collaboration with Kilkenny County Council (conservation officer), and

the final selection was based on participants having the interest, character, capacity and attitude necessary to successfully complete the course and put the acquired skills to use in the industry[19].

The St. Nicholas's Project provided a two-week intensive training programme.

Share of on-site and classroom trainings for St. Nicolas's project



In Week 1, trainees were given:

- a health and safety induction;
- a site tour and explanation of its archaeological and historical significance;
- an overview of the conservation project;
- an explanation and assessment of the scope of works for the training programme;
- an introduction to the tools and techniques to be employed on the course; and
- the methodology for cleaning and preparing the structure for conservation.

The trainees also worked together during Week 1 to conserve the first of two sidewalls of a section of St Nicholas's Church. In Week 2, each trainee was given their own section of the second sidewall to work on and conserve with the help and guidance of the instructor[20].

Presentations, lectures and Q&A sessions were done in the classroom. The health and safety induction was done in the classroom and on-site. Training was given by two private sector specialists[21] in stonemasonry and conservation.

The St Nicholas Training Programme has ultimately had a very positive impact on the career development prospects of all four trainees, with each having gained employment as a direct result of completing the courses. The trainees have subsequently worked on Skerry's Castle in Callan, the Workhouse (also in Callan) and New Ross town walls.

Table 4 summarises the key results of the two projects implemented in Kilkenny.

Table 4: Kilkenny projects (2) results summary

	St Mary's Church project	**St Nicholas' Church project**
Number & type of training places:	15 WIT student places	4 stone trainees
Project start/finish dates:	8 Oct 2014 – 27 Jan 2015	5-15 Aug 2014
Training type:	BSc in Applied Conservation Skills. Practical on-site training with lectures, workshops and demonstrations	2-week intensive on-site practical training course under supervision of master stonemason with lectures
TOTAL FUNDING GRANTED = EUR 15,447 **(EUR 5,447 for St Mary's Church project EUR 10,000 for St Nicholas's Church project)**		

Source: TBSTS Evaluation Report 2015[22]

3. Perspectives and lessons learned

This section provides a selection of perspectives and lessons learned expressed by different stakeholders involved in the four DAHG-funded TBSTS training pilots. Their views are presented by stakeholder type.

From an implementation perspective, based on participants' feedback and evaluation report, all four pilot projects were successfully implemented and provided a highly beneficial learning experience to all participants.

There are however a number of important lessons learned that the local authorities and training providers responsible for implementing the project have highlighted based on the pilot project experiences, and which should inform future training schemes[23]:

- A longer lead-in time for these types of training projects would allow for better preparatory work to be done. Galway County Council, in particular, argues that the lead-in time should be 6 to 12 months, rather than the much shorter lead-in time allowed by the TBSTS scheme;
- Traditional buildings skills training is best delivered to smaller groups of trainees, because it helps to ensure higher quality training and practical work on-site. Trainees would also benefit from skills practice on mock-ups before working on historic buildings;
- Trainee recruitment should involve face-to-face interviews and skills assessments (theory and practical) to ensure that trainees have the appropriate skill levels to undertake specific types of training, and to ensure that trainees are fully interested and committed to the courses;
- Some trainees are less literate than others, for a number of reasons (e.g. lack of formal education, leaving school early, differences in educational attainment, dyslexia, etc.). Where literacy issues arise with some trainees, the issue needs to be acknowledged and handled discreetly by the trainer (in order not to embarrass a trainee in front of colleagues). Therefore, where possible, emphasis should be given to: 1) the use of tick boxes rather than free text responses to questions; and 2) oral assessments;
- Trainees benefit most from a blended training approach that combines lectures and demonstrations with practical on-site training and the experience of working on 'live' conservation projects. This kind of approach not only gives trainees the skills they need to work on conservation projects, but also helps them to understand the complexities, challenges and extreme variety of conservation projects;
- Trainees should be more involved in the entire conservation project process. Instead of just being told what to do by supervisors (top-down approach), they should be encouraged to provide input during training and on live projects, and should be involved in the decision-making process. The aim should be to give the trainees a holistic understanding of conservation projects that employ traditional building skills, in order to improve their competences and better equip them for work in future conservation projects;
- Although each of the local authorities involved in the scheme recognises the importance of traditional building skills training to the built heritage sector and the broader construction industry, financial constraints are a significant limitation that hinders their ability to support this type of training. Kilkenny County Council, for example, is keen to continue with on-site practical conservation training and to engage in further collaborations with project stakeholders. The main constraint however is the lack of a regular funding stream to guarantee work in the built heritage sector, which in turn limits training and employment opportunities[24].

From an industry / trainee perspective, all training course participants expressed satisfaction with the structure, content and delivery of the training courses in each pilot project.

The level of trainee feedback reported by each project varies from one project to the other. Only Galway appears to have used/published an evaluation scale to assess feedback.

- Fingal County Council trainees gave feedback anonymously and the specific results were not published. Instead, the council summarised their feedback as positive and enthusiastic;
- Galway County Council provided more detail on the positive feedback received from their trainees on the training they received. On a scale of 1 (low) to 10 (high), their knowledge on the conservation and repair of traditional stone buildings rose from 3.75 before the course to 7.4 after the course. Similarly, their knowledge of working with lime has risen from 3.6 to 8 and their knowledge of energy efficiency in traditional buildings rose from 3 to 6. Overall, the trainees rated the course in general as 8.6 out of 10 and their enjoyment of the course as 8.9. They also all expressed confidence in their ability to implement what they had learned on their own in contracted project work;
- The student trainees on the St Mary's Project (Kilkenny) gave very positive feedback on the training they received, although it was reported by the council in summarised form and without an evaluation scale. They all emphasised the benefits of working on a live project with 'real life' tasks and working environments, and they considered that the lectures and practical demonstrations had provided a realistic learning experience[25];
- The trainees on the St Nicholas Project (Kilkenny) found the course to be very satisfactory, in terms of outcomes for all involved. The trainees were able to progress to working on similar structures straight away and all gained employment in the field of stonemasonry. The skills learned have a broad application as most permanent structures built here from the 8th to the 19th centuries are of similar construction to St Nicholas's and many are in a similar state of neglect and decay. One issue that could be addressed for the future development of courses similar to this is that of accreditation. Ideally a programme like this would be part of a longer, fully accredited apprenticeship in traditional stonemasonry which would have a series of modules that encompass all aspects of the trade.

4. Conclusions and recommendations

Key success factors of the pilot projects are recommended for use as best practice examples for future conservation training schemes.

Future schemes are advised, for example, to replicate the inter-disciplinary nature of the pilot projects, to ensure local and national input from public and private sector professionals, trainers and contractors[26].

The pilot projects have also shown that traditional building skills training is best provided using a modular approach to course development and delivery. The use of longer courses that provide fuller training, but which are made up of short upskilling course modules, leading to official accreditation, is ideal, as this enables trainees that work as contractors to undertake individual training modules at their convenience and over time, without impacting their availability to work. Many, for example, would like the flexibility to do training outside of work hours or between contracts. The use of smart (RFID) cards that record training and accreditation details would also be helpful for both trainees and potential employers[27].

Better scrutiny of a prospective trainee's skills and suitability for a specific course would make it easier to adapt course contents and levels to provide more effective training.

For example, in the case of unqualified general operatives that have good hand skills, training should concentrate on conservation theory and judgement skills. It is also important to assist trainees with literacy difficulties during course elements that require literacy (e.g.: theory and assessment)[28].

The creation of a steering group or network, involving all relevant stakeholders (including from education, construction, rural development and heritage policy), is recommended in all training projects, as they help to connect a project with local initiatives and activities. Local training networks, for example, should provide a panel of local and national conservation practitioners and educators to assist with presentations, demonstrations, etc., with costs agreed in advance. Structured involvement of public and private sector stakeholders would also allow for early identification/preparation of potential projects, as well as properly specified and structured training[29].

A national network of qualified trainers in traditional building skills and conservation specialisms should be formed to circulate information within the sector and enable local organisations to source trainers for training project delivery (e.g.: talks, demonstrations, workshops, etc.)[30].

Publicly-funded conservation projects and public sector capital works on historic buildings should include a training element, where feasible. The Government Construction Contracts Committee (GCCC) is also advised to introduce training clauses in the public works suite of contracts to accommodate onsite training with associated lectures and discussion for trainees, preferably as one module of an accredited award[31].

Funding models should be structured as part of a rolling programme that addresses local building and skills needs, enabling project organisers to prepare a training project during one calendar year and deliver it in the following year.

This would allow for trainees to be properly assessed and selected and would enable both onsite preparation work and outdoor training to be completed in appropriate weather[32].

Overall, the TBSTS scheme is considered to be a 3-star good practice measure, using a scale of 1 (low) to 5 (high) stars. This score is based on a number of reasons. On the one hand, for example, the scheme is an important training measure that has produced very positive results that aim to benefit a construction sub-sector (the historic built environment) which does not receive as much

attention or investment, compared to other sub-sectors. It also aims to protect specific skillsets that are a vital part of the country's heritage sector and need to be preserved. On the other hand, however, the scheme has only been piloted on a very small scale in only four localities and with very limited funding. Although some of the local authorities are keen to support continued or further schemes, they all concur that there are considerable financial constraints that prevent them from doing so. The TBSTS scheme would likely attain a higher good practice score if there were the resources available to pilot it at a larger scale.

The TBSTS scheme is considered to be transferable, with a score of 4 stars, to countries and regions that are facing similar issues in their domestic built heritage environment to those experienced in Ireland.

Those issues include: an historic building stock in need of conservation; a lack of skills in the construction / conservation workforce to repair heritage buildings; and limited resources with which to fund training initiatives. Despite the lack of resources available to the TBSTS scheme, it has achieved positive results and may therefore appeal to policymakers as a small-scale pilot opportunity through which to trial traditional building skills training, with a view to scaling it up if successful. This type of scheme has the potential to achieve significant impact if the appropriate resources are made available to support conservation projects and skills training, and if the training can be linked to an official accreditation process.

Endnotes

1 The implementing authority was named the Department of Arts, Heritage and the Gaeltacht (DAHG) at the time of the measure (2014) and its evaluation (2015). It has since been renamed as the Department of Culture, Heritage and the Gaeltacht (DCHG).

2 Ecorys & Fitzpatrick Associates, Economic Value of Ireland's Historic Environment, Final Report to the Heritage Council, 2011: https://www.heritagecouncil.ie/content/files/ecorys_economic_evaluation_historic_environment_final_report_1mb.pdf

3 Ibid

4 Built Heritage Jobs Leverage Scheme 2014: https://www.chg.gov.ie/app/uploads/2015/10/bhjls-2014-report.pdf

5 A capital incentive scheme is a government-funded scheme that is designed to stimulate greater output or investment.

6 The Irish NFQ, established in 2003, is a framework through which all learning achievements may be measured and related to each other in a coherent way. The many different types and sizes of qualifications included in the NFQ, are organised based on their level of knowledge, skill and competence. Because all NFQ qualifications are quality assured, learners can be confident that they will be recognised at home and abroad. http://www.nfq-qqi.com/ https://www.qqi.ie/Articles/Pages/National-Framework-of-Qualifications-(NFQ).aspx

7 Department of Arts, Heritage and the Gaeltacht (DAHG), Traditional Building Skills Training Scheme 2014, Evaluation Report for Stakeholder Circulation, 2015: https://www.chg.gov.ie/app/uploads/2016/01/tbsts-evaluation-of-scheme1.pdf

8 Ibid

9 Ibid

10 Ibid

11 Ibid

12 Ardgillan Castle, The Rose Garden – The Victorian Conservatory: https://ardgillancastle.ie/the-rose-garden/

13 Department of Arts, Heritage and the Gaeltacht (DAHG), Traditional Building Skills Training Scheme 2014, Evaluation Report for Stakeholder Circulation, 2015: https://www.chg.gov.ie/app/uploads/2016/01/tbsts-evaluation-of-scheme1.pdf

14 Department of Arts, Heritage and the Gaeltacht (DAHG), Traditional Building Skills Training Scheme 2014, Evaluation Report for Stakeholder Circulation, 2015: https://www.chg.gov.ie/app/uploads/2016/01/tbsts-evaluation-of-scheme1.pdf

15 Training on energy efficiency in traditional buildings given by Ms Ursula Marmion, Manager of the Irish Workhouse, and Peter Smyth, Technical Advisor at Ecological Building Solutions.

16 Laurik Mathieu, Director of Mathieu & Mitchell Ltd – a construction and heritage conservation company. Laurik was the contractor-trainer on the GCC training project. http://www.mathieu-mitchell-builders.ie/

17 Department of Arts, Heritage and the Gaeltacht (DAHG), Traditional Building Skills Training Scheme 2014, Evaluation Report for Stakeholder Circulation, 2015: https://www.chg.gov.ie/app/uploads/2016/01/tbsts-evaluation-of-scheme1.pdf

18 Kilkenny County Council, St. Mary's TBSTS Evaluation Summary, February 2015: https://www.kilkennycoco.ie/eng/Services/Heritage/St-Marys-Church-Graveyard/St-Mary-s-TBSTS-evaluation-summary-February-2015.html

19 Department of Arts, Heritage and the Gaeltacht (DAHG), Traditional Building Skills Training Scheme 2014, Evaluation Report for Stakeholder Circulation, 2015: https://www.chg.gov.ie/app/uploads/2016/01/tbsts-evaluation-of-scheme1.pdf

20 Ibid

21 Trainers contracted to deliver the St Nicholas Training Programme were Patrick McAfee, a stone mason and conservation consultant, and Ivor McElveen, a historic building consultant and conservation engineer. http://homepage.eircom.net/~mcafee/ http://www.ivormcelveenassociates.ie/

22 Department of Arts, Heritage and the Gaeltacht (DAHG), Traditional Building Skills Training Scheme 2014, Evaluation Report for Stakeholder Circulation, 2015: https://www.chg.gov.ie/app/uploads/2016/01/tbsts-evaluation-of-scheme1.pdf

23 Ibid

24 Kilkenny County Council, St. Mary's TBSTS Evaluation Summary, February 2015: https://www.kilkennycoco.ie/eng/Services/Heritage/St-Marys-Church-Graveyard/St-Mary-s-TBSTS-evaluation-summary-February-2015.html

25 More detailed summaries of trainee feedback on the St Mary's Church project provided in the St. Mary's TBSTS Evaluation Summary, February 2015: https://www.kilkennycoco.ie/eng/Services/Heritage/St-Marys-Church-Graveyard/St-Mary-s-TBSTS-evaluation-summary-February-2015.html

26 Department of Arts, Heritage and the Gaeltacht (DAHG), Traditional Building Skills Training Scheme 2014, Evaluation Report for Stakeholder Circulation, 2015: https://www.chg.gov.ie/app/uploads/2016/01/tbsts-evaluation-of-scheme1.pdf

27 Ibid

28 Ibid

29 Ibid

30 Ibid

31 Ibid

32 Ibid