

Skills for the Construction Sector: Assessment of 2008-2018 Strategies

Meeting of the Expert Group on Future Skills Needs, 23rd September 2019

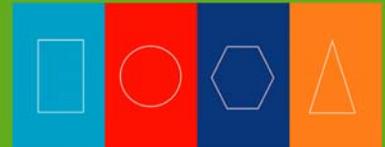
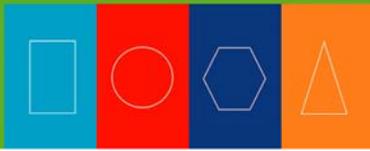


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Executive Summary

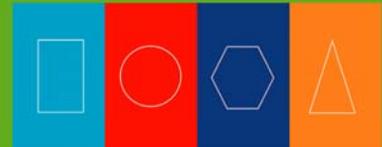
This paper is an assessment of the Construction related strategies and reports, and their related skills recommendations, that have been published by Government and the Construction sector over the period 2008 to 2018.¹ It forms part of the EGFSN 2019 work programme commitment to analyse the skills needs of the Construction Sector and is a preliminary piece of analysis- together with a productivity analysis of the Construction sector being undertaken under the aegis of the Government chaired Construction Sector Group, the findings of this paper will be considered by the EGFSN at its meeting on 23rd September 2019. On the basis of the findings of these pieces of analysis, the Group will determine the need for a broader EGFSN skills demand forecast study.

The paper set out to determine the following in relation to the skills recommendations in these strategies and reports: whether there have any been any common themes across the recommendations made; if these recommendations have been implemented and the progress made to date; and whether this progress has been effective. A high level of commonality was found across the strategies/reports in terms of themes. These included:

- **Measures to boost skills/labour supply within the construction sector**, including through stimulating enhanced employer demand for apprentices, marketing Construction as a viable career option, and leveraging international sources of construction skills (Irish diaspora, Employment Permits system)
- **Alignment of education and training provision with Construction sector skills needs**, through the undertaking of a Construction sector skills analysis, the establishment of a coordinating “Construction Skills Forum”, and the development of “green” construction skills (Built Environment Sustainability, Energy Efficiency, Retrofitting)
- **Support for Construction sector export trade diversification**, through Enterprise Ireland’s developmental agenda for potential Construction exporters, Construction specific workshops, inclusion of international business/sales, government tendering modules on undergraduate programmes, and greater sectoral engagement with international graduate mobility programmes
- **The enhancement of productivity and innovation activity** within the Construction sector, through increased engagement with management development programmes, the promotion of Building Information Modelling (BIM) and greater research, development and innovation activity across the Construction sector.

The following table sets out, in Traffic Light format, the progress made to date in the implementation of recommendations or actions in these four areas- Green representing significant

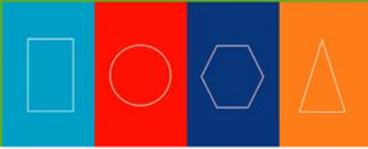
¹ A Review of the Employment and Skills Needs of the Construction Industry in Ireland, Expert Group on Future Skills Needs (Skills and Labour Market Research Unit, FAS) 2008; Future Skills Needs of the Green Economy in Ireland, Expert Group on Future Skills Needs, 2010; Ireland’s Construction Sector: Outlook and Strategic Plan to 2015, Forfas, 2013; Build Up Skills-Ireland: National Roadmap for Energy Training in Construction, Intelligent Energy Europe, 2013; Construction 2020: A Strategy for a Renewed Construction Sector, Government of Ireland, 2014; Demand for Skills in Construction to 2020, DKM Consultants/Construction Industry Federation, 2016; Rebuilding Ireland: Action Plan for Housing and Homelessness, Government of Ireland, 2016; Roadmap to a Digital Transition, National BIM Council, 2017; Trades and Apprenticeships Skills Survey: The Employers Perspective, Dublin Institute of Technology/Construction Industry Federation, 2018; Better Housing: Improving Affordability and Supply, Property Industry Ireland, 2018; Employment Opportunities and Future Skills Requirements for Surveying Professions, 2018-2021, Society of Chartered Surveyors Ireland, 2018



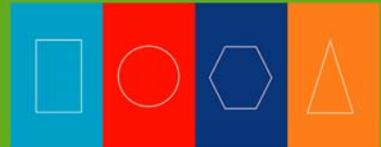
or full progress, orange mixed progress and red no progress at all. For many of the recommendations, evaluation of their “effectiveness” has necessarily been more qualitative than quantitative. As can be seen, however, implementation has been stronger in certain areas over others.

Traffic Light system on Implementation of Recommendations

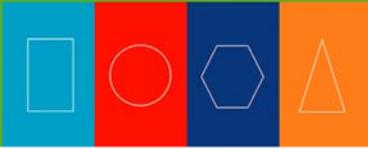
Recommendation	R	O	G	Comment/ Outcome
Boosting Skills/Labour supply within Construction sector				
2.1 Employer engagement with the apprenticeship system		X		<p>Industry has highlighted post-2008 firm downsizing and the prevalence of a ‘survival mindset’ for a fall off in employer recruitment, and with it engagement with apprenticeships (with registrations rising year on year, this is a criticism that applies more to the collapse in Wet Trade registrations).</p> <p>As per CIF recommendations (2016, 2018), there has been roll out of a “shared apprenticeship scheme” (i.e. sharing of apprentices across several firms) in various regions targeting wet trade apprentice recruitment. The numbers involved, however, are relatively small compared with the fall off in registrations.</p> <p>CIF recommendations (2018) have also argued that the key barriers to apprentice recruitment for employers are financial, and have argued for a NTF waiver for construction firms engaging in apprenticeships, a grant system for construction apprentices fully paid for by the Exchequer, and a zero rating employers PRSI contributions scheme for firms employing apprentices in trades identified as in need of stimulus.</p> <p>These recommendations raise issues of equity and have not been implemented to date. Construction employers already benefit most from investment from the NTF (including through the payment of apprentice training allowances) and a waiver would raise questions around the fairness of the sector contributing less than other employers to the levy.</p> <p>The proposal for a construction apprenticeship specific zero rated PRSI scheme also raises issues of equity and administrative complexity. It would have to be cross sectoral in its application and a case would need to be made for the trend of apprenticeship registrations representing a ‘market failure’.</p>
2.2 Marketing Construction as an attractive career option			X	<p>A number of industry recommendations (CIF in 2016, 2018, PII in 2018) have argued for the marketing of construction as a viable and attractive career option.</p> <p>There has been extensive promotional activity engaged in by the Construction sector in recent years, including in national initiatives such as the Generation</p>



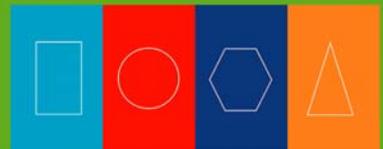
			<p>Apprenticeship promotional campaign and Ireland/World Skills Live.</p> <p>The CIF has supported a work placement initiative, a WorkXperience programme in collaboration with Careers Portal, and a Build Your Career Initiative, all targeted at second level students; launched the now defunct apprentices.ie portal; and has collaborated with Careers Portal and Grad Ireland on construction career related content.</p> <p>Engineers Ireland promote engineering through the STEPS programme, while the Royal Institute of Architects in Ireland operates a TY work placement programme, as well as, in common with the Society of Chartered Surveyors of Ireland, hosting career information on their websites.</p> <p>The CIF has also targeted a redressing of the gender imbalance within the Construction workforce, through the roll out of its #BuildingEquality campaign, which includes an annual International Women's Day breakfast, the establishment of a Women in Construction Network, and a social media campaign, featuring female role models from within the sector.</p>
2.3 The attraction of overseas talent		X	<p>The CIF (2016) advocated the delivery of an international recruitment drive to target the Irish diaspora, which it delivered over subsequent years, through the launch of the cifjobs.ie jobs portal, and a series of online seminars on salaries, construction projects and taking steps to secure employment at home. The numbers attracted home have been small, reflecting the broader barriers to returning Irish emigrants.</p> <p>PII (2018) also called for construction roles to be granted eligibility for employment permits. Following the Q4 2018 Biannual Review of the Employment Permit Lists, four Construction related roles (Civil Engineer, Quantity Surveyor, Mechanical and Electrical Engineers with BIM Capabilities, and Construction Project Manager) were added to the Critical Skills List, while a number of trades were removed from the ineligible list and made eligible for General Employment Permits.</p>
Alignment of education and training provision with sectoral skills needs			
3.1 Construction Skills Analysis		X	<p>Construction 2020 (2014), Rebuilding Ireland (2016) and the PII (2018) all called for the undertaking of a Construction skills analysis and/or forecast to support skills planning for the construction sector.</p> <p>On foot of the Rebuilding Ireland recommendation, the SLRMU undertook a 2015-2020 skills demand forecast as part of the CIF's <i>Demand for Skills in Construction to 2020</i> study, which has been used internally by the</p>



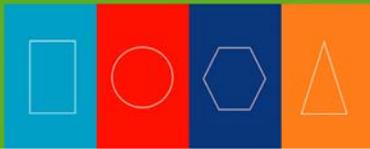
			<p>Department of Education and Skills for skills planning purposes.</p> <p>The PII recommendation for a Construction Skills analysis is being considered as part of the EGFSN's 2019 work programme.</p>
3.2 Convening of Construction Skills Forum	X		<p>Forfas (2013), Construction 2020 (2014) and the CIF (2016) recommended the establishment of formal public/private sector grouping to oversee and coordinate, amongst other matters, the development of construction skills across the numerous agencies and bodies responsible for training and education in the sector.</p> <p>Forfas' proposal for a Construction Enterprise Clearing House was superseded by a Construction Sector Group, established to support delivery of <i>Construction 2020</i>. Representation on this group, however, was confined to the public sector, and rather than a broader initiative, it was used as an internal Government mechanism for implementing and monitoring delivery.</p> <p>The CIF's proposal for a Construction Skills Forum- to be established within DES and DBEI's existing structures to monitor progress and address barriers in the education and training system which are impeding the delivery of the required skilled employees- has not come to pass. This recommendation appears to arise from a misunderstanding around the role of the National Skills Council and EGFSN.</p> <p>As part of the delivery structures for Project Ireland 2040, however, a 'Construction Sector Group' chaired by the Department of Public Expenditure and Reform has been established, representative of Government Departments/offices/agencies, Construction representative organisations, and ICTU.</p> <p>The remit of this Group includes considering the supply of necessary skills and measures to enhance capacity within the Construction sector. 'Securing the Skills Pipeline' forms part of its 2019 work programme, and discussions have been held about apprenticeships, third level provision and promoting construction as a viable career option.</p>
3.3 National Skills Architecture and alignment of training provision with industry needs		X	<p>While no formal skills forum has been established to coordinate construction skills provision, the Construction sector has successfully engaged with the responsive skills architecture established by the Department of Education and Skills.</p> <p>The CIF is represented on each Regional Skills Forum, which have been working with Regional Construction firms to address their skills needs through relevant HEI and FET provision; the skills needs of the sector are also being addressed through Springboard+ provision</p>



			and Construction sector engagement with Skillnet Ireland training networks.
3.4 Greening of Construction Skills		X	<p>Forfas (2013) recommended the full implementation of the Build Up Skills Ireland Roadmap, aimed at increasing the number of qualified workers to delivery renovations offering a high energy performance. The EGFSN (2010) also highlighted the increasing demand for workers in the energy efficiency field.</p> <p>The “QualiBuild” initiative sought to implement the Build Up Skills Roadmap in 2014-17, through the provision of ‘Foundation Energy skills’ and ‘Train the Trainers’ courses and other promotional activities.</p> <p>On its completion, QualiBuild recommended that SOLAS assume responsibility for the long-term national roll out of its energy skills training. This does not appear to have taken place, at least in the form envisaged by QualiBuild.</p> <p>The establishment of an NZEB centre of excellence in Waterford/Wexford ETB, and the proposed national roll out of its NZEB training under the Climate Action Plan, may, however, be a means of fulfilling this.</p> <p>In terms of broader energy efficiency education and training at HEI level, there is now extensive course provision across the University, Institute of Technology and FET sectors.</p>
Construction sector trade diversification			
4. Export trade diversification		X	<p>At a time of reduced demand within the domestic Construction sector, Forfas (2013) recommended continuing efforts to internationalise the activities of Irish construction firms, which serve to raise standards of professionalism, competitiveness and capability.</p> <p>Admittedly dealing with a small proportion of the Construction firm base (748 of 51,000), this work has been ongoing through Enterprise Ireland, which has been providing supports and guidance to firms securing inroads into overseas markets- this has resulted in rising sales, exports, and employment in recent years.</p> <p>The UK dependence of these firms is a risk going forward, and EI is seeking to diversify the trade of these exporters, particularly to Northern Europe.</p> <p>Forfas (2013) and Construction 2020 (2014) recommendations have also focussed on expanding international business/sales and government tendering modules on undergraduate construction courses, and greater construction firm engagement with international graduate mobility programmes (Enterprise Ireland, Ibec) to support their internationalisation.</p>



			Business/tendering modules are now a common feature of HEI Construction courses. The engagement with the graduate mobility programmes, however, has met with limited success. The numbers engaging with the EI programmes are small, while there has been no Construction representation within Ibec's Global Graduates programme.
Productivity and Innovation within the Construction sector			
5.1 Promotion of Management Development	X		<p>Forfas (2013) and Construction 2020 (2014) both highlighted the relationship between effective management practice- traditionally weak within the construction sector- and ultimate business performance.</p> <p>Both recommended increased Construction sector engagement with Skillnet Ireland's Management Development provision and Enterprise Ireland's management development offerings (Management4Growth, Leadership4Growth, Lean).</p> <p>The numbers engaging with this training in recent years have been limited- addressing this needs to be an area of focus going forward.</p>
5.2 Promotion of Building Information Modelling		X	<p>As a means of supporting enhanced productivity, Forfas (2013) and Construction 2020 (2014) recommended that Government work with industry organisations to promote the use of BIM and develop the appropriate technical skills amongst Irish construction firms.</p> <p>This recommendation has largely been driven forward by the OGP, which has mandated for the adoption of BIM across the public capital programme, and Enterprise Ireland, which has been working with the construction sector to promote BIM uptake, including through BIM support programmes.</p> <p>EI also convened the National BIM Council, composed of public and private sector stakeholders, which developed the <i>Roadmap to a Digital Transition for Ireland's Construction sector, 2018-2021</i> for the roll out of BIM.</p> <p>The Roadmap is currently being progressed through the Government chaired Construction Sector Group and will result in the establishment of a BIM Centre of Excellence (the Build Digital Project).</p>
5.3 Research, development and innovation	X		<p>A key underpinning to productivity performance, Forfas (2013) recommended greater Construction sector engagement with research, development and innovation activity- in particular through market focussed HEI collaboration.</p> <p>Again, while there appears to be Construction related research activity across the HEI sector, and within EI Technology Gateway networks, engagement is limited- of that engagement that is ongoing, much appears to</p>



			<p>be small scale and unstructured, rather than representing a defined construction research agenda.</p> <p>The importance of identifying the research needs of the Construction sector has been recognised, through the establishment by the industry and academics of a Construction R&D forum. This will be working to define the sector's needs and developing a thematic research agenda.</p>
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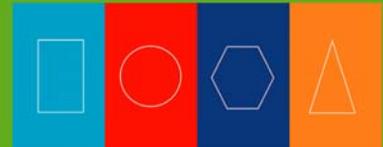
Interim Recommendations

On progress to date, this appears to have been weakest in the enhancement of management development and greater sectoral engagement with research, development and innovation, with the record more mixed in areas such as boosting employer engagement with the apprenticeship system, the convening of a Construction Skills forum, the greening of Construction skills and promotion of BIM. The implementation of recommendations has been strongest in relation to the marketing of construction as a viable career option, the attraction of overseas talent, the undertaking of a Construction sector skills analysis, the alignment of education and training provision with sectoral needs, and Enterprise Ireland's activities around export diversification.

While a full Expert Group on Future Skills Needs study is proposed, this review indicates that the following interim recommendations are valid for Construction sector stakeholders. Any EGFSN study will seek to confirm these recommendations, identify new potential actions and quantify precise skills demand and supply gaps:

- **On Skills and Labour demand/supply:**
 1. Communication of a sustainable growth path for the construction sector- under the auspices of Project Ireland 2040- appears to be key to addressing the employer apprenticeship engagement/recruitment issue, as well as certainty amongst potential apprentices, HEI students and international talent (including the Irish diaspora) on the viability of the Irish construction sector and construction more generally as a career option.
 2. This communications campaign should be combined with the intensive career promotional activity that the construction sector is already engaged in- including, importantly, activity aimed at enhancing gender balance. The implementation of the National Development Plan and other construction related strategies have the potential to increase demand and form a virtuous circle in terms of boosting skills supply.
 3. As this communications campaign will take time to boost output, in the interim the Construction sector should be supported in leveraging resources such as EURES and the employment permits system to bridge the short-term skills gap. Evidence suggests that engagement with EURES services has been limited, and that employment permit applications have been slow to materialise within the sector.

- In the area of **alignment of education and training provision with industry skills needs:**



4. To ensure that education and training provision is as informed and future proofed as possible, Construction skills planning will benefit from the findings and recommendations of the productivity analysis being undertaken by DPER (Strand 2 of this study).

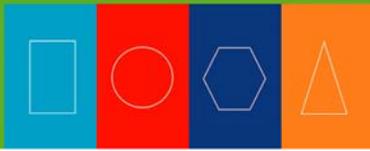
 5. On the proposal for a Construction Skills Forum, and given the consideration already given to skills matters within its structures, the coordination and oversight of Construction skills development might be entrusted to the Construction Sector Group- perhaps through the formation of a dedicated sub-group composed of the key public and private sector stakeholders.

 6. In light of the challenge posed by Climate Change, and the contribution of the Built Environment to carbon emissions, the national roll out of NZEB/energy efficiency training in the coming years will also be key to supporting implementation of the Climate Action Plan and should be prioritised in the years ahead.
- As **productivity and innovation within the construction sector** is the major area of weakness in terms of implementation:
 7. There needs to be a concerted effort to increase management capability within the construction sector, through enhanced promotion of and engagement with the relevant Skillnet Ireland and Enterprise Ireland support programmes by Construction sector firms.

 8. Similarly, research and development activity, key to innovation within the sector, requires a significant culture change across the Construction sector base. The efforts now being undertaken by the CIF convened Construction R&D Forum should be supported by the industry, and where relevant, Government, in identifying the needs of construction firms and developing a thematic research agenda for the sector.

The wider deployment of Building Information Modelling across the Construction sector will also be a key support to improving its poor productivity performance.

9. The proposed Build Digital Project, in particular its proposal for delivery of a broad awareness and upskilling learning framework for educators and industry, will be a key mechanism in advancing the adoption of BIM in the coming years. Subject to a competitive call to be issued in late 2019/early 2020, the project, once formally established, should receive maximum support from the public and private sector construction stakeholders in its promotional, educational and capacity building activities.



Introduction

As part of the Expert Group on Future Skills Needs' 2019 Work programme, it has committed to undertaking an analysis of the Skills Needs of the Construction Sector. It has been agreed by the EGFSN that this analysis be composed of three strands- the undertaking of a traditional Expert Group on Future Skills Needs skills demand forecast study has been made conditional on the undertaking of two preliminary pieces of evidence based analysis, which will permit the Group to consider the requirement for a broader study. These two preliminary strands are:

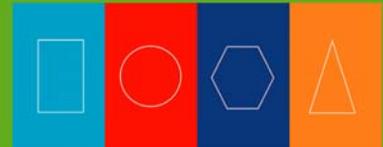
- 1 An assessment of the Construction sector strategies, and their associated skills recommendations, undertaken by Government and industry over the period 2008 to 2018; and
- 2 An analysis of Construction Sector productivity, being undertaken by the Department of Public Expenditure and Reform on behalf of the Construction Sector Group

The findings from both of these analyses are being considered by the EGFSN at its meeting on 23rd September 2019.

This paper represents the first of these pieces of analysis- the assessment of Construction Sector strategies undertaken in the years since 2008. The strategies considered in the context of this paper include the following:

- *A Review of the Employment and Skills Needs of the Construction Industry in Ireland*, Expert Group on Future Skills Needs (Skills and Labour Market Research Unit, FAS) 2008
- *Future Skills Needs of the Green Economy in Ireland*, Expert Group on Future Skills Needs, 2010
- *Ireland's Construction Sector: Outlook and Strategic Plan to 2015*, Forfas, 2013
- *Build Up Skills- Ireland: National Roadmap for Energy Training in Construction*, Intelligent Energy Europe, 2013
- *Construction 2020: A Strategy for a Renewed Construction Sector*, Government of Ireland, 2014
- *Demand for Skills in Construction to 2020*, DKM Consultants/Construction Industry Federation, 2016
- *Rebuilding Ireland: Action Plan for Housing and Homelessness*, Government of Ireland, 2016
- *Roadmap to a Digital Transition*, National BIM Council, 2017
- *Trades and Apprenticeships Skills Survey: The Employers Perspective*, Dublin Institute of Technology/Construction Industry Federation, 2018
- *Better Housing: Improving Affordability and Supply*, Property Industry Ireland, 2018
- *Employment Opportunities and Future Skills Requirements for Surveying Professions*, 2018-2021, Society of Chartered Surveyors Ireland, 2018

This paper represents a stocktake of the initiatives recommended or undertaken as part of these strategies and action plans over the last ten years, which in turn can help inform understanding of the skills challenges, as well as the skills opportunities, in the construction sector going forward. It sets out to determine the following in relation to the skills recommendations made by Government and industry since 2008:

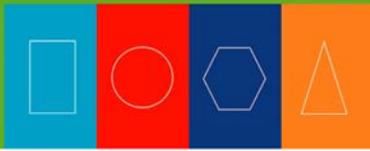


- Whether there have been any common themes in these recommendations
- If these recommendations have been implemented, and what progress, if any, has been made to date; and
- If any progress has been effective for those recommendations that have been implemented

This paper finds a high degree of overlap between the skills related recommendations made by Government and industry over the past decade. These common themes are fourfold, and include measures to:

- Boost skills and labour supply for construction sector activities, including through the creation of employer demand for apprenticeships; the marketing of construction as a viable career option; and the attraction of international construction skills, including from within the Irish diaspora and through the employment permits system.
- Properly align education and training provision with the skills needs of the Construction sector. Common themes have included the undertaking of a Construction sector skills analysis; the convening of a public/private sector Construction skills forum, to coordinate and align education and training system output with sectoral needs; and the 'greening' of construction skills, through the development of a skills base in sustainability, energy efficiency and retrofitting.
- Support further export trade activity, and where feasible, diversification, on the part of the Construction sector, through continued Enterprise Ireland support for the sector's internationalisation efforts, the development and roll out of a programme of Construction sector specific workshops, and increased Construction firm involvement in Enterprise Ireland's Marketing Sales Strategy Review process.
- Boost productivity and innovation within the Construction sector, by strengthening managerial capability within the sector, the roll out and effective deployment of Building Information Modelling (BIM) across construction activities, and greater sectoral engagement with research, development and innovation.

The paper will treat these four themes in order, covering chapters 2 to 5. They will be prefaced by a contextual Chapter 1, which will provide an overview of the recent historical and current skills and labour supply situation for Construction (apprenticeship registrations, HEI output, Live Register, foreign nationals), in order to put the theme of chapter 2- boosting skills and labour supply for construction sector activities- in its proper context.



Chapter 1- Skills and Labour Supply within the Construction Sector

Recovery in demand for Construction skills

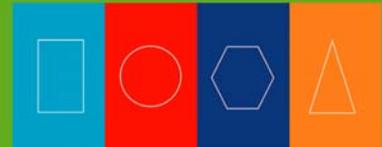
Of those recommendations made in the 2008-2018 strategies and reports, those around boosting skills supply within the Construction sector are the most prominent. Indeed, it has been the issue of emerging skills shortages within Construction roles that influenced the Expert Group on Future Skills Needs in adopting a Construction skills study as part of its 2019 work programme. These calls by industry are relatively recent- they started to emerge from 2016 onwards, and these calls have been intensified in the context of (1) the Government's *Ireland 2040* national planning framework, and the skills base that will be required to deliver the planned increase in infrastructural investment; and (2) the *Rebuilding Ireland* programme, and the resolution of the availability and affordability crisis in Ireland's accommodation and housebuilding sectors.

The emphasis of later strategies contrasts with those prior to 2015/16, before which the Construction sector had witnessed a loss of skills either due to retirement, retraining, moving to other sectors of employment or emigration. The largest decline in the labour force was in relation to those roles linked to the surge in house building, including roofers, slaters, tilers, sheeters and cladders- the numbers of which fell by over 60% over the 2006-2011 period, followed by Bricklayers and Mason Occupations, which fell by over 36%.

In total, approximately 56,000 individuals with construction occupations left the labour force in the 2006-2011 period, equivalent to 1 in 5 persons employed at the peak. From its peak level of employment in Q2 2007 (241,300), when 18% of total national employment was said to be driven directly or indirectly by construction related activity (c.380,000), construction employment fell to 80,900 in Q1 2013. From 2013, however, the sector has recorded positive growth rates, with the volume of output expanding by 18% in both 2017 and 2018. In Q2 2019, construction employment stood at 144,600.

The current growth in the sector domestically is being driven by commercial activity and the increase in housebuilding in urban areas, particularly Dublin, where demand for homes outstrips supply. The resumption of growth has in turn seen the emergence of key skills shortages across construction activities, most notably Civil Engineers, Construction Project Managers, Quantity Surveyors, Shuttering Carpenters, Shift Managers, Glaziers, Steel Erectors, Curtain Wallers, Scaffolders and Pipelayers (2018 National Skills Bulletin).

This tightening of skills supply within the Construction sector has been accompanied by two skills demand forecasts for Construction skills, undertaken on behalf of the Construction Industry Federation and Property Services Ireland (Ibec) respectively. In the 2016 DKM study *Demand for Skills in Construction to 2020*, a skills demand forecast was undertaken by the Skills and Labour Market Research Unit for the period 2016-2020, assuming that current policy regarding construction activity was delivered over the forecast period (Social Housing and Housing Infrastructure, Public



Sector infrastructure, including in Energy Transmission, Water/Wastewater quality and capacity, Roads, Education, Healthcare, Public Transport, Airports).

This tracked the evolving relationship between three variables: construction sector output, employment (in particular its labour intensity), and apprentice intake levels. It took account of the impact of changing technologies and building practices over time on the recruitment of different trades, but not other factors which have the potential to impact on the future demand for skills in the construction industry, such as technological advances in construction methods using robotics and automation (hence they did not anticipate any major changes in technology up to 2020).

2015-2020 Forecast of Direct Employment for Construction Occupations in the Construction Sector (*Demand for Skills in Construction to 2020*)

	2007 Actual	2015	2020 Forecast	2015- 2020 change	2015- 2020 % change	2007- 2020 change	2007- 2020 % change
Managers (1)	7,600	9,000	9,600	600	7%	2,000	26%
Professionals and Associate Professionals (2)	8,600	7,700	8,700	1,000	13%	100	1%
Skilled craftspersons	122,100	48,900	88,900	40,000	82%	-33,200	-27%
Electricians	23,100	9,700	15,200	5,500	57%	-7,900	-34%
Bricklayers and Masons	14,600	3,200	7,800	4,600	144%	-6,800	-47%
Plumbers, Heating and Ventilating Engineers	15,200	7,800	11,800	4,000	51%	-3,400	-22%
Carpenters and Joiners	37,400	15,500	30,800	15,300	99%	-6,600	-18%
Plasterers, Floor and Wall Tilers	19,900	5,500	13,900	8,400	153%	-6,000	-30%
Painters and Decorators	11,900	7,200	9,400	2,200	31%	-2,500	-21%
Other Construction Trades (3)	11,900	4,900	9,900	5,000	102%	-2,000	-17%
Other Trades (4)	28,100	13,500	26,900	13,400	99%	1,200	4%
Operatives	20,800	11,700	18,100	6,400	55%	-2,700	-13%
Labourers	42,100	13,100	27,600	14,500	111%	-14,500	-34%
All other occupations	29,000	16,700	23,100	6,400	38%	-6,100	-21%
Total Construction	270,300	125,500	212,700	87,200	69%	-57,600	-21%

Source: SLMRU, Solas.

Note 1: Includes all types of managers employed in the construction sector.

Note 2: Includes all types of professionals and associate professionals employed in the construction sector.

Note 3: Includes Pipe Fitters; Steel Erectors; Roofers, Roof Tilers and Slaters; Glaziers, Window Fabricators and Fitters; Construction and Building Trades' supervisors.

Note 4: Includes Construction and Building Trades not elsewhere classified; Metal Working Production and Maintenance Fitters and Furniture Makers and Other Craft Woodworkers.

According to this forecast, total direct employment in construction (to correlate this total with CSO statistics, subtract the 'All other occupations' row) was forecast to increase to 212,700 by 2020 (i.e. 189,600), from 125,500 in 2015 (i.e. 108,800). When the issue of replacement demand was taken into account, the total labour requirement was closer to 112,000 workers between 2016 and 2020. Acknowledging the assumptions on which this forecast was based, actual employment remains far off that forecast for 2020; as stated above, employment as of Q2 2019 stood at 144,600.

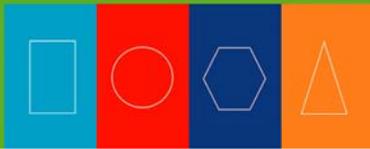
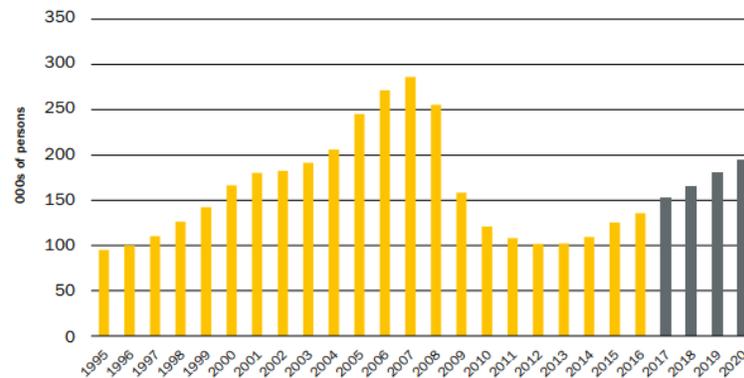


Figure 17: Ibec estimate of construction employment growth to 2020 under Ireland 2040 & other private demand



Source: Ibec calculations

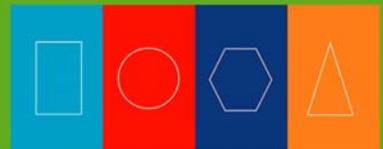
In its *Better Housing: Improving Affordability and Supply* report from 2018, Property Services Ireland (Ibec), on the basis of its current forecasts for other areas of construction and estimated housing need, also forecast that construction employment (including on and off-site staff) would need to grow by around 80,000 between 2016 and 2020 to meet demand of 36,000 homes annually².

Apprenticeship system and Higher Education Output

Much of the debate around skills supply within Construction at present highlights how output from the education and training system stands below that experienced during the height of the Construction boom in the mid-2000s. In the 2000s, apprenticeship and undergraduate courses in construction related disciplines were in high demand. In the years immediately following the downturn in the sector, however, apprenticeship and undergraduate registrations in turn experienced a similarly rapid decline. The difficulties this might pose on any return to growth were noted by Forfas in 2013, which highlighted how ‘the more recent collapse in the number of new entrants may give rise to capacity issues in future as the sector recovers’.

Taking the apprenticeship system first, if the peak year of 2005 is to be taken as a comparison, apprenticeship registrations in 2018 were slightly less than half those recorded in the mid-2000s (3,398 compared with 6,862). Even in the context of the 2000s, however, registrations in 2004-06 appeared to be linked to what we now know to have been an unsustainable level of activity within the Construction sector. A more appropriate comparator may therefore be found in the registrations recorded for 2002 (5,210) and 2003 (5,831)- compared with these years apprenticeship registrations in 2018 were 53% and 71% below the pre-2008 performance respectively.

² Ibec’s calculations appear to rest on 21 roles: Elementary construction occupations, Carpenters and Joiners, Electricians and electrical fitters, Metal Working fitters, Other Trades, Building Services Engineers, Architects and town planners, Painters and Decorators, Civil Engineers, Electrical Engineers, Construction Operatives, Mobile Machine Drivers, Bricklayers and Masons, Managers and Directors, Plasterers, Road Construction Operatives, Floorers and wall tilers, Supervisors, Glaziers, window fabricators and fitters, Roofers, roof tilers and slaters, Project Managers



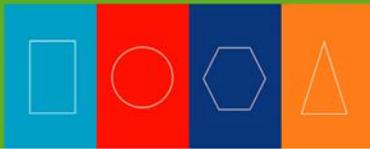
Construction related apprenticeship registrations, 2001-2011

Apprenticeship	2001 actual intake	2002 actual intake	2003 actual intake	2004 actual intake	2005 actual intake	2006 actual intake	2007 actual intake	2008 actual intake	2009 actual intake	2010 actual intake	2011 actual intake
Electrician	2,156	1,813	1,770	2,031	2,159	2,270	2,055	1,108	522	373	355
Carpenter and Joiner	1,665	1,548	1,850	2,089	2,127	1,908	1,358	511	136	96	72
Plumber	857	731	938	1,250	1,252	1,501	1,040	451	126	91	146
Bricklayer and Stonelayer	416	441	549	680	599	474	247	56	20	10	11
Plasterer	201	186	268	311	278	220	143	57	14	12	5
Painter and Decorator	148	151	140	157	148	161	113	62	19	8	18
Construction Plant Fitter	114	83	84	102	104	89	93	64	26	30	32
Wood Manufacturer and Finisher	324	257	232	218	195	221	168	80	24	13	12
Stonecutting and Stonemasonry			-	-	-	-	-	-	-	-	-
Total	5,881	5,210	5,831	6,838	6,862	6,844	5,217	2,389	887	633	651

Construction related apprenticeship registrations, 2015-2018

Apprenticeship	2015 actual intake	2016 actual intake	2017 actual intake	2018 actual intake	Y-o-Y percent Dec 17- Dec 18
Electrician	956	1,343	1,705	1,841	8%
Carpenter and Joiner	291	399	443	591	33%
Plumber	289	345	532	653	23%
Bricklayer and Stonelayer	26	52	60	81	35%
Plasterer	7	18	34	29	-15%
Painter and Decorator	19	27	44	30	-32%
Construction Plant Fitter	77	59	86	71	-17%
Wood Manufacturer and Finisher	48	71	59	95	61%
Stonecutting and Stonemasonry	13	2	8	7	-13%
Total	1,726	2,316	2,971	3,398	14%

By 2010/11, registrations had hit lows of 633 and 651. In recent years, however, registration numbers have been recovering year on year. The 3,398 construction related apprenticeships



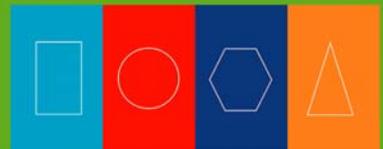
recorded in 2018 represented an increase of 14% on the 2017 figure of 2,971, and almost 47% on the 2016 figure of 2,316. The 2020 intake is meanwhile forecast to increase to 3,929, with most of the increase concentrated in electrical, carpentry and joinery and plumber trades. These numbers are forecast to increase further in the years to 2022 to 4,474, on the basis of an analysis undertaken by the Skills and Labour Market Unit in SOLAS. This increase will be supported by the expansion of the range of Construction related apprenticeships. Arising from Apprenticeship Council calls, proposals in Engineering Services Management and Scaffolding (Construction Industry Federation) and Senior Quantity Surveyor (Society of Chartered Surveyors Ireland) are also currently being developed into national programmes.

Despite the positive trend in overall apprenticeship registrations, however, concern remains around the performance of individual trades within the overall figures. While the 2018 performance of electricians and Construction Plant Fitters compares favourably with the numbers registered during the 2000s, Plumbers and Wood Manufacturers and Finishers (c.50% below their peak), and to a much greater extent, Carpentry and Joinery (591 vs c.2,000) and the Wet Trades i.e. Bricklayer (81 vs c.400-600), Plasterer (29 vs 200-300), Painter and Decorator (30 vs c.150) are recording registration levels far below those recorded in the 2000s- albeit while registering year on year increases since 2015.

There has been a similar fall off in the numbers both registering for and graduating in Construction related undergraduate programmes in Higher Education Institutions. New entrants to Architecture and Building courses declined from 2,188 in the 2008/09 academic year to a low of 977 in 2013/14; in the years since, however, there has been a steady increase, to 1,540 in 2015/16 before a decline to 1,476 in 2017/18.

New Entrants to Undergraduate Architecture and Building courses, 2008-09 and 2012/12 to 2017/18

	2008/09	2011/12	2012/13	2013/14	2014/15	2015/16	2016/17	2017/18
(580) Combined Architecture and building	66	43	48	49	118	130	135	126
(581) Architecture and town planning	605	458	428	399	454	464	492	487
(582) Building and civil engineering	1517	651	582	529	645	800	913	863
Total	2188	1152	1058	977	1217	1394	1540	1476



This decline is mirrored in the drop in HEI undergraduate awards in Construction related disciplines from 2008 on, when there were 2,959 awards. In the subsequent decade, the number of awards has fallen year on year; by 2017 they numbered 1,158, just over one third of the total in 2008. This decline in graduates is influenced to a significant extent by the drop in Civil and Building Engineering undergraduates, the number of which declined from 1,494 in 2008 to 669 in 2017. It is notable, however, that overall, awards at postgraduate level were more stable over this period and had increased to 451 by 2017. NFQ Level 9/10 awards represented 28% of all HEI awards in 2017, up from 8% in 2008. While HEI graduates have been at a low ebb in recent years, the rising trend of new entrants does indicate higher output from the HEI system in the coming years.

Undergraduate awards in Architecture and Building Courses, 2008-2017

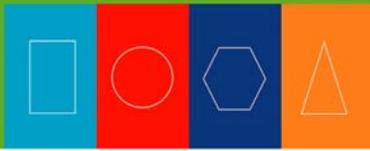
	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
(580) Combined Architecture and building	119	147	180	144	141	141	154	77	91	97
(581) Architecture and town planning	671	604	732	786	746	534	555	369	253	285
(582) Building and civil engineering	2,169	1957	1984	1,692	1,650	1,398	1,004	845	937	776
Total	2959	2708	2896	2622	2537	2073	1713	1291	1281	1158

Postgraduate awards in Architecture and Building Courses, 2008-2017

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
(580) Combined Architecture and building	0	0	0	-	13	11	25	73	61	70
(581) Architecture and town planning	147	172	151	121	144	127	149	174	171	207
(582) Building and civil engineering	117	104	169	136	133	148	179	149	138	174
Total	264	276	320	257	290	286	353	396	370	451

Activation from the Live Register

The post-2007 decline in supply from the apprenticeship and higher education systems has coincided with a similar decline in the pool of construction skills on the Live Register. For most of the past decade, Construction employers have been able to leverage a pool of workers formerly employed within the sector- this reached a peak of 81,900 in Q4 2009. By Q3 2018, however, this had reached 7,400. These individuals mostly held a Leaving Certificate as the highest level of education attained.



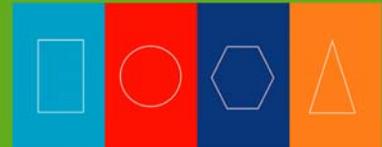
The Employer Relations Team in the Department of Employment Affairs and Social Protection has worked and continues to work closely with the Construction sector, to address its skills needs from the Live Register, including, increasingly, those not formerly employed within Construction.

There is a Key Account Manager for Construction, who in conjunction with the Employer Relations staff across DEASP's 10 divisions, works with various construction companies in assisting them in recruiting for job vacancies. This includes through tailored recruitment fairs, information and briefing for jobseekers, and the advertising of vacancies on JobsIreland.ie. The Key Account Manager and divisional staff also actively work with various educational and training providers, in particular the ETB network, in identifying and referring suitable candidates for training, apprenticeship and third level programmes.

Notable supports offered to the Construction sector in recent years include:

- The annual Jobs Week, a major annual event in DEASP's national recruitment calendar. In 2019, this included a large number of recruitment fairs featuring construction companies as exhibitors, educational and training events showcasing the range of opportunities available within construction, and an online Careers fair which provided employers with the opportunity to advertise vacancies nationally and across Europe.
- The JobsPlus financial incentive (€7,500-10,000, depending on length of unemployment, age), which incentivises employers to provide employment to the long term unemployed. A 2017 survey indicated a positive reaction regarding JobsPlus. There are currently 576 persons employed in the construction sector whose employer is supported by JobsPlus.
- The establishment of relationships with the CIF, ICF and major contractors to ensure job opportunities are made available to and are accessible to jobseekers. This is especially relevant to the social clauses within public sector construction contracts, where contractors are required to recruit 5% of those employed from the Live Register. DEASP collaborates with contractors and ETBs at commencement stage to determine the skills required for projects. In 2016-18, PPP contractors advised that the 5% threshold had been achieved for Primary Care and Courts projects, and 10% for Schools.
- Placements under the 6-9 month JobBridge scheme: Up to 2016, these included 1,057 or 2.71% of Internships in the Construction sector, with a further 987 (2.53%) in Engineering. The Department is now promoting JobBridge's successor scheme, the Youth Employment Support Scheme (YESS), to construction employers.
- In collaboration with the Irish Concrete Federation, Laois Offaly ETB and Midlands Regional Skills Forum, in 2018 DEASP also ran the Building Your Career event in the National Construction Training Centre, Mount Lucas, for jobseekers and employer and education and training exhibitors, from which job offers and training and apprenticeship opportunities resulted.

Given the level of demand forecast within Construction, however, and the fact that the economy is fast approaching full employment, labour market activation cannot be expected to make more than a marginal contribution towards meeting the sector's skills needs going forward.



Attraction of Labour from within the EEA

In addressing the issue of labour supply within the Construction sector, it is also important to highlight the role of foreign nationals in the pre-2008 Construction sector. In 2005-2009, following the accession of 10 new members states to the EU, more than 200,000 people came to Ireland from Central and Eastern Europe. Their importance for construction is reflected in the table below- Central and Eastern European workers represented 80% of the 50,500 foreign nationals working in the sector in 2007. During this period (2006-2009), foreign national accounted for approximately one fifth of the total Construction workforce.

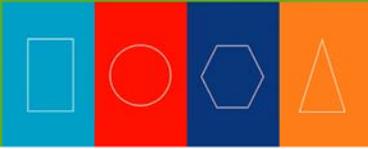
Foreign Nationals in Employment in Construction (Industry NACE Rev F), 2005-2017

	United Kingdom	EU 15 excl Ireland and the UK	EU 15 to EU 25 states	EU25 to EU28 states	USA	Rest of the World	Total Foreign nationals	Foreign nationals as % of Construction workforce (based on Q4 LFS)
2005	2,074	1,114	21,477	411	62	2,670	27,808	13.2%
2006	2,717	1,442	36,657	818	76	2,698	44,408	18.7%
2007	3,050	1,644	39,955	2,763	85	3,003	50,500	21.7%
2008	2,528	2,025	28,235	3,200	69	2,623	38,680	20.4%
2009	1,746	1,858	14,419	1,826	39	1,569	21,457	18.6%
2010	1,252	775	8,461	1,202	28	1,059	12,777	14.1%
2011	981	435	6,133	1,050	24	830	9,453	10.7%
2012	808	435	5,040	1,126	24	638	8,071	9.5%
2013	845	481	4,779	1,265	24	637	8,031	9.1%
2014	912	420	5,053	1,632	23	723	8,763	8.7%
2015	938	438	5,378	2,342	29	748	9,873	8.9%
2016	1,247	584	6,797	3,661	42	1,085	13,416	11%
2017	1,514	799	7,911	5,113	62	1,389	16,788	12.5%

During the downturn in Construction and wider Irish economy, however, net migration from post-2004 EU accession countries turned negative, and only turned positive again from 2014 on. This was reflected in the share of EU 15 to 25 nationals working in construction falling from a high of 40,000 in 2007 to a low of just under 5,000 in 2013.

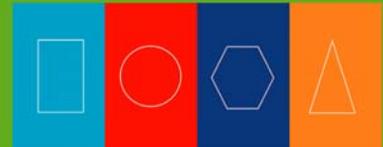
In recent years net migration from post-2004 accession states has increased from 2,700 for April 2015-16 to 5,300 for April 2018-19, a contrast with the 34,000-47,000 annual net inward migrations experienced during the mid-2000s. In 2017, EU 15 to 25 nationals in construction had increased to just under 8,000- just under half of the total of foreign nationals working in construction (16,788). A notable trend, however, is the increase in EU 25 to 28 nationals (Bulgaria, Romania, Croatia) employed in the Construction sector by 2017- this increased from 1,632 in 2014 to 5,113 in 2017.

The decline in the EU 15 to 25 share of the construction workforce has been attributed to the considerable improvement in economic conditions in Central and Eastern Europe in recent years- although this trend was recognised as early as 2008 in the SLMRU study, which noted the improving Polish economy and how the number of Polish migrants had declined significantly in the second half



of 2007. The experience of European labour in the run up to the 2008 downturn in the sector was raised as a possible influence by stakeholders. There was a massive recruitment drive in 2004-07, with many Eastern European workers moving en bloc; this lessened any language issues that existed, but with the collapse of the sector post-2008 and shakeout of labour, impacted on their ability to integrate into other sectors of the economy.

On EEA recruitment, it should be noted that, in conversations with the EURES Ireland team in the Department of Employment Affairs and Social Protection, it appears that engagement by the Construction sector with the EURES recruitment services and jobs fairs (see Appendix IV)- tasked with facilitating the free movement of workers between EU/EEA countries- has been relatively limited. In recent submissions to the Biannual Employment Permits review process, details on EEA recruitment activity, other than the posting of vacancies or advertisements, is sparse.



Chapter 2: Recommendations to boost skills supply

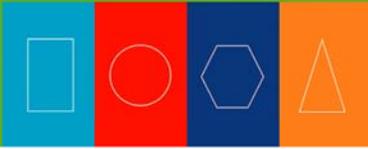
In order to bridge the supply gap that has emerged in the Construction sector in recent years, strategies, mainly on the industry side, have made recommendations in a number of areas: these include the introduction of supports or incentives to enhance employer engagement with the apprenticeship system; the marketing of Construction as a viable career option; and the attraction of international construction talent, including amongst the Irish diaspora and through the employment permits system.

2.1 Employer Engagement with the Apprenticeship System

While, as the previous chapter has highlighted, apprenticeship registrations are growing year on year and will continue to grow to 2022, the Construction industry has highlighted a number of trends which it argues pose obstacles to employer engagement with the apprenticeship system. These include structural changes within the sector after 2008, with the extent of the crisis leading to a downsizing of the sector, an increased incidence of outsourcing, and a lingering uncertainty for employers around the prospects for or the sustainability of construction sector activity, which is leading to a risk aversion towards apprentice recruitment.

Construction enterprises: Number of firms, employees, persons engaged by firm size, 2008-2016

	2008	2009	2010	2011	2012	2013	2014	2015	2016
Under 10	59,076	55,722	51,380	49,202	48,618	47,503	46,180	49,192	49,968
Employees Total	66,126	46,676	36,974	33,789	31,244	30,714	33,315	36,409	40,260
Persons Engaged (Total)	110,123	84,578	71,650	67,151	64,789	63,704	65,893	71,430	75,535
10-49	2,544	1,587	1,128	975	847	924	1,064	1,240	1,454
Employees Total	44,804	28,542	19,711	16,617	14,968	16,268	18,984	22,251	26,612
Persons Engaged (Total)	45,126	28,699	19,802	16,697	15,038	16,339	19,069	22,362	26,722
50-249	259	147	88	70	56	66	89	101	132
Employees Total	22,051	13,360	8,458	6,944	5,840	6,449	7,324	8,897	11,301
Persons Engaged (Total)	22,061	13,365	8,459	6,945	5,840	6,451	7,327	8,898	11,301
250 and over	26	16	11	9	9	9	16	13	14
Employees Total	12,759	7,671	4,634	3,847	3,684	4,628	7,571	6,030	6,783
Persons Engaged (Total)	12,759	7,671	4,634	3,847	3,684	4,628	7,571	6,030	6,783
Total Enterprises	61,905	57,472	52,607	50,256	49,530	48,502	47,349	50,546	51,568
Total Employees	145,740	96,339	69,777	61,197	55,736	58,059	67,174	73,587	84,956



In terms of downsizing, it is clear that between 2008 and 2016, the number of microenterprises, many of which would act as sub-contractors to the larger firms, while declining from 59,076 to 49,968, increased their share of the number of total enterprises. The number of small (non-micro) enterprises declined from 2,544 to 1,454 in the same period, medium enterprises from 259 to 132, and large enterprises from 26 to 14. It is also notable that for micro-enterprises, who make up around 47% of total employment in Construction enterprises (40,260 of 84,956), the number of 'persons engaged' (75,535 in 2016) far exceeds those employed- this is explained by the CSO as sub-contractors engaging with sole traders, and is perhaps a reflection of the level of sub-contracting activity.

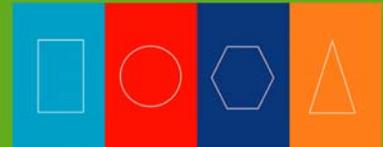
Reduced absorptive capacity amongst construction firms is therefore a potential issue, but so, it is argued, is the idea that many employers remain in a "survival mindset". The 2018 DIT/CIF Trades and Apprenticeship Skills Survey surveyed firms not employing tradespeople and asked them to identify the main barriers to them directly engaging this form of employment. A number of factors were highlighted, including the onerous nature of legislative obligations, the costs of direct employment of trades, the lower cost of using sub-contractors and agencies and the 'discontinuous demand for trade work'. The survey argued that 'the industry has not yet fully recovered from the recent downturn. While this is evident from economic markers, it is reinforced... by the sentiment of employers... a 'discontinuous demand for trade work' indicates that firms are not yet sourcing significant work to drive confidence in the industry'.

The 2013 Forfas report referred to market uncertainty as a key barrier to a resumption of confidence within the industry; this was being exacerbated by a lack of information relating to prevailing market conditions. This confidence piece, it can be argued, is being addressed by the pipeline of projects now committed to through the 2018-2027 National Development Plan, and the Communications strategy around *Project Ireland 2040*, which is targeted at the broad construction activity stakeholder community- including the Irish diaspora, private companies and the policy community.

The Project Ireland 2040 Investments Interactive map (accessible at the Project Ireland gov.ie website)



Led out of the Department of Public Expenditure and Reform, this is aiming to increase the efficiency and consistency of communications to make Project Ireland 2040 and its associated investments



more open, credible and accessible. This has included the development of an investments tracker, while the project will involve developing bespoke campaigns, directly engaging with staff, citizens, and industry; mobilising engagement amongst partner colleagues; enhancing its web presence; use of infographics and explainers; and working with industry publications.

Recommendations around boosting employer engagement

Industry recommendations around boosting employer engagement with the apprenticeship model have drawn on the arguments underlying downsizing and the existence of a 'survival mindset' within the broader construction sector. In both 2016's *Demand for Skills in Construction to 2020* and 2018's *Trades and Apprenticeship Skills Survey*, the CIF argued for 'more innovative methods of apprenticeship delivery'. Both studies highlighted the potential for the roll out of a **shared apprenticeship scheme** as a means of stimulating engagement in apprentice training by firms, in particular in the wet trades.

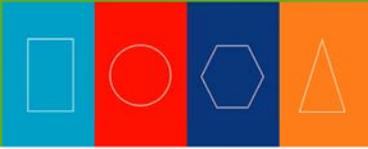
These recommendations were made in the context of a pilot Shared Apprenticeship scheme, which was launched in 2016 by the South East branch of the CIF in conjunction with SOLAS and Waterford/Wexford ETB. This scheme, which ran into 2017, allowed a number of CIF member companies (four in total)³ to take on apprentices as part of a consortium: participating companies were able to share apprentices with other members if the volume decreased, providing consistent training in an appointed trade and work experience for the apprentices involved.

Following further engagement between the CIF and SOLAS in the summer of 2018, a small working group was formed with CIF and SOLAS representatives to examine the demand for a shared apprenticeship scheme in more detail, and its viability as a national initiative. SOLAS agreed to extend the project nationally, and in March 2018 the CIF called on its membership to form consortia of three to four companies and to start registering apprentices. The number of apprentices to be employed by each consortia is to be agreed amongst the participating companies, and short term transfers between employers is permitted.

The CIF view is that, due to the recovery in Construction activity, this initiative has lost momentum—such has been the increase in Construction activity that companies are in a position that they are busy enough not to have to share. As of summer 2019, however, the CIF are looking to extend the scheme to the Midlands and Western regions. Its Western and Midland branches have called on member companies to consider creating co-ops where a number of companies choose to work collaboratively in providing training for new apprentices.

2018's *Trades and Apprenticeship Survey: An Employer Perspective* made a number of further proposals for enhancing employer engagement. Surveying construction employers on the barriers to employing apprentices, a number of factors emerged as the most significant reasons for non-engagement: the cost of releasing apprentices to off the job training, onerous legislative obligations, and lack of incentives from government. The survey remarked that: 'These barriers

³ Clancy Construction, Cleary-Doyle Construction, Anthony Neville Homes and Mythen Construction



highlight a range of issues for employers all of which are financial. This would seem to indicate a lack of faith within the industry to sustain investment in training. This is most likely predicated on the extent to which the economic downturn affected employer insolvency, output and employment’.

As well as a review of the duration and sequence of off the job phases, as part of a planned initiative to improve employer engagement, the survey recommended the introduction of financial supports or incentives for employers prepared to recruit apprentices:

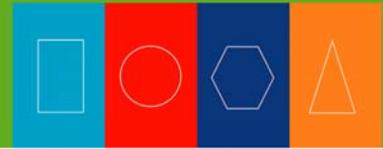
- Targeted use of the National Training Fund ‘through implementation of a waiver of NTF contributions for those firms which engage in apprenticeships’
- A grant system, paid in full by the Exchequer, for apprenticeship trainees in construction, ‘until such time as the shortage has been fully addressed’
- The initiation of a scheme of zero-rating employers PRSI contributions for those firms engaging apprentices in trades identified as being in need of stimulus. This, it was argued, ‘would incentivise small employers particularly, through the removal of employer’s PRSI contributions for the duration of the training period’.

On the NTF Levy waiver, the CIF argues that it would act as a significant enabler to training investment, with forecast economic growth meaning that Government revenue from the Fund would rise naturally in line with an improving economy, even without the intended increase to 1%- which the 2018 survey argued, ‘may result in a negative response by employers who could perceive that no tangible benefit will be observed’.

On the proposal for a waiver, the Department of Education and Skills has highlighted how most international schemes that allow rebates for employers who train directly only apply where that training is provided and funded by the employer. There would be issues with a proposal that employers who benefit most from investment from the NTF contribute less than other employers to the levy.

This in turn impacts on the proposal for a grant system for construction apprentices. Again, DES has highlighted how employers engaged in craft-based apprenticeships are benefitting significantly from the NTF- in particular through the payment of a training allowance to apprentices equivalent to their wages by their local ETB during their off the job training phases. This is not the case in the new consortia led apprenticeships, where the apprentice’s wage for the full duration of the apprenticeship. Further financial assistance to employers in the construction sector needs to be considered in that context.

The recommendation for a zero-rating employers PRSI contribution meanwhile touches on the area of tax expenditures- government interventions that can be used to correct what the Department of Finance defines as market failures that result in inefficient or inequitable outcomes and encourage



a socially optimal allocation of resources.⁴ A Construction sector specific PRSI relief would, given the broader reach of the apprenticeship system, raise objections around its equity. Those enterprise tax reliefs or incentives that currently exist are general in their coverage (R&D Tax Credit, Employment and Investment Incentive, Start Your Own Business relief). In terms of PRSI waivers, there has been recent experience of such a scheme- the Employer Job (PRSI) Incentive scheme under the 2011 Jobs Programme to boost employee recruitment. This, however, was a cross sectoral initiative.

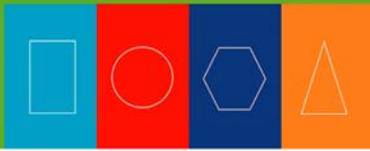
If a new tax related incentive/waiver for apprentice recruitment was to be introduced it would have to be cross sectoral in its application, to maintain equity within the tax system and minimise administrative complexity. The 2013 Review of Apprenticeship Training in Ireland did propose a targeted approach- that consideration should 'be given to providing incentives for employers in the form of subsidies, or PRSI or tax relief, to encourage them to recruit hard to reach groups, such as persons with low skills, those who have been unemployed for prolonged periods and those with disabilities'. This approach has been maintained in the recommendations- admittedly more focused on targeted funding or supports- in the *Review of Pathways to Apprenticeship*.

There is therefore limited likelihood that any of the incentives advocated by the CIF will be implemented in the near future. For those recommendations around grant aid or National Training Fund levy waivers, it must be highlighted that these are made in the context of the introduction of reforms to the operation and financing of the Fund. The National Training Fund levy is scheduled to increase to 1% by 2020, on the basis of the implementation of these reforms- which include an enhanced role for employers in the direction and allocation of resources from the Fund.

In terms of the 'tangible benefit' for employers from the increase in the rate of the NTF levy, however, the CIF is represented on the recently established Employer Advisory Committee for the National Training Fund, composed of employer and public sector representatives. This was one of the channels recommended in the review of the Fund for enhancing the employer voice in its direction.

The purpose of the group, as set out in its terms of reference, is to provide a permanent resourced structure to optimise enterprise engagement on NTF priorities; develop evidence based recommendations to the National Skills Council in order to maximise the effectiveness and impact of NTF expenditure; and to facilitate NTF focussed inputs from enterprise stakeholders to the Department of Education and Skills in the context of the annual estimates cycle. This would suggest a channel through which the Construction sector can input and advise on securing greater traction with the apprenticeship system amongst construction employers.

⁴ The Government approach to tax expenditures was set out in the 2014 *Report on Tax Expenditures- Incorporating Department of Finance Guidelines for Tax Expenditure Evaluation*, published by the Department of Finance.



2.2 Marketing Construction as an attractive career option

As trends in chapter 1 highlighted, the post-2008 collapse in the construction sector impacted on its attractiveness as a viable career option amongst both students and their key influencers, parents and career guidance counsellors. Recommendations aimed at raising its profile and promoting its associated career opportunities began to emerge from 2016, as the sector returned to growth and demand for skills increased. 2016's *Demand for Skills in Construction 2020*, for example, recommended enhancing:

... the image of the industry by inspiring young people through extensive communications on the industry's ability to shape Irish society and deliver world class projects, promoting the highest health and safety standards in the EU and through insisting on standards on measures such as the Construction Industry Register Ireland (CIRI). This should involve the development of a national awareness campaign on careers in the construction industry and related fields through the Construction Industry Council and partners.

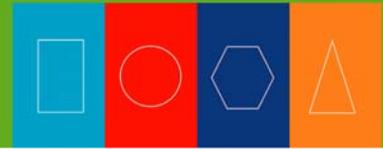
Ibec's *Better Housing* report from 2018 also recommended the better marketing of construction related apprenticeships and development of new programmes where gaps exist, while the DIT/CIF *Trades and Apprenticeships Skills Survey* advocated for a collaborative forum (involving all stakeholders) for the marketing of construction as a viable career option. The survey also pointed towards the development of an Approved Apprenticeship Employer marketing initiative, which would entail all approved apprenticeship employers being given a registration number and logo/badge.

In any re-establishing construction as a viable career option, however, industry surveys have acknowledged the negative perceptions that still attach to the sector. A recent CIF survey on Construction careers found that in the public mind the industry is still associated with primarily blue-collar trades, such as brick laying, carpentry, plumbing and electrical wiring. Furthermore, while more than 6 in 10 see building something as an inspiring career option, more than half of those surveyed believe that society still puts a stigma on 'manual physical work' as a profession which is less reputable and deserving of credit. These perceptions fail to reflect the modern construction sector, as described in the CIF's *Women in the Construction Sector* report:

Modern construction methods have shifted away from traditional block work to embrace new technologies and the increased use of metal, glass and panelling etc. Much of the work that was previously conducted on site has now moved off site where prefabricated design and building has greatly enhanced project efficiencies... The modern world of construction is one that includes a breadth of on site and off site roles requiring engineers, project managers, quantity surveyors, architects, technicians and designers working together to deliver a project from beginning to end.

The Construction sector has been proactive in recent years in its marketing activities, supporting and running a range of initiatives aimed at enhancing the profile of the sector and its associated careers.

On apprenticeships more broadly, the Construction Industry Federation has acted as one of the industry sponsors of the **Ireland Skills Live** event, which aims to address negative perceptions



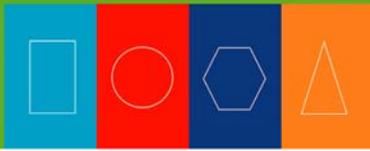
students, parents, as well as teachers and career guidance counsellors may have about apprenticeships as a future career pathway, through exposure to competitions and demonstrations by Irish apprentices and trainees. The 2019 event attracted 12,500 visitors, and featured panel discussions from successful business people who started as construction and engineering apprentices, the attendance of construction employers showcasing the range of jobs they currently have on offer, and 'Try a Skill' - which permitted visitors to gauge their interest in Construction skills including: Bricklaying, Cabinetmaking, Carpentry, Electrical Installations, Industrial Control, Joinery, Painting and Decorating, Plastering, Plumbing and Heating, and Refrigeration.

The CIF has also been active in the **Generation Apprenticeship promotional campaign**, which was launched in May 2017 and is led by the Apprenticeship Council with coordination from SOLAS. The initial year of the campaign targeted the key audiences of employers, prospective apprentices, schools and guidance counsellors. Accessible information booklets and other materials were published and used at high profile events, in meetings with employer groups, and via print, radio and on television as well as across social media platforms including Twitter, LinkedIn, Facebook and Instagram. The CIF, with ESB International, has also jointly sponsored a [Generation Apprenticeship competition](#), which showcases the skills and creativity of Irish apprentices.

In support of apprenticeship registrations, the CIF also established Apprentices.ie, to enable school leavers and CIF members to connect on apprenticeship opportunities. CIF members approved by SOLAS to employ apprentices could register on the website, as could school-leavers seeking an apprenticeship. The website also offered employers a free service to advertise their apprenticeship vacancies. The portal closed permanently in April 2019, with the introduction of www.apprenticeshipjobs.ie, the new central Apprenticeship Council website for advertising new apprenticeship vacancies.

At individual organisation level, the CIF also runs a number of initiatives aimed at boosting the awareness and attractiveness of construction related roles through practical exposure:

- In 2016 it launched the **Work Placement Initiative**, which enables CIF member companies to offer work placements to local TY students. The initiative is supported by the Institute of Guidance Counsellors.
- In collaboration with Careers Portal, the **WorkXperience** platform has been developed to allow CIF members advertise their willingness to take on work placement students. The programme is targeted at 16-19-year-old students, and is designed to run over 10 days, which can be completed over a period of 1, 2 or 10 weeks, according to the student's needs and a company's requirements.
- A pilot **Building Your Career initiative** was launched in 2018, in collaboration with DEASP, Dublin Regional Skills Forum, and with support from SOLAS, City of Dublin ETB, Ballyfermot Training Centre and Youthreach. A total of 75 second level students from the Ballyfermot area attended the event to learn more about construction career opportunities, as well as the educational pathways available.



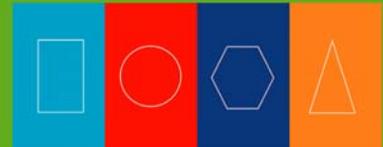
On its marketing to second level students, the CIF has been a regular attendee at the Higher Options event held each September, and has collaborated with Grad Ireland in 2017 to produce a [Construction and Property careers guide](#), outlining the different areas of work, apprenticeships, pathways to employment (work experience, internships, non-vocational courses) and different professional bodies across both sectors. It has also partnered with Careers Portal to provide content for the [Construction, Architecture and Property section](#) of the website, providing information on career opportunities, education and training, career advice, work experience, as well as career interview videos and career articles across a number of roles.

The other professional organisations active in Construction have also been engaging in promotional activities to school students. While it does not differentiate between the different engineering disciplines, **Engineers Ireland**, with funding from Science Foundation Ireland's Discover programme, runs the **STEPs** outreach programme, which promotes interest and awareness in engineering as a future career to school students. This incorporates a number of strands, including: the week-long **Engineering Your Future TY programme**, hosted by HEIs and companies, which aims to give students a hands on, fun and practical insight into engineering at third level and as a career (415 student participants in 2018); the **Engineers Week** festival of nationwide events, celebrating the world of engineering in Ireland (858 events in 2018); the **Young Engineers Award**, where volunteer engineers visit schools, and which asks 3rd/4th class students to form an engineering team to resolve a community challenge (172 school visits in 2018); and the **Girl Guides badge**, developed in partnership with the Irish girl guides, the syllabi for which include fun activities to help girls explore STEM and encourage them to pursue STEM subjects and careers (1,858 badges awarded in 2018).

The **Royal Institute of Architects of Ireland** also engages in outreach to stimulate interest among young people in the architectural profession, providing access to materials, resources and programmes to help school teachers and students understand architectural design. A dedicated [section of the RIAI website](#) contains information on becoming an Architect or Architectural Technologist, while the Institute also operates a TY programme, which provides a framework for a one week placement in an architect's office. Working alongside an assigned mentor, students develop design development, research and presentation skills, and gain experience in a variety of industry applications. The **Society of Chartered Surveyors Ireland** also have a dedicated section on their website for those considering their CAO options, allowing them to discover more about surveying professions across property, construction and land, as well as Third Level courses accredited by the Society in Irish Higher Education Institutions.

Construction and Gender Equality

In seeking to establish a broader base of skills within the Construction sector, the CIF has also been active in recent years in seeking to enhance female representation within its workforce. The gender imbalance within Construction is reflected in CSO figures- only 5.5% of the workforce across all construction related activities are women, while the number of women in senior management positions is also low- just 10% of senior managers and 3% of CEOs according to a CIF survey. On site work, involving work on or as part of a construction site team remains male dominated, while off site positions, such as working in an office role (e.g. finance or administrative roles), are more



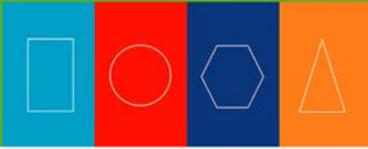
likely to comprise a balance of men and women. This is reflected in HEI graduate numbers, where males heavily outnumber female graduates in building and civil engineering (717 and 59 for 2017/18); this is far less pronounced, however, in Architecture and Town Planning (191 and 94).

This gender imbalance is starkest in the apprenticeship registration figures: in October 2018, of the eight apprenticeship programmes, only 12, or 0.3% of the total were women. Those apprenticeship programmes with no female apprentices included Brick and Stone Laying, Plastering, Stonecutting and Stonemasonry, and Construction Plant Fitting. As part of the implementation of the *Review of Pathways to participation in Apprenticeship*, SOLAS has committed to increasing the number of female apprentices in the coming years, including by increasing practical supports for apprentices from under-represented groups, working with training providers, consortia and employer representative groups; and by considering the extension of the employer bursary to apprenticeships which have less than 20% females.

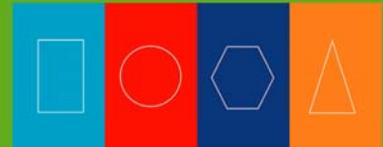
To address this imbalance the CIF commissioned the *Women in the Construction Industry* report. This report has set a target of increasing female participation to 25% of the total Construction sector workforce by 2030, and has recommended a number of actions for industry and companies in support of this objective: a national multi-annual awareness campaign, to highlight gender balance as a key priority, and promote the industry as a career destination for women; structured outreach to primary and post-primary schools, including through open days and site visits, to educate career guidance teachers and students about the career opportunities available to both men and women; and at company level the introduction of gender inclusive recruitment policies, staff training on gender bias, and mentoring programmes for female employees.

The multi-annual awareness campaign was launched by the CIF in 2017, in the form of **#BuildingEquality**. An associated breakfast briefing is held each year on International Women's Day, while a Women in Construction Network, composed of senior women leaders, has been established to identify and address key barriers to gender balance; a Building Equality Working Group also aims to promote equality of opportunity in construction, by positioning the sector as a viable and attractive career option for all groups at an early age. The #BuildingEquality social media campaign also features stories from female role models within the sector. As part of the campaign, the CIF has also partnered with Donegal toymaker Lottie Dolls in the design of Construction related dolls, to address gender stereotyping and influence young girls to envisage a future in the Construction industry. This included a #LottieTour of schools and construction sites around Ireland in 2018, which featured on the Lottie Dolls and CIF social media platforms.

In support of firm level inclusion, the CIF also commissioned the Irish Centre for Diversity to produce an **Equality, Diversity and Guidance document**, which is designed to act as a high-level guide for organisations on improving diversity and inclusion- including in relation to ethnicity age and sexual orientation- within their workplace and the wider industry. The guidance document highlights the business case for diverse and inclusive workplaces, such as the strong correlation between female representation at senior level and financial performance. Workforce diversity was



also linked with better customer service, a wider talent pool and benefits in terms of creativity and innovation.



2.3 The attraction of overseas talent

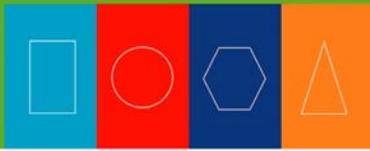
As a means of bridging the supply gap that has emerged in recent years, the construction industry has also made recommendations around boosting the attraction of overseas talent. This has included the attraction of skilled construction personnel from within the Irish diaspora and from outside the EEA. In the 2016 DKM report, for example, it was recommended that the Construction industry deliver an international recruitment drive targeted at the Irish diaspora, to attract skilled construction personnel, many of whom had left post-2008, back to Ireland. Over 100,000 construction workers emigrated during the recession to countries such as Australia, Canada, the United States, New Zealand and the UAE.

This recommendation coincided with a focus on the potential diaspora workforce at Government level, with the launch of the #hometowork social media campaign in 2015, publication of *Global Irish: Ireland's Diaspora Policy*, and the commitment under the 2016 Programme for Partnership Government to facilitate the return of at least 70,000 emigrants to help address the skills needs of the Irish economy. Following on from this recommendation, in late 2016 the Construction Industry Federation launched www.cifjobs.ie as part of an effort to target the Diaspora workforce to fill available and emerging jobs in Ireland's construction sector. The website allows CIF members to post jobs and jobseekers to apply for those jobs.

The CIF also partnered with a number of organisations such as DKM consultants, Hays Recruitment Ireland, ICDS Recruitment, Back4Good.ie and the CIF's Pension Administration Services to inform Irish emigrants of the opportunities in Ireland. In the case of Hays, in association with the CIF is held a series of Construction and Property online seminars, designed to provide the information required before deciding to return to Ireland. The seminars provided information on how salaries had improved in the sector, the range of construction projects being undertaken across Ireland, and how participants could take the first steps to securing employment at home.

The numbers attracted back through this recruitment drive appear to have been limited. It has been confirmed by the Department of Foreign Affairs and Trade that, in relation to this CIF initiative, Ireland's missions in Abu Dhabi, Canberra, London, Ottawa, Riyadh, Sydney, Wellington and Vancouver have not undertaken specific actions targeted towards the Construction diaspora. The Embassy network has, however, expressed readiness to support the recruitment drive through supportive messaging or events.

The Construction industry has reported a number of constraints to diaspora attraction, including the recognition of overseas construction qualifications, licences and expertise, which require the undertaking of similar courses in Ireland before employment can be secured. Certainty in the construction sector outlook has also been highlighted, as has the difference in professionalisation in the construction industries in which emigrants have established themselves. A recent CIF survey suggested that construction workers who have returned have done so primarily for family reasons.



The recognition of qualifications issue reflects the findings of research undertaken on behalf of the Department of Foreign Affairs and Trade, the coordinator of the Government's diaspora policy, on the barriers to attracting back Irish emigrants.

This research, which was published in early 2018, and the findings of which are being addressed by the Interdepartmental Committee on the Irish Abroad, highlighted a number of areas in which action was required to ease the return of emigrants. These include: information provision, housing (Help to Buy eligibility, Housing market/mortgage approval information), motor driving (bilateral licence exchange, motor insurance penalties), employment (overseas jobs fairs, job opportunity information, transferability of qualifications/training), financial/banking/pensions (setting up bank accounts from overseas, recognition of overseas savings for Mortgage approval), childcare (information on new supports, costs), welfare (pre-booking of PPSN appointments), education (admissions, school places), and entrepreneurship.

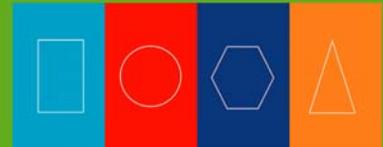
Engineers Ireland has also been engaging with Irish engineers working abroad, through its 'Global Engineers' events aimed at helping corporate partners connect with talented international engineers seeking to establish themselves in Ireland. This is as part of its work in establishing and promoting international agreements with overseas professional engineering institutions, which guarantee mutual recognition of engineering qualifications- in particular with countries such as the USA, Canada, Australia and New Zealand- and facilitate the professional mobility of Irish engineers, as well as engineers from those countries.

Engineers Ireland has also negotiated an Access Pathways Agreement with the UK's Engineering Council, replacing the EU directive on Professional Qualifications, to maintain the recognition of engineering professionals post-Brexit. This ensures that engineers who apply, are assessed and achieve a registered professional title from Engineers Ireland will continue to have that title recognised if they seek work in the UK. UK engineers will also have their title recognised in Ireland.

Employment Permits system

Due to shortages within Ireland and the fall off in EEA migration, the Construction industry has also increasingly called in recent years for the restoration of Construction related roles to the Employment Permits eligible occupation lists. Property Services Ireland's 2018, *Better Housing: Improving Affordability and Sustainability*, argued that the 'labour market needs of the construction sector should be part of the review of the work permit system by the Department of Business, Enterprise and Innovation. It should be in consultation with the Department of Public Expenditure and Reform and the Department of Housing, Planning and Local Government as well as industry. Our work permit regime should be tailored not just for skilled workers but also for general operatives in the construction industry'.

It added that: 'Separately, Government should undertake an international promotional campaign for the National Development Plan to highlight construction opportunities in Ireland over the next decade. This would attract investment, skills and expertise to the country. It could also highlight the ambitious housing delivery objectives under the NPF'.



As part of the Biannual Review of the Employment Permit lists undertaken in Q4 2018, submissions were received from the Construction Industry Federation, the Association of Consulting Engineers of Ireland, and Property Industry Ireland requesting changes in relation to Construction related roles. Changes arising from this biannual review were announced by the Minister for Business, Enterprise and Innovation in early April 2019, and featured a heavy emphasis on Construction. These changes, which have been active since 22nd April 2019, were made across both the Critical Skills and Ineligible lists of occupations:

- Addition of occupations to the Critical Skills List of Occupations:
 - Civil Engineers
 - Quantity Surveyors
 - Construction project managers
 - Mechanical and electrical engineers with Building Information Modelling capabilities

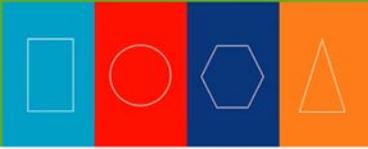
- Removal of occupations from Ineligible List of Occupations (qualification for General Employment Permit)
 - Sheet Metal Workers
 - Welding Trades
 - Pipefitters
 - Air-conditioning and Refrigeration Engineers
 - Shuttering Carpenters
 - Glaziers, window fabricators and fitters
 - Scaffolders, staggers and riggers
 - Crane drivers

- Removal of occupations from the Ineligible List of Occupations by quota (qualification for General Employment Permit)
 - Plasterers, subject to a quota of 250
 - Bricklayers, subject to a quota of 250

In order to prepare the construction sector for the introduction of these changes, the Economic Migration Policy Unit of the Department of Business, Enterprise and Innovation has engaged with the sector through the CIF, providing guidance on the employment permit application process.

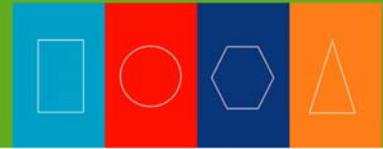
As the revisions only came into effect in late April 2019, take up will remain unclear for a number of months- although anecdotally, in conversation with the CIF, it has been suggested that member companies have been slow to engage with the permits system. As of early September 2019, there had been the following take up of critical skills permits for construction occupations: 50 for civil engineers (14 General Employment Permits had previously been issued in 2019), 15 for Quantity Surveyors (6 GEPs had previously been issued- 1 CSEP for a Chartered Surveyor has also been granted), and 6 for Construction Project Managers and related professionals.

Critical skills permits for 12 Mechanical Engineers (and 1 GEP) and 6 for Electrical Engineers (and 2 GEPs) had also been issued- although it does not specify whether these roles had BIM capabilities. It is interesting to note, however, that in submissions for the Q2 2019 Biannual review the industry is arguing that the application of BIM capabilities to Mechanical and Electronic engineering is too



narrow and requires eligibility for BIM specialists in their own right. While not subject to the changes, CSEPs were also granted for Architects (1, and 3 GEPs), Draughtpersons (1) and Production Managers and Directors in Construction (1, and 2 GEPs). For those occupations removed from the ineligible lists and requiring a Labour Market Needs test, four permits have been granted for the Welding Trades and four for carpenters and joiners.

For critical skills permit holders, it is relevant that these changes coincide with the implementation of the recommendations in the *Review of Economic Migration Policy*, published in September 2018. Under the Review the thresholds for critical skills permits will rise from €30,000 to €32,000 and €60,000 to €64,000 respectively. The most consequential change in terms of the attractiveness of critical skills permits to international talent, however, are the changes to immigration arrangements for spouses and partners of CSEP holders. These mean that spouses are now able to access the Irish labour market, without the need to obtain a separate employment permit. The Irish Naturalisation and Immigration Service will grant eligible spouses and de-facto partners of CSEP holders permission to reside in the State on Stamp 1 conditions. The Review has proposed proactively marketing the opportunities for eligible family members to work in the State.



Chapter 3- Recommendations on aligning education and training provision with Construction sector needs

As well as establishing an adequate pipeline of skills for Construction activities, ensuring that this pipeline is fully aligned with the skills needs of the sector has also been a core concern of Construction related strategies over the last decade. Recommendations across both Government and industry strategies have focussed on a number of areas:

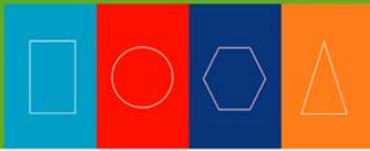
- The undertaking of Construction skills analyses, to ensure both the nature and scale of the demand for construction skills could be assessed and planned for through the education and training system;
- The establishment of a broadly based (i.e. State and industry) to continually monitor and collaborate on the delivery of the sector's skills needs; and
- The greening of construction skills, to help address the sector's responsibility in advancing the climate change mitigation agenda.

3.1 Construction Skills Analysis

As the Construction industry recovered from the mid-2010s, calls have been made by Government and industry for the undertaking of a skills analysis to support this recovery and inform the necessary education and training response. Prior to this analysis, the last direct study of the Construction sector undertaken by the Expert Group on Future Skills Needs was 2008's *A Review of the Employment and Skills Needs of the Construction Industry in Ireland*, when it faced significant contraction rather any prospect of growth. Aspects of Construction were also covered by 2010's *Future Skills Needs of Enterprise within the Green Economy in Ireland*.

This compares with a more active and ongoing examination of Construction related skills needs in the first half decade of the EGFSN's existence, when it operated a sub-committee on construction, chaired by the Department of Enterprise, Trade and Employment, and with relevant training agency, trade union, and construction sector representation- the work of this sub-committee culminated in the publication of *The Skills Monitoring Report- The Construction Industry 2003-2010*, undertaken by the SLMRU.

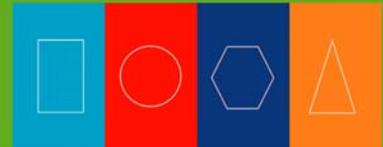
With a view to establishing a more sustainable Construction sector, 2014's *Construction 2020* mandated the EGFSN with identifying 'future skills needs in the sector and implement targeted measures to ensure we can meet demand. Priority will be given to addressing the skills gaps identified'. Rather than undertake a separate study, the EGFSN Secretariat reviewed and compiled information on the sector's skills needs from a range of sources (the 2010 Green Economy report, recent Springboard calls, the Apprenticeship Review, and the 2014-2019 FET Strategy), while the SLMRU provided occupational and apprenticeship forecasts, including a breakdown of PES jobseekers across 21 construction occupations. These findings were presented at a meeting with the CIF in late 2014, with the discussion informing the EGFSN's development of the Springboard call Guidance document, and CIF inputs into the Apprenticeship Review and 2014-2019 FET Strategy implementation plans.



Under 2016's *Rebuilding Ireland: Action Plan for Housing and Homelessness*, SOLAS was meanwhile tasked with updating skills forecasts and working with stakeholders to ensure that mainstream and targeted education and training initiatives supported the supply of skills required to deliver the action plan. These skills forecasts were undertaken as part of the CIF commissioned DKM report from 2016, *Demand for Skills in Construction to 2020*, and have been employed for internal planning purposes by the Department of Education and Skills.

As part of its 2018 *Better Housing: Improving Affordability and Sustainability* report, Property Services Ireland called on the Expert Group on Future Skills Needs to conduct a comprehensive review of the entire skills base of the construction sector. It explained how 'Skills gaps exist right across the board, not just in direct construction activities. They span the entire spectrum from general operatives to skilled specialists to the myriad of ancillary functions, including professional services. The key factor is that they are interlinked and increasingly interdependent. Gaps in one or more areas impact the entire sector. More fundamentally it is a direct challenge to the delivery of new homes'. On the EGFSN review, it stated that this will 'ensure that the labour market needs for the sector will be prioritised by policymakers'.

The undertaking of such a review is being considered in the context of the EGFSN's 2019 work programme.



3.2 Convening of Construction Skills Forum

A number of strategies have also recommended the establishment of formal public and private sector groups to provide oversight of, amongst other matters, the development of construction skills. The 2008 SLRMU study provided a rationale for these recommendations, commenting on how the 'wide range of education and training courses which are available for the industry and the diverse number of institutions and organisations involved in delivering these programmes, suggests that there may be some scope for achieving greater efficiencies through developing a more co-ordinated approach to education and training provision'.

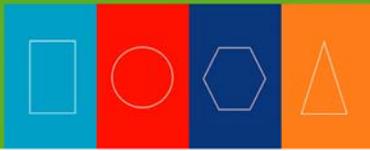
In 2013 Forfas also highlighted the numerous agencies and bodies involved in training and education for the sector, and a variety of other organisations involved in setting regulations and standards which have an impact on education and training requirements- e.g. the Department of Housing, the Sustainable Energy Authority of Ireland (SEAI), and the National Standards Authority of Ireland (NSAI): 'Against this fragmented backdrop, skills monitoring for the sector has become somewhat disjointed... Given the challenges facing the sector at the present time and a looming issue in relation to skills shortages, the need for such an approach is more urgent'.

The Forfas report for its part recommended the convening of a 'Construction Enterprise Clearing House' to drive its admittedly broader recommendations, to inform the Construction sector's ongoing development and to coordinate relevant policies; the house was to comprise officials from key Government departments,⁵ Enterprise Ireland and industry representatives, and it was proposed that the Department of Education and Skills, SOLAS and industry representatives work with the Clearing House to facilitate a 'coordinated approach to defining the construction skills development agenda'.

Construction 2020, the development and publication of which in 2014 followed on from the Forfas report, superseded this proposed governance structure, while adopting many of the accompanying recommendations verbatim. Rather than a clearing house, it was proposed that a 'Construction Sector Group' be established, chaired by the Secretary General of the Department of the Taoiseach, to support delivery of the strategy, and to engage with industry in relation to specific developmental issues for the sectors. Relevant Cabinet Committees were to be responsible for ensuring a whole of government approach to implementation.

On the basis of discussions with the Department of the Taoiseach, it has been established that the Group's membership was confined to the public sector and used as an internal Government mechanism for implementing and monitoring *Construction 2020's* delivery. The timing of the lapsing of this group has been harder to establish, but it is assumed that this coincided with the publication of the *Programme for a Partnership Government* in 2016, that programme's commitment to "ending the Housing Shortage and Homelessness", and the publication of *Rebuilding Ireland* later in 2016.

⁵ Jobs, Enterprise and Innovation, Environment, Community and Local Government, Public Expenditure and Reform, and Finance



In the 2016 DKM report, the CIF meanwhile proposed the establishment of a 'Construction Skills Forum within the current National Skills Strategy Group between the Departments of Education and Skills and Jobs, Industry and Innovation, to monitor progress and address barriers in the education and training system which are impeding the delivery of the required skilled employees. This forum would meet quarterly and report annually to work as a feedback mechanism between industry and the education and training system allowing issues to be resolved in partnership'.

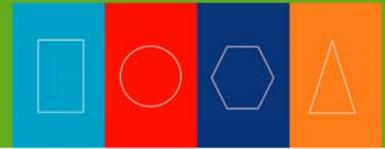
This recommendation appears to arise from a misunderstanding of the role of what would become the National Skills Council (the recommendation was made in 2016, while the Council met for the first time in April 2017) and the EGFSN. In discussions with the Construction Industry Federation, however, interest has been expressed in the model adopted for the Tourism and Hospitality sector, through the National Tourism and Hospitality Careers Oversight Group on which Failte Ireland leads, and which is composed of the chief industry representative organisations, education and training agencies, and relevant Government Departments.

Under the governance structures set up to support the delivery of *Project Ireland 2040*, meanwhile, a 'Construction Sector Group' has been established to ensure regular and open dialogue between Government and industry on how best to achieve and maintain a sustainable and innovative construction sector positioned to deliver the strategy. Chaired by the Secretary General of the Department of Public Expenditure and Reform, its membership includes Government Departments and offices/agencies,⁶ the key Construction industry organisations⁷ and ICTU. As well as improving productivity, environmental sustainability, and the modernisation of public works delivery, its remit includes a focus on 'the supply of necessary skills and measures enhancing capacity (including the potential use of overseas contractors)'.

As part of its 2019 work programme, the Group has set as one of its objectives 'Securing the Skills Pipeline'. Skills related issues, such as apprenticeships and third level provision, as well as the promotion of construction careers, have been discussed by the Group, while under its structure industry bodies have been tasked with working together to promote the sector as an attractive, modern and technology centric industry, and to have a focussed discussion on apprenticeships, issues, challenges and opportunities.

⁶ Departments of Public Expenditure and Reform, Business, Enterprise and Innovation, Communications, Climate Action and Environment, Education and Skills, Health, Housing, Planning and Local Government, Taoiseach, Transport, Tourism and Sport; Health Service Executive, Office of Government Procurement, Office of Public Works

⁷ Association of Consulting Engineers of Ireland, Building Materials Federation, Construction Industry Federation, Engineers Ireland, Irish Planning Institute, Royal Institute of the Architects of Ireland, Society of Chartered Surveyors Ireland



3.3 National Skills Architecture and alignment of training provision with industry needs

While no formal public/private sector grouping has been convened to ensure alignment between provision and industry needs, there have been several channels for advancing this alignment with employer demand through reforms to the skills monitoring architecture implemented following the publication of *Ireland's National Skills Strategy 2025* in 2016.

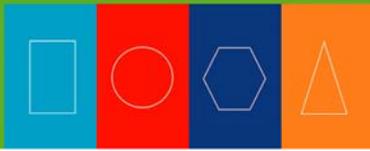
This was an issue highlighted in the 2013 Review of Apprenticeship Training in Ireland, which noted how in its consultations employers argued that 'they had an inadequate influence over the content of existing VET programmes outside VET'. It continued- 'Any new system should put employers firmly in the driving seat in identifying the occupational needs which should underpin programmes'. A year later *Construction 2020* advised that 'links between construction sector firms, professional bodies and education and training providers should be further enhanced to ensure programmes are continuously aligned with emerging skills needs'.

Responsiveness to employer skills needs, including those within the Construction sector, are central to the National Skills Architecture that has been established in Ireland since 2016. The **National Skills Council** works to ensure optimal investment in identified skills needs, and the response to these skills needs by education and training providers, in considering the labour market and skills intelligence provided through SOLAS'S Skills and Labour Market Research Unit, the research of the Expert Group on Future Skills Needs, and the work of the network of nine Regional Skills Fora. Under the reforms to the National Training Fund announced in 2018, an Employer Advisory Committee has also been established to input and advise on the strategic direction of the fund's resources- a quid pro quo for the increase in the NTF levy initiated under Budget 2018.

Regional Skills Fora

More directly, the CIF is represented on each of the nine Regional Skills Fora, which work to address the skills needs of enterprises at regional level. According to figures from the Department of Education and Skills, in 2017 9% of all engagements undertaken by the RSF managers were with Construction sector enterprises. According to provisional figures, this increased to 10% of all engagements with enterprises in 2018. There have been a number of notable construction related initiatives recorded across the RSF network since 2017:

- In Dublin, this has included a Development Careers event, focussed on apprenticeship and craft access routes, linking employers and potential new recruits, held in collaboration with the CIF, DEASP, SOLAS and City of Dublin ETB, and the development of new specific steel fixing and Glazing programmes in Tallaght and Ballyfermot, in collaboration with the CIF and industry partners.
- In the Midlands, a new Quantity Surveyor course has been developed in Athlone IT; a Careers in Construction event aimed at secondary school students was held in conjunction with the CIF, and attracted 503 students- this featured talks and exhibits from Construction companies and education and training providers; and the Midlands manager, as well as Athlone IT, have engaged with a small construction cluster with needs in the areas of BIM, BCAR, Financial Modelling, Revit and Project Management through skills audits and course design.



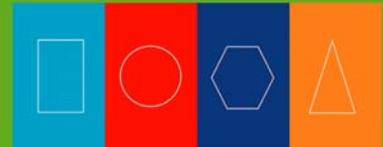
- In the Mid-West, the RSF has engaged with the CIF regional executive, facilitated CIF participation in the Mid-West Apprenticeship and Traineeship Careers showcase in November 2018, while the CIF has also participated in an industry steering group for the development of Springboard+ BIM and Quantity Surveying programmes in Limerick IT.
- In the North West, the RSF met with Donegal ETB, the CIF and construction employers, resulting in changes to existing programmes and plans for new programmes, and also organised events in Donegal, Sligo and Leitrim in 2018, where employers from all sectors were invited to attend to hear how local ETBs and HEIs can support them.
- In the South East, collaboration with industry in 2017 identified a demand for upskilling in construction site management, resulting in the development of a new part time NFQ L7 BSc in Construction Site Management in Waterford IT, which was approved for Springboard funding. Carlow IT has also developed a BFQ L9 Certificate in BIM and Construction Project Management, which was also approved for Springboard funding.
- In the South West, the Forum held a Construction sector roundtable event in June 2018 in collaboration with the CIF. The RSF subsequently included promotion of all construction related programmes aligned to industry needs in a targeted upskilling brochure, to raise awareness across the sector.

At regional level, SOLAS also funds construction related further education and training programmes provided by ETBs under a 'Built Environment' skills cluster. Approximately 2,100 learners were enrolled in these programmes in 2017. Of those learners 1,393 started their education in that year, and their completion rate was 61% (1,275 out of 2,093). Examples of these programmes include 'Concreting', 'Construction Ground Work Skills', 'Scaffolding', and Diploma in Sustainable Construction (for an overview of non-apprenticeship FET provision in Construction, see Appendix 1).

Springboard+

Responsiveness to identified industry needs has also been evident in the annual Springboard+ calls, which since 2011 have supported the development of Construction related skills. From 2014 Construction related courses began to feature in the Springboard Guidance document, which highlighted the growing importance of areas such as BIM, Green skills (to enable compliance with climate change directives), management capability skills to support business management and internationalisation, and quantity and property surveyor skillsets.

A Springboard evaluation for 2011-14, when the programme was focussed on Live Register activation, found that a high number of those previously employed in Construction were reskilling into other roles. 1,084 participated in Construction/Green Economy programmes during this period (535- 11% of total in 2011, 467- 8% of total in 2012, and 82- 2% of total in 2014). Only 52% (560) of this total graduated, however, with a 32% (346) level of non-completion. Overall, there was a 39% employment rate for graduates 3-6 months following graduation, compared with 45% for Financial Services, 53% for ICT, 54% for Management/Business/Entrepreneurship and 55% for Manufacturing/Biopharma. For Construction/Green Economy, this employment rate rose by NFO level: 33% for NFO L6, 37% for NFO L7, and 46% and 44% for NFO Levels 8 and 9 respectively.



Provision for Construction related courses under Springboard+ has been rising over recent years, with 37 places on 3 courses in 2016, 101 participants on 11 courses in 2017, and 270 participants on 13 courses in 2018- the first year for which courses were opened to people irrespective of their employment status. This was in the context of an overall 8,000 places on 245 courses. For the coming academic year, this number has again risen: to 570 places on 21 courses (see Appendix 1).

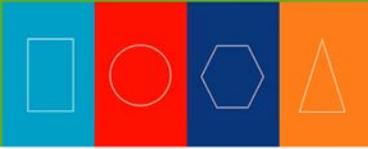
Skillnet Ireland

The Construction sector has also been engaging with Skillnet Ireland in addressing its skills needs- but this engagement does not appear to be as extensive as it was prior to 2008-09, when there were seven Construction related skillnets in existence (Irish Hardware, Renewable Energy, Enviro, Engineers, The Timber Frame, CITA, Construction). The Construction Skillnet appears to have been the chief network; this addressed the skills needs of companies in the Border, Midlands and Western region, engaged in contracting and specialist activities in Construction. The 2016 DKM report recommended the establishment of the Construction SME Skillnet, which was promoted by the CIF. The CIF opted to discontinue this Skillnet in 2017, however, a decision it has attributed to the competition posed by the Federation's own in-house training offerings. It is the CIF's intention, however, to revive this network by submitting an application to Skillnet Ireland's funding call for new networks, scheduled for Q3 2019.

The most prominent of the construction related Skillnet networks currently in existence is that operated by the Construction IT Alliance (CITA). Established in DIT Bolton in association with Waterford IT in 2001, CITA comprises IoTs and Architecture, Engineering and Construction enterprises and actively encourages the Construction sector to take full advantage of current and emerging ICT. The **CITA Skillnet** supports Construction companies of all sizes and focuses on ICT training needs, including BIM, drone use, Lean, IT and soft skills, virtual environment and data analytics. Under Skillnet Ireland's Future Skills programme, CITA have also secured funding to deliver the buildingSmart International Professional Certification, which, through a globally recognised qualification, aims to improve the exchange of information between software applications used in the construction industry, through standardised training content based on the latest international developments and best practices.

Skillnet Ireland also supports the **Lean and Green Skillnet**, which provides training for enterprises in environmental, water and energy management- including the design and construction of wind farms. Training is provided in the areas of Lean Six Sigma, Operational Excellence, Sustainability and Management Skills through workshops or distance learning. Its member companies include Roadbridge Civil Engineering and Building Contractors, as well as companies across a range of other sectors, while its industry steering group includes representation from the Sustainable Energy Authority of Ireland and EPA.

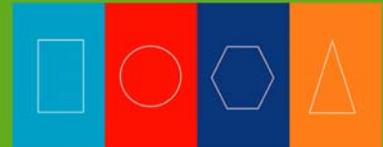
Overall, broader construction demand for Skillnet Ireland training has increased in recent years, in line with the return to growth in the sector. In 2014-2018, the number of construction related programmes delivered by Skillnet Ireland networks rose from 219 to 546, while participants increased from 1,677 to 4,569. This training was provided by c.25 networks annually, the majority



of which were regional networks. Provision included training that enables modern building techniques and increases organisational efficiencies within Construction SMEs, including Building Information Modelling, Lean and Six Sigma.

Construction related Skillnet Ireland Training Programmes and Participants, 2014-2018

Year	2014	2015	2016	2017	2018
Construction Training Programmes	219	232	383	435	546
Programme Participants	1,677	1,966	3,336	3,606	4,569



3.4 The Greening of Construction Skills

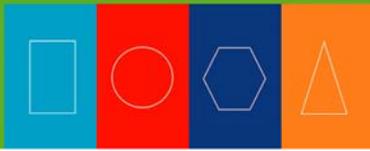
Strategies published over the last decade have also highlighted the role of the built environment in carbon emissions, and, guided by EU and national climate policies, the need for education and training provision to support the mitigation of this role through Eco Construction techniques. As of 2018, the Built environment accounted for 12.7% of Ireland's Greenhouse gases. In Ireland this has seen the introduction of the Building Energy Rating (BER) Certificate in 2007, the National Energy Efficiency Action Plan 2009-2020, and the introduction of a National Retrofit programme in 2011. The OPW has also published detailed guidelines for green public sector construction procurement, which seek to embed green design and energy efficiency.

From a skills perspective, a roadmap for Eco-Construction training was set out in the Build Up Ireland Skills Roadmap, the full implementation of which both the 2013 Forfas report and *Construction 2020* recommended. "Build Up Skills" (BUSI) was a strategic initiative under the Intelligent Energy Europe (IEE) programme (2011-2013). It was aimed at boosting the continuing or further education and training of craftsmen and other on-site construction workers and systems installers in the building sector- in particular, in increasing the number of qualified workers across Europe to deliver renovations offering a high energy performance as well as new, nearly zero energy buildings. The initiative focussed on energy efficiency and renewables in all types of buildings.

The Irish chapter of Build Up Skills was a coalition of academics and industry representative bodies led by Limerick IT, and including IT Blanchardstown, DIT, the Irish Green Building Council, and the CIF- which undertook a comprehensive analysis of skills development requirements. The analysis concluded that neither the informal skills learning nor the apprenticeship system had evolved sufficiently with the movement towards low energy building construction, and that no concerted effort had been made to upskill trainers in the sector to reflect the change in emphasis to building energy efficient homes.

Arising from the Irish report was **Qualibuild**, an EU funded Build Up Skills project established in 2013, which worked to provide on a pilot basis training for those employed in the construction sector, and a register for those who wished to employ an approved level of craft worker. It provided two training courses, which ran between 2014 and 2017: the pilot 'Foundation Energy Skills' and 'Train the Trainers' programmes, which focussed on teaching skills that would ensure that new construction and retrofitting work was of high quality and energy efficient:

- The Certificate in Introduction to Low Energy Buildings (Foundation Energy Skills course) was designed to improve the skills and awareness of building operatives, craft workers and site managers of quality, energy efficiency, best practice and system thinking. A target was set of having 200 Building Construction workers having completed this course after two years of the project.
- The Certificate in Training in Low Energy Buildings (Train the Trainers programme) upskilled trainers of construction related craft apprenticeships in low energy building technology and standards and the delivery of training on the fundamental principles of the area to construction workers over 5/6 months. QualiBuild aimed to have 100 trainers trained after one year of the project.



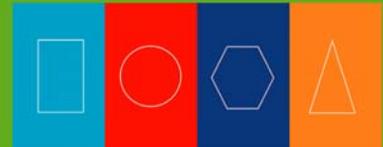
Qualibuild also supported a Quality Building campaign to the construction industry and consumer through the provision of free briefings for workers and design professionals, the Qualibuild website and social media channels, attendance at tradeshows and events, and the development of an e-book on quality building for homeowners. A pilot Construction Worker Skills Register was also established, with the aim of having 2,000 workers registered after two years.

In terms of outputs, engagement with the Foundation Energy Skills course, which was delivered nationally, was successful- 232 registered on the course across two phases, with 196 completing it successfully. There was lower than expected engagement for the Train the Trainer programme, however, which was attributed to the downturn in construction training. 85 trainers registered, with 59 qualifying. This was seen as covering the existing training need at that time, with provision of further courses as required. The website of the pilot Skills register is also now defunct. It appears to have been superseded by the Construction Industry Register Ireland (CIRI) portal established by the CIF.

A further ambition of the QualiBuild project was for the transfer of its pilot actions to relevant national bodies and agencies, to ensure the ambition set out in the BUSI Roadmap was sustainable and its targets achieved. While QualiBuild reported interest and support from SOLAS, ETBI, SEAI, NSAI, public and private training bodies, and industry for the roll out of the training programmes nationally, this does not appear to have taken place- at least in terms of direct adoption of the QualiBuild programme. Instead, as part of Future Jobs Ireland, it has also been proposed that a National Centre of Excellence on High Performance and Nearly Zero Energy Buildings (NZEB) be developed, based in Waterford Wexford Education and Training Board.

Establishment of this centre also involves the delivery of one day NZEB Fundamental Awareness training to over 500 people through WWETB, focussed on: NZEB principles, Building Physics, Building Fabric, Building services, Renewable energy, photo voltaics, smart metering and electric, and Communication and user information. WWETB has confirmed that it will train 500 in 2019 and aims to increase capacity to 750 in 2020.

The area of sustainability was also examined in the EGFSN's 2010 report *Skills for the Green Economy*, which looked at skills required in renewable energies, efficient energy use and management, water and waste water management, and waste management, recovery and recycling- in particular with a view to availing of export market opportunities. The report highlighted the likely increasing demand for roles such as Energy Engineers, involved in the design of energy efficiency installations, and identification of energy usage and efficiency improvements; architects with an understanding of energy efficient design and retrofitting, as well as overseas construction techniques and regulations; insulation workers; Energy auditors, to assess the scope for and implementation of energy savings in the industrial and commercial sectors; and home energy consultants.



From the early 2010s, a range of add on or supplemental training programmes in energy efficiency and renewable energy emerged for the upskilling of construction trades people and system installers (see Appendix V for relevant HEI programmes, and Appendix I for FET provision).

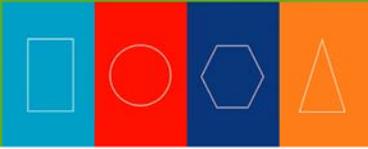
The sustainability/ecoConstruction agenda is also being advanced in an Irish context by the **Irish Green Building Council (IGBC)**, launched in 2011, and which is representative of education and training providers, professional institutes, NGOs, local authorities and businesses across the built environment value chain. The Council seeks to promote built environment sustainability through leadership, research and education. It hosts regular green building events and education modules and encourages the provision of sustainable building tools such as the Environmental Product Declarations Platform, which enables the mainstreaming of life cycle assessment for buildings in Ireland; comprehensive listings of green building certifications of accredited professionals in LEED, BREEAM and HPI; and the Home Performance Index. The Council also runs webinars in Nearly Zero Energy Buildings (NZEB), with presentations from leading experts on key principles for the practical implementation of nZEB.

The Council also provides training courses in green building certifications, including:

- Leadership in Energy and Environmental Design (LEED)- a voluntary rating system to certify sustainable buildings and neighbourhoods. The IGBC offers short preparatory training and workshops on the fundamentals and tools associated with LEED systems, needed to sit the LEED Accredited Professional exam, the accreditation for which demonstrates leadership in the field.
- BREEAM: This is the longest established environmental assessment method and rating system for buildings and is most closely aligned with Irish building standards, providing design teams with expert advice on sustainability, environmental design and assessment. The IGBC offers the BREEAM accredited professional qualification to construction professionals who wish to deliver buildings to meet BREEAM certification requirements.

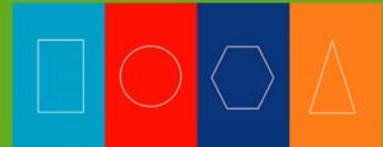
The IGBC also runs one day and half day CPD modules for professionals in different aspects of sustainable design and construction, including: Introduction to Certification of Green Buildings, EU Green Building Policy and Law, Environmental Design of Buildings- Non-Residential, Sustainable Construction Products and Life Cycle Analysis, Waste Resource Efficiency, and Sustainability and Systems Thinking.

In 2018 the Council trained 695 building professionals in the NZEB standard and green building certifications, through training courses and webinars. This was an increase of 395% from 2017. There were also more than 100 building professionals trained in LEED, the Home Performance Index, Building Life Cycle Assessment and WELL. There were also 550 registered participants for the NZEB Commercial and Residential Buildings Webinar series. On foot of findings from consultations from the National Renovation strategy, which highlighted a lack of sustainability and energy efficiency literacy among Irish construction professionals, the Council has also been engaged in efforts to develop an energy accreditation system for Construction professionals, to allow end users to identify those who have upskilled in energy efficiency related skills.



The IGBC has proposed a framework to incentivise upskilling in energy renovation through consumer demand: endorsement by a neutral, nationally trusted organisation such as the SEAI, which can maintain, promote and police the system; the involvement of professional bodies in its development, promotion and operation; and development of a clear pathway to accreditation, which recognises prior learning and allows for modular and flexible learning. Any framework has to be designed to allow building professionals to easily identify the skills they are missing and how they can acquire them through small incremental steps.

Going forward, the eco-construction agenda will receive a further impetus from the implementation of the **Climate Action Plan**, published in June 2019, which sets out an ambition for improving built environment energy efficiency through higher energy performance standards and an increase in retrofit activity (a target of 500,000 retrofits has been set for 2021-30), through the optimising of funding, grant and incentive schemes and regulation to drive demand. The plan sets out a number of education and training actions for delivery between 2019 and 2021, including a skilling up of current contractors/other industry players in deep retrofit, NZEB and new technology installations, as well as developing the supply chain for renewables and retrofitting through engagement with the Regional Skills Fora, ETBs and SOLAS. This will include the national delivery of accredited programmes in High Performing Buildings, developed in WWETB, through the ETB network.



Chapter 4- Recommendations around export trade diversification

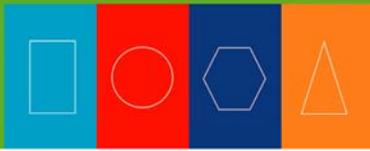
The 2013 Forfas report, developed at a time when domestic Construction activity was at a low ebb, emphasised the encouragement and equipping of Construction firms for expansion into overseas markets. While the numbers involved are relatively small, as the Forfas report highlighted engagement with overseas markets serves to raise standards of professionalism, competitiveness and capability within construction firms, in particular enhanced management and technical capability, which can in turn support the performance of the sector domestically.

Resulting recommendations sought to build upon a growing base of export activity on the part of Irish based construction enterprises, which have grown in scale and compete successfully on international markets as Ireland has become a centre of excellence in civil/structural engineering, mechanical/electrical contracting, and power, energy and pharmaceutical construction and maintenance. Experience in developing world class high specification facilities for FDI investments, including increasingly data centres, have helped build a strong value proposition for Irish construction firms abroad.

A challenge lies, however, in the sector's low propensity to export, with exports accounting for 26% of total sales. This has been attributed to the fragmented nature of the sector; a key challenge in securing contracts in the overseas context is overcoming issues of scale, relating to capacity and resources, competition from larger firms and experience. Recommendations in this area have mainly focussed on the activities being undertaken by Enterprise Ireland with its cohort of Construction sector clients, which it has fostered since the late 2000s, promoting the internationalisation agenda through trade and professional bodies and the contracting community.

Enterprise Ireland currently deals with a client portfolio of c.750 companies (c.1.5% of the total construction firm cohort of 51,000 in 2016), spread across **Construction products**, mainly SMEs heavily dependent on the UK for exports (76%) but with ambitions for expansion into the Eurozone; and **Construction Services** (contractors, project management, mechanical and electrical engineering, architecture, water and wastewater), dominated by large companies, and for which the UK is a traditional market (42% of exports), but which is expanded into new markets, often through following multinational customers developed in Ireland.

Specifically, the 2013 Forfas report recommended continued support for Construction firms in internationalising their offerings, including the development and roll out of a programme of Construction sector specific workshops covering legal and other technical issues that firms encounter in overseas markets, as well as active promotion of increased Construction firm involvement in Enterprise Ireland's Marketing Sales Strategy Review process- where an experienced



Sales and Marketing specialist works with a company to identify and address persistent challenges and untapped opportunities that impact on a company's international sales growth potential.⁸

The performance of Enterprise Ireland's construction client cohort has been improving year on year since 2014. The downturn in the domestic market resulted in more indigenous firms making forays into overseas markets. Enterprise Ireland's client base saw growth in sales, export and total employment between 2014 and 2016, as reflected in the table below.

Construction sector performance- Annual comparison, 2014-16

	Total sales (€000)	Exports (€000)	Export Intensity	Irish economy expenditure (€000)	R&D spend (€000)	Total employment
2014	5,833,292	1,481,227	25%	4,426,531	35,698	24,507
2015	5,573,353	1,593,613	29%	3,885,531	25,648	27,317
2016	6,689,236	1,736,798	26%	4,446,793	28,554	30,084

Later data is available for total employment, which in 2017 reached a record 32,708. These employment numbers are on the basis of 748 Enterprise Ireland client companies. The majority of the jobs in this client portfolio, meanwhile- 20,169 or 62% of the total in 2017- are concentrated in 135 companies: 87 Construction Products and 48 Construction Services companies. Enterprise Ireland construction clients are based across the country, with almost 60% of employment outside of Dublin.

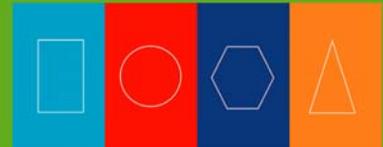
Regional Employment in Construction clients by county, 2014-2017

	Jobs				Clients	
	2015	2016	2017	% of 2017 total	2017	% total 2017
Dublin	11,046	12,191	12,809	41%	235	31%
Cork	3,804	4,059	4,243	14%	74	10%
Limerick	1,971	2,409	2,744	8%	38	5%
Galway	776	914	1,176	3%	26	3%
Rest of Country	9,393	10,191	11,736	34%	375	50%
Total	26,990	29,764	32,708	100%	748	100%

This performance has been supported by the Enterprise Ireland overseas network, which has prioritised Construction in several markets and hired staff in several offices to support client companies. The Construction sector team within Enterprise Ireland has also been:

- Delivering an enhanced programme of events in key targets markets (UK, Eurozone, Nordics) (for the list of events for 2018 see Appendix VI)

⁸ Through four workshops, the Strategic Marketing Review focuses on key elements of sales and marketing activity: intelligence gathering; customer value proposition; sales process and route to market; People and finance resources; and communication and intercultural awareness.



- Prioritising clusters focussed on new markets such as North America, Middle East, Africa and Australia, and through an enhanced programme of Inward Buyer Visits, Market Study Visits, Trade Missions and workshops to highlight specific opportunities
- Selecting and proactively approaching clients to ensure a strong pipeline for the Market Discovery Fund, for the Eurozone Start and Scale programmes and to develop Market Action Plans
- Targeting clients with Client Management Development support to overcome the constraint of language skills
- Developing deeper contacts with multinationals across key target markets including datacentres and IT, Life Sciences, mining, food production, energy generation and distribution. This is supporting clients from moving from regional to global suppliers for their key customers.

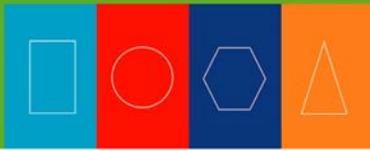
The Cleantech and Construction sectors are meanwhile two of the featured sectors on Enterprise Ireland's **Irish Advantage portal** (<https://irishadvantage.com/>), a company directory which seeks to connect international businesses with innovative Irish companies for their specific business needs. For Construction, the portal highlights Irish construction companies' 'design and project management to cost and electrical services', which have given Ireland 'an unequalled reputation for delivering large, complex projects internationally... Building on experience working with multinationals in biopharma and data centres in Ireland, they understand that delivery- on time, on budget and to the highest international standards- matters most'.

On the related recommendation from 2013, engagement with the **Strategic Marketing Review** since 2013 has been relatively small- 33 in total up to 2018. The number of completed reviews has, however, increased year on year since 2015: 2013 (1), 2014 (5), 2015 (2), 2016 (6), 2017 (9) and 2018 (10).

Future challenges for construction export agenda

Strong growth in the domestic market in recent years, however, is providing a challenge to Enterprise Ireland to maintain clients' focus on overseas markets. Uncertainty surrounding the UK market also represents a key risk for the future growth and structure of the construction export sector. Overall, 35% of Ireland's total indigenous exports are destined for the UK, while for Construction the share is 59%. The impact of Brexit is already being felt through currency fluctuations, while in the longer term it could result in fewer projects to tender on with the imposition of tariffs and new regulations driving up the cost of Irish products and services, while reducing profit margins for Irish exporters to the UK.

Enterprise Ireland have been developing sustainability and growth plans for their UK exposed client firms, many of whom have confirmed their commitment to remaining active in the UK and are reviewing what steps they need to undertake to achieve a more embedded market position. Depending on the outcome, there is a risk of some firms moving capacity to the UK in order to better serve existing UK customers. It is notable that Enterprise Ireland is heavily marketing the cleantech and renewables, construction and engineering and manufacturing opportunities offered by the UK Government's Northern Powerhouse project, including housing, regeneration, life



sciences, healthcare, rail and road developments, and the supply of engineering products and services related to renewable and nuclear energy, accelerate spend in the economy to €5.6 billion,

Enterprise Ireland's approach going forward, however, is largely one of diversification under its *Eurozone Strategy 2017-2020*- sustaining and growing UK Construction exports, while reducing the share of UK exports from 59% to 50% by 2020. Construction and engineering are identified as two sectoral priorities, in particular opportunities around data centre construction and housing and infrastructure. Overall, by 2020 Enterprise Ireland is aiming to increase sales by its construction client base to €8.5 billion, exports to €2.2 billion, and increase employment to 40,000. Under the *Eurozone Strategy* it is also aiming to increase exports to Northern Europe by 52% to €573 million by 2020 (over 2016).

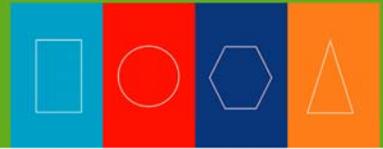
International Business/Government Tendering and Graduate Mobility Programmes

In support of the trade diversification agenda, the 2013 Forfas report also recommended ensuring that all construction undergraduate courses include compulsory modules relating to international business/sales and government tendering, both in Ireland and overseas. A breakdown of a number of relevant HEI courses and modules is contained in Appendix VII- it appears from this breakdown that international business/sales modules are more prevalent in Construction Management courses, while Tendering appears more often in general Construction courses.

Both the Forfas report and 2014's *Construction 2020* meanwhile placed an emphasis on increasing Construction firm engagement with international graduate placement programmes, as a means of supporting their internationalisation efforts. Both recommended the continuation of 'international graduate placement programmes that have received a strong industry endorsement including the Enterprise Ireland Graduates for International Growth programme, IBEC Export Orientation Programme and Farmleigh Fellowships, and actively promote to the Construction sector'. The take up by Construction firms of opportunities under these programmes have, however, been relatively low.

Approvals for Construction, Timber, Cleantech and Consumer clients under Enterprise Ireland's firms have fluctuated from a high of 15 in 2011, to a low of 3 in 2018 (see Appendix VIII for more detail). The latter is likely due to the introduction of a replacement programme for Graduates for International Growth, GradStart, in May 2018.

The IBEC Export Orientation programme, which provides paid international work placements with leading companies in business development, marketing/branding and finance, IT and supply chain roles, as well as a postgraduate qualification, was meanwhile rebranded as the Global Graduates programme in 2015. As confirmed with Ibec, the programme, which placed 86 graduates in 2018, has never been specifically targeted at construction firms- earlier iterations included a focus on IT, pharmaceutical, medical devices and tourism, while from 2015 the programme has had three strands: Food and Drink, Tourism and Multinationals.

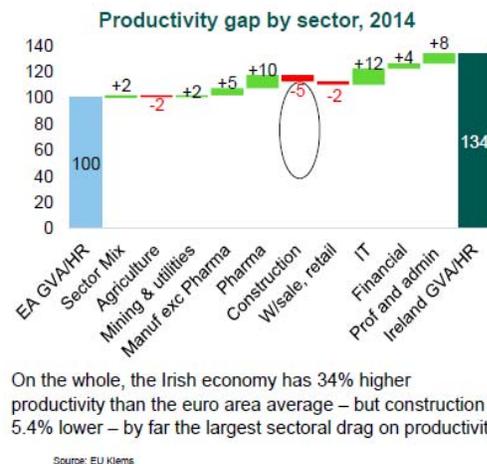
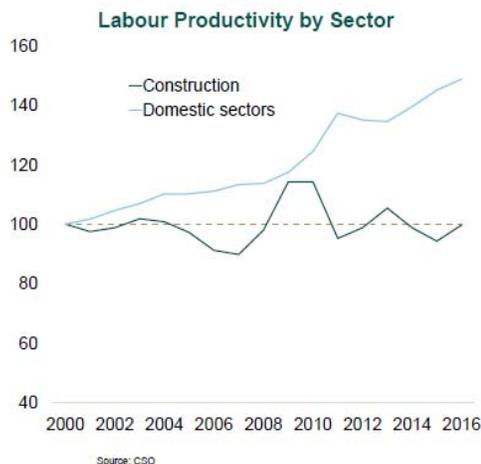


Under the Multinational strand, participants are concentrated amongst the IDA Ireland client base. While the Architectural, Engineering and Construction Services sector falls under IDA's Engineering and Industrial Technologies remit, AEC firms do not appear to be represented amongst those firms engaging with the programme.

Chapter 5- Recommendations on boosting Productivity and Innovation

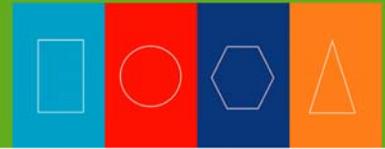
A further concern of strategies published over the last decade, and a particular concern of the Government chaired Construction Sector Group at present, has been the Construction sector's comparatively poor productivity and innovation performances, which have lagged those of other domestic sectors. Recommendations in this area have been predominantly export led, with a challenge in securing overseas business resting on product or service differentiation- this can relate to cost competitiveness, but more often to capability, productivity and levels of innovation. This also has implications of course for domestic construction activity, however, and how productivity and innovation trends impact on both Ireland's cost base and the broader competitiveness agenda.

Trends in Productivity



This poor productivity performance is borne out by Eurostat figures, which showed the sector lagging the average overall EU productivity performance by 5% in 2014, while over Irish productivity was 34% above this average. That said, the Construction sector globally is not renowned for its ability to achieve radical productivity improvements, due to its diverse, project based and fragmented nature. The growing sophistication of technology, however, offers potential in streamlining project delivery.

On innovation, there are meanwhile a number of influential drivers changing the market for construction services and products, and which are placing an onus on innovation to keep pace with these emerging market or consumer tastes. These include climate change and the need to adapt buildings and products to meet energy performance and efficiency regulations and standards; the emergence of a more sophisticated consumer, who is demanding higher performance and design standards; changing demographics, rising urbanisation and economic growth, which are shifting the intensity of global construction activity towards Asia and other developing markets; and technological advances in materials, construction methods, ICT and global communications, which



are influencing all aspects of the sector, including development of new products and services to ways of working.

These trends have been reflected in recommendations aimed at boosting the productivity and innovation agenda within the Construction sector and have centred on three areas: the promotion of management development, Building Information Modelling, and the Construction sector's engagement in Research, Development and Innovation activities.

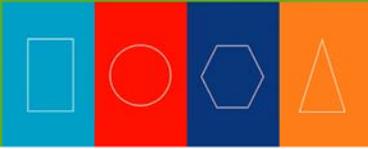
5.1 Promotion of Management Development

Those strategies that have promoted management development within the construction sector have highlighted the relationship between effective management practice and ultimate business performance- it is fundamental to identifying and anticipating changing market dynamics and fully understanding customer needs. This has been a challenging area for the Construction sector. Forfas, and more recently Enterprise Ireland, have highlighted how most construction companies have small management teams, with limited resources- many firms are also family owned and face intergenerational change and challenges.

The impact of the 2008-12 downturn meanwhile led to an exodus and resulting deficit of experienced mid-level personnel across a range of disciplines (the regional and rural location of many Enterprise Ireland clients has impacted on their ability to attract new talent to support their growth ambitions), while the challenging domestic conditions of that period led management teams to focus on technical and daily operational issues rather than grasping dynamic market development challenges or longer term overseas market penetration. The amount of effort and resources required, together with the risk of failure, was often enough to dissuade firms from pursuing opportunities for expansion.

To address this capability deficit, both the 2013 Forfas study and 2014's *Construction 2020* recommended the targeted promotion of management development programmes amongst the Construction management cohort. Both highlighted promotion of the **Skillnet ManagementWorks** initiative for SMEs, launched in 2013, to maximise take up from the sector; with the rebranding of Skillnet in 2018, this is now known as the Management Development programme. This aims to increase the efficiency and improve business outcomes amongst SMEs, through BSc/Postgraduate and coach led programmes in areas such as Leadership, Strategy and Management, Business Growth, Leadership and Planning. A range of promotional approaches are used by Skillnet Ireland to target SME owner managers and executives across multiple sectors, including construction.

According to Skillnet Ireland, however, demand from construction based SMEs for its management development offering has remained low. Between 2013 and 2018, c.30 construction managers participated in the programme annually. According to figures for 2016 and 2017, overall 721 and 776 managers received training under Skillnets' management development training respectively.



The 2013 Forfas report also contained recommendations around **Enterprise Ireland's Management development programmes**- that increased participation on long- and short-term programmes be promoted and facilitated, with a particular emphasis on *Management4Growth*, and that there be continued support for strategic company development through the *Business Accelerator* programme and Strategic Consultancy. The 2016 CIF report also recommended the adaptation of initiatives such as 'Leadership for Growth' and the delivery of a wider cadre of management functions within construction companies of all sizes.

According to Enterprise Ireland, within its Construction, Timber, Cleantech client base over the decade 2008-2018:

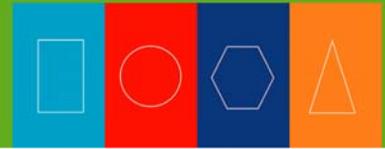
- There were 14 participants on the Management4Growth programme, as well as 30 participants on the Leadership4Growth 2008 programme, and 25 participants on the Leadership4Growth 2010 programme. The latter programme, of 12 months' duration, aims to enhance leadership and strategic capability, with modules on dynamic business strategy, high performance leadership and sustainable growth, and the assignment of a Business Adviser coach to encourage, challenge and assist in the implementation of strategic frameworks to participants' companies. These numbers appear low, compared with an average annual total of 1,000 participants on Enterprise Ireland Management Development programmes throughout this period.
- Over the same time period, there were also 79 Business Accelerators appointed within EI's Construction, Timber, Cleantech client base. In recent years, across all sectors, 10 accelerators were appointed in 2017, 25 in 2016, 66 in 2015, and c.110 each year for 2011-13.

Going forward, Enterprise Ireland is aiming to work with its Client Management Development department to accelerate participation on programmes such as Leadership4Growth and Platform4Growth, while also embedding marketing and internationalisation capability through the use of its International Selling Programme. It is also working to increase client adoption of Strategic Consultancy in Ireland and Business Accelerator programmes in target markets, to support strategic company development, build market knowledge and create opportunities in new markets for firms. It is also working with CMD team to drive uptake of supports with a focus on succession planning for family owned firms e.g. Go Global.

Enterprise Ireland Lean supports

As part of the broader Management Development agenda, the 2013 Forfas report also recommended the continued promotion of Enterprise Ireland's **Lean** Start programme and advancing construction companies onto the following stages: Lean Plus and Lean Transform. All are designed to encourage companies to adopt Lean business principles within their organisation, to increase performance and competitiveness. Of the different offerings:

- LeanStart provides an introduction to Lean concepts and allows companies to gain an understanding of what Lean tools and techniques can do in a short, focussed engagement. Companies can apply for grant support towards the cost of hiring a Lean consultant/trainer to undertake a short in-company assignment.
- LeanPlus (6 months) supports companies looking to undertake a Lean project over a medium term period through a Business Process Improvement Grant. This is designed to result in



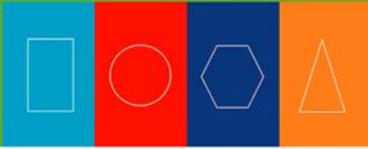
sustained use of Lean techniques and related methodologies by a company, and achieve significant measurable gains in capabilities and competitiveness.

- LeanTransform (1 year) is a large scale company transformation programme delivered by external trainers. It is primarily designed for larger companies with significant operations, who can demonstrate that they have existing capability and resources to implement a programme of this scale.

73 Enterprise Ireland construction client companies have undertaken Lean programmes since 2015, including 13 Lean Transform- the extensive transformation projects of more than 1-year duration. This compares with support provided to 622 managers across all sectors on Lean Business initiatives in 2017 alone.

Outside of Enterprise Ireland, Lean is being promoted by **Lean Construction Ireland**, a community of Built Environment stakeholders, including professionals, academics, trainers and business owners, which is seeking to embed Lean thinking and practices throughout the Irish Architecture, Engineering and Construction sector. It supports research into Lean practices nationally and globally, their application within Construction, and their sharing with the broader Built environment community. This includes webinars on lean transformation models for construction, an [annual book of case studies](#) on the benefits offered by Lean thinking and practices, a directory of [Lean Construction Service providers](#), including consultants/trainers and HEI course providers, an annual national conference,⁹ and Lean Enterprise Excellence Fora and Practitioner Seminars in Waterford IT.

⁹ This year's conference- 'Lean Innovation- Inspiring our Future in Construction'- will take place in Croke Park in October 2019.



5.2 Promotion of Building Information Modelling

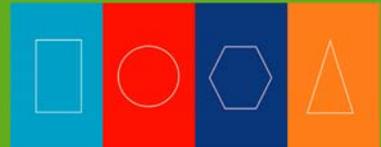
Several of the 2008-2018 strategies placed an emphasis on the deployment of Building Information Modelling, or BIM, in the Irish Construction sector. BIM, which is at the centre of the sector's digital transformation internationally, is the process of generating and managing a digital dataset about a building (a 'single source of truth') amongst all partners involved in a project throughout its lifecycle, beginning with its design and construction, through to longer-term facilities management. This can include information about an asset's scheduling, cost, sustainability, operations and maintenance.

In the context of Construction traditionally being one of the slowest industries to adopt new technologies, BIM has become a powerful tool in driving efficiencies and increasing productivity. A growing number of private and public sector clients are seeking out suppliers who have competence in BIM and the industry is moving towards a situation where BIM is becoming an essential requirement internationally. The implications of these international trends have been clear- unless the Irish Construction sector is able to work in a BIM environment, it will find itself at a disadvantage, particularly in overseas markets.

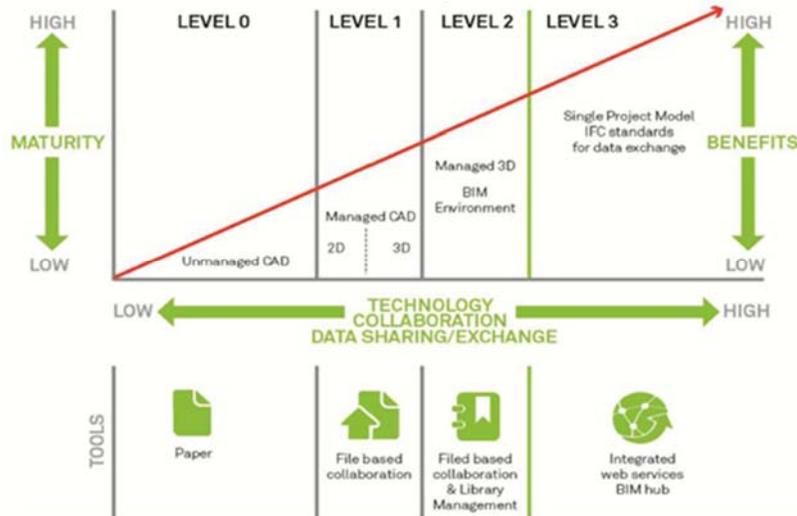
This was the impetus behind BIM related recommendations in both the 2013 Forfas report and 2014's *Construction 2020*. Both recommended that Government work with industry organisations to promote the use of BIM and develop the appropriate technical skills amongst Irish construction firms, so that they can successfully compete in markets where BIM is widely adopted or a requirement.

Some progress has been made on advancing this agenda in the intervening years. Following on from the introduction of an EU Procurement Directive in 2014, the Office of Government Procurement published a strategy in 2017 for the adoption of BIM across the Government's public capital programme, phasing in requirements for the use of BIM in the design, construction and operation of public buildings and infrastructure in the years to 2021. Under *Construction 2020*, Enterprise Ireland was also assigned a lead role in promoting the uptake of BIM, which it has advanced by funding and supporting awareness and promotion across the industry, through bodies such as CITA, as well as a number of research programmes and reports on the level of BIM uptake and sector readiness across Ireland and globally.

Enterprise Ireland has also supported individual construction businesses in their digital transition, as part of their mentoring to Irish businesses looking to compete and win contracts overseas where BIM is a requirement. Two levels of support have been offered for clients who wish to scope out and implement a digital roadmap: BIM-Enable, a strategic consultancy programme which assists companies in setting out a digital roadmap and considering how they can apply BIM within their organisation to Level 2 BIM proficiency; and BIM Implement, which aims to equip staff with the competencies required to successfully manage a BIM project, including giving them a deeper understanding of the supply chain implications.



BIM maturity levels

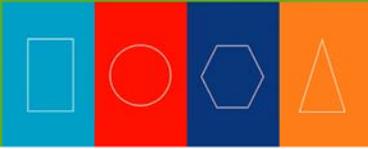


Enterprise Ireland has also been promoting Ireland internationally as an early adopter of BIM through the Irish Advantage marketing campaign. While some Enterprise Ireland clients are availing of supports to achieve BIM Level 2, however, the majority of Irish construction firms are currently rated at BIM Level 0 or 1. Enterprise Ireland has also been centrally involved in an initiative aimed at mainstreaming BIM adoption, through its work in establishing the National BIM Council in 2016, whose role was to develop a national roadmap to optimise the successful adoption of BIM in Ireland. The Council was chaired by Engineers Ireland and was composed of public sector clients and industry representatives.¹⁰

This resulted in the publication of *Roadmap to a Digital Transition for Ireland's Construction Industry, 2018-2021*, in late 2017, which was designed to secure funding for the digital transition in Ireland and set performance goals. Underpinned by an analysis of BIM adoption in other jurisdictions, as well as Ireland's current capability in both industry and education, the roadmap identified a number of key components to BIM's successful implementation: the strong leadership of Government and industry, standards, procurement, and skills and training.

The Roadmap found that all international mandates for BIM require high levels of collaboration between Government, industry and academia to drive adoption, with the establishment and funding of a dedicated body- which would be a resource and reference point, as well as an active proponent of BIM- important to champion its use amongst industry and coordinate the necessary policies, templates and training programmes. Actions in four areas were identified as necessary to advance the BIM agenda:

¹⁰ The Council is chaired by Caroline Spillane of Engineers Ireland, and includes Dr Alan Hore, DIT and BICP; Damian Duffy, National Development Finance Agency, David O' Brien, Government Construction Contracts Committee; David O' Connell, CIC BIM Working Group; Gerard Bourke, OPW and EU BIM Task Force; John Hunt and Stephen Hughes, Enterprise Ireland; Noel Kennedy, Intel; Ralph Montague, CiTA/Arcdox; Sean Downey, Construction Industry Federation; Shane Brodie, Intel/MacArdle McSweeney Associates; and Tom Costello, Irish Property Unit Trust.

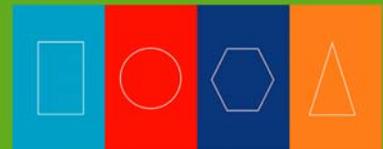


- Leadership, through the formation of a resourced National Centre of Excellence, to roll out digital tools and processes in Ireland, and set and communicate a clear vision through a regional cluster of BIM communities of practice throughout Ireland.
- Standards, through adoption of a common collaborative framework for Open BIM Standards, through consultations with key stakeholder groups, the development of industry standards training and certification programmes, and the implementation of a digital toolkit and national BIM library to help drive general conformance with standards, and a proactive role in the ongoing development of international information management standards in construction.
- Education and Training, through the establishment of a National Education Taskforce to deliver a broad awareness and upskilling learning framework for educators and industry, development of an online BIM self-assessment tool for companies to help them define their training needs, development of a BIM certification programme, inclusion of Digital Design and Construction on the second level curriculum, and professional institute consistency in specifying BIM competencies when accrediting built environment programmes.
- Procurement, through determination of a clear framework for procurement of BIM on public sector construction projects, identification of a champion body to act as a focal point to support BIM adoption and act as a resource for expert advice to clients and construction professionals/contractors/suppliers, and efficient and effective management of the building stock through the use of digital information, tools and processes.

The Roadmap set a number of key performance targets arising from its implementation. These included 20% reductions in project delivery programme, wasteful construction practices and capital costs, and a 20% increase in construction exports through enhanced productivity and knowledge leadership. Through BIM implementation every construction project would also contribute valuable digital data to Ireland's smart communities, cities and economy, positioning Ireland at the forefront of digital transition.

Moves are ongoing to implement the Roadmap. In *Future Jobs Ireland* the Government committed to the roadmap, pledging to 'develop an implementation plan for actions to stimulate construction sector productivity, including greater deployment of Building Information Modelling'. This ambition has also formed part of the 2019 work programme of the Construction Sector Group, which has developed a proposal for the establishment of a 'Build Digital Project', to address the obstacles around digital adoption within the construction sector- which it identifies as a lack of investment by both clients and the supply side in skills, knowledge, and standardized tools- and facilitate its digital transition. It is intended that the Department of Public Expenditure and Reform will launch a challenge-based funding call for this project in late 2019 or early 2020.

At a minimum, it is envisaged that the Build Digital Project will create and maintain an online portal which will act as a single source of expertise and guidance on BIM (advice and guidance, standardized templates and tools, relevant education and training), organize national promotional, dissemination and networking events, as well as engage in other engagement and promotional activities. The Project will address the four themes identified in the Roadmap: Leadership and Cultural Change, Standards, Education and Training, and Procurement.



5.3 The Construction Sector and Research, Development and Innovation

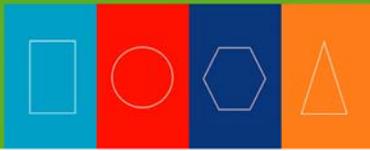
Strategies have also highlighted the need to enhance construction sector engagement with Research, Development and Innovation, which will be key to keeping pace with changing market and consumer tastes. There has traditionally been underinvestment in R&D and a slowness to innovate by the sector, which has been attributed to its informality and fragmentation. The last reliable numbers on the Construction sector's investment in R&D is drawn out in the 2009/10 Survey on Business Expenditure in Research and Development- a dated dataset, admittedly, but one in which the sector was identifiable through the 'Construction and Utilities' grouping. This accounted for only €4.6 million out of a total of €1.9 billion expended by all sectors on R&D. In terms of total headcount of all R&D staff, these comprised 61 out of 15,773 across all sectors.

This innovation deficit was highlighted in Property Services Ireland's 2018 report, *Better Housing*, which recommended that Ireland be enabled in becoming a 'world innovation leader in construction, by encouraging the take up of skills, knowledge and technology'. In 2013 Forfas also placed stress on the construction sector's innovation underperformance, in particular its limited RD&I engagement with Irish HEIs- although construction related R&D activity did start to emerge within HEIs from the early to mid-2000s. Forfas made a number of recommendations in the R&D field, including the acceleration of engagement by construction sector firms with third level institutes and continued promotion of available programmes including innovation partnerships and vouchers, to support R&D projects in collaboration with the Third Level sector.

Forfas also recommended that construction related researchers and the industry were engaged with the research prioritisation implementation process, so that the sector's needs are understood, current research strategies are recognised and gaps in research capacity are identified. The progress in the years since these recommendations were made, however, appears to have been piecemeal. In particular, the needs of the sector remain to be identified, but an impetus from within the industry appears to have emerged, aimed at addressing this knowledge gap.

In terms of the HEI research and development infrastructure relevant to Construction, there is a base of Construction research ongoing within Technological University Dublin, Waterford IT, Limerick IT and Cork IT. These are key partner institutions for Enterprise Ireland, in working to increase the R&D intensity of clients through the use of Innovation Partnerships and Vouchers. The scale of current R&D ambition, however, is reflected in the greater reliance on Innovation Vouchers (value €5,000) in relation to Construction related HEI research. The use of Innovation Partnerships by Enterprise Ireland client firms since 2015, however, has been much more limited, suggesting that the sector remains tied to smaller scales solutions.

The partnerships are designed to provide access to Irish research institute expertise and resources to develop new and improved products, processes, services, and to generate new knowledge and know-how. All projects require the company partner to provide a minimum cash contribution of 20% of the project cost, with Enterprise Ireland providing grants of up to 80% towards the project's eligible costs. Eight Partnerships were availed of by Enterprise Ireland Construction client companies between 2015 and 2018, compared with a total of 280 partnerships that were granted



overall over the same period. This has been attributed to the jump in value from vouchers to partnerships and the level of ambition and R&D confidence Partnerships generally entail.

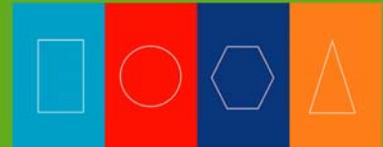
More generally, Enterprise Ireland has been working with its Research and Innovation Department to promote client engagement with its network of Technology Gateways and relevant Technology Centres. Based on discussions with managers within the Gateway network, Construction sector engagement appeared to have been limited, if non-existent, in recent years. There are currently two Enterprise Ireland Gateway clusters that, while not explicitly construction focussed, engage in areas that are increasingly relevant to the Construction sector: the Internet of Things (Smart Buildings) and Engineering, Materials and Design:

- The A-IOT cluster (TEC/Cork IT, IMaR/IT Tralee, WiSAR/Letterkenny IT, MSTG/Waterford IT and COMAND/Athlone IT) provides a single point of contact for companies looking to access technical capabilities for Internet of Things R&D. A Dublin based business development coordinator meets with interested companies to discuss their needs and assign one or more of the five Gateways with the relevant expertise and capabilities.
- EMD Ireland meanwhile is a cluster operating within the engineering, materials and design sector (Applied Polymer Technologies, CREST (Innovative coatings), Design+ (Applied Industrial design), Medical and Engineering Technologies, Precision Engineering and Manufacturing, SEAM (Materials Engineering). It provides expertise for companies looking to access expertise in areas including protective coatings, materials surface engineering and coatings for environmental applications.

There is also one Enterprise Ireland/IDA Ireland Technology Centre with a construction dimension: **iCOMP, the Irish Centre for Composites Research**, based across the University of Limerick, UCD and Athlone IT. The Centre provides innovative R&D, consultancy and networking opportunities for industry to work with researchers to address some of the critical issues to the use of composite materials. iCOMP members include companies from the construction sector and its activities have included a focus on the application of new materials technologies for Irish building products manufacturers and meeting the need for greener construction projects- in particular innovation in the production and re-engineering of building materials and their deployment.

Establishment of Construction R+D Forum

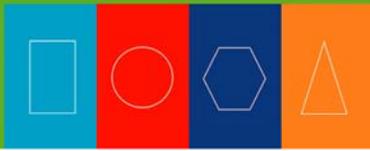
Since 2018 there has been an impetus from within the Construction sector to enhance innovation activity as a means of driving productivity and competitiveness. In November 2018 the Construction Industry Federation convened a R&D/Innovation workshop, consisting of the CIF, Institute of Technology and University sector representatives and Enterprise Ireland to develop strong alignment between industry and the research community and establish the context for construction related research in Ireland. As a note of the workshop stated- 'participants wholly agreed that an industry dominated by price versus quality is not helpful. By investing in good quality buildings/projects from the outset a client will undoubtedly save money in the longer term. Higher RDI investment is essential to ensure that investment goals are aligned with societal goals'.



The workshop highlighted the key research interests of the Construction sector, including sustainability, construction techniques, technology, productivity, offsite modular construction, the circular economy and Building Management Systems. The experience of industry/research collaboration was described as positive, but informal, unstructured and lacking a clear national/industry strategy. The workshop also identified barriers to research, including: no distinct construction research funding stream, the sector's fragmented and adversarial structure, its short-term mindset- which perceives RDI as lacking value- and the low/tight margins available for RDI spend.

The chief recommendation from the workshop was that short, medium- and long-term goals for the Construction research agenda be identified, in particular through an analysis of industry requirements, the development of common themes across the industry, and easing access to the research community. Arising from this, the Construction Industry Federation has established a Construction R&D Forum, composed of employers and academics, which is aiming to provide a coherent approach to the sector's skills, educational and RD&I requirements into the future.

The Forum, which met for the first time in May 2019, is engaged in advancing construction research through identification of sectoral and client needs, the mapping of existing RDI in 3rd level/research community outputs, and the development of a thematic research agenda. The Forum's long-term objective is for the establishment of a designated centre for construction RDI (a 'Teagasc for the Construction Centre'), to provide a bridge between academia and industry, helping to provide the right conditions for research collaboration and knowledge spill-over, and drive long term productivity growth and innovation collaboration. Its establishment is viewed as allowing for the development of a shared research agenda, as well as facilitating individual companies in accessing research capability.



Conclusion

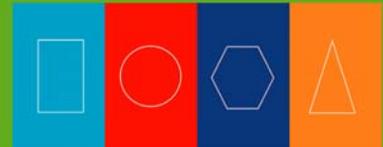
This review examined a range of Construction strategies and reports, and their associated skills recommendations, published by both Government and industry in the years since 2008. This was a period in which the construction sector declined from unsustainable highs of output and employment, to lows in the early part of this decade. A tentative recovery began, however, from 2013 onwards, and the sector has maintained a positive growth trajectory in the intervening years. This growth is expected to be maintained in the delivery of important Government initiatives such as *Rebuilding Ireland*, *Project Ireland 2040*, and the *Climate Action Plan*.

Many of the 2008-2018 strategies and reports were undertaken with a view to supporting the development of a more balanced and sustainable Construction sector, with a skills base, productivity performance and capacity for innovation that could assist the sector in playing its role in national and regional development in a manner that supports Ireland's competitiveness agenda. This was reflected in the common themes that emerged across the different strategies: boosting skills and labour supply within the construction sector; ensuring the alignment of education and training provision with the skills needs of the sector, both current and future; further encouraging and assisting the sector's engagement in export activity; and the focus on managerial competence, the promotion of BIM and greater sectoral engagement with research and development activities.

The progress to date across these different themes has been mixed. It has been weakest in the areas of the Construction sector's engagement with management development programmes and research, development and innovation activities- although the recently established R&D forum is a promising sign in seeking to identify and promote this agenda across the sector. The record is more mixed in areas such as boosting employer engagement with the apprenticeship system, the convening of a Construction Skills Forum, the greening of Construction skills and promotion of BIM. Initiatives in all these areas have either been undertaken, although to mixed results; provide a base from which further action can be taken; or involve actions that are subject to imminent, wider roll out.

By contrast, implementation of recommendations has been strongest in relation to the marketing of construction as a viable career option and the attraction of overseas talent, in particular through changes to the employment permit eligibility lists; the undertaking of Construction sector skills analyses for skills planning purposes; the alignment of education and training provision with sectoral needs; and Enterprise Ireland's activities, admittedly with a small cohort of the sector, around export diversification.

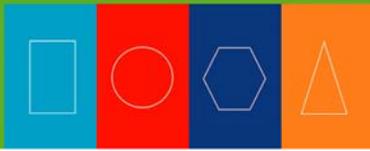
While a full Expert Group on Future Skills Needs study is proposed, this review indicates that the following interim recommendations are valid for Construction sector stakeholders. Any EGFSN study will seek to confirm these recommendations, identify new potential actions and quantify precise skills demand and supply gaps:



- **On Skills and Labour demand/supply:**
 1. Communication of a sustainable growth path for the construction sector- under the auspices of Project Ireland 2040- appears to be key to addressing the employer apprenticeship engagement/recruitment issue, as well as certainty amongst potential apprentices, HEI students and international talent (including the Irish diaspora) on the viability of the Irish construction sector and construction more generally as a career option.
 2. This communications campaign should be combined with the intensive career promotional activity that the construction sector is already engaged in- including, importantly, activity aimed at enhancing gender balance. The implementation of the National Development Plan and other construction related strategies have the potential to increase demand and form a virtuous circle in terms of boosting skills supply.
 3. As this communications campaign will take time to boost output, in the interim the Construction sector should be supported in leveraging resources such as EURES and the employment permits system to bridge the short-term skills gap. Evidence suggests that engagement with EURES services has been limited, and that employment permit applications have been slow to materialise within the sector.

- **In the area of alignment of education and training provision with industry skills needs:**
 4. To ensure that this provision is as informed and future proofed as possible, Construction skills planning will benefit from the findings and recommendations of the productivity analysis being undertaken by DPER (Strand 2 of this study).
 5. On the proposal for a Construction Skills Forum, and given the consideration already given to skills matters within its structures, the coordination and oversight of Construction skills development might be entrusted to the Construction Sector Group- perhaps through the formation of a dedicated sub-group composed of the key public and private sector stakeholders.
 6. In light of the challenge posed by Climate Change, and the contribution of the Built Environment to carbon emissions, the national roll out of NZEB/energy efficiency training in the coming years will also be key to supporting implementation of the Climate Action Plan and should be prioritised in the years ahead.

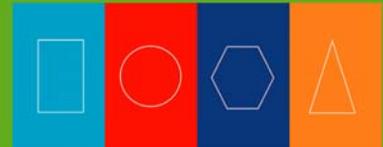
- **As productivity and innovation within the construction sector is the major area of weakness in terms of implementation:**
 7. There needs to be a concerted effort to increase management capability within the construction sector, through enhanced promotion of and engagement with the relevant Skillnet Ireland and Enterprise Ireland support programmes by Construction sector firms.



8. Similarly, research and development activity, key to innovation within the sector, requires a significant culture change across the Construction sector base. The efforts now being undertaken by the CIF convened Construction R&D Forum should be supported by the industry, and where relevant, Government, in identifying the needs of construction firms and developing a thematic research agenda for the sector.

The wider deployment of Building Information Modelling across the Construction sector will also be a key support to improving its poor productivity performance.

9. The proposed Build Digital Project, in particular its proposal for delivery of a broad awareness and upskilling learning framework for educators and industry, will be a key mechanism in advancing the adoption of BIM in the coming years. Subject to a competitive call to be issued in late 2019/early 2020, the project, once formally established, should receive maximum support from the public and private sector construction stakeholders in its promotional, educational and capacity building activities.



Appendix I: Terms of Reference

Expert Group on Future Skills Needs: Skills for the Construction Industry project proposal (approved 10th December 2018)

Background

The construction sector has a dual role in Ireland's economy. As a sector, it directly provides regionally distributed jobs across a wide variety of occupations and skills levels. The sector also provides and maintains the physical infrastructures and buildings on which every other industry and society depends. The sector includes both a number of large, internationally trading companies, combined with a large number of SMEs, many of which supply local markets.

Construction by its nature is a cyclical industry aligned with economic performance generally. The output of the Irish construction industry peaked in 2007 at over €38 billion¹¹, representing almost 24% of GNP and directly employing over 270,000.¹² Output from the industry fell to its lowest point in 2012, at just over €9 billion, representing a fall of 76% from peak. Recovery commenced during 2013, accelerating from 2014, with output rising to just over €15 billion in 2016. These levels of activity represented 8% of GNI* in 2016.¹³ Construction output in 2017 is estimated to be €17.1 billion in 2017 and is expected to reach €19.5 billion in 2018.¹⁴ The industry is in a recovery phase and is on course to experience the most positive outlook for construction in a decade, provided it has the skills available to meet the demands of industry. As of Q3 2018 there were 146,300 people employed in the construction sector - an increase of 65% on the same quarter in 2013.

National targets for the building of new residential properties have been identified by Government. Rebuilding Ireland, the Government's Action Plan for Housing and Homelessness published in July 2016, committed to increasing overall housing supply to a baseline of 25,000 new homes by 2020. In line with the long-term demand of at least 500,000 new homes forecast within the National Planning Framework models, this level of housing supply will, at a minimum, need to be maintained to 2040. An enhancement of skills capacity in the industry will be required to ensure that the industry can deliver these demands.

Rationale

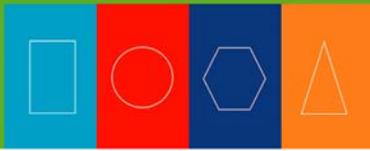
The current growth in the construction sector domestically is being driven by commercial activity and the pick-up in housebuilding in urban areas, particularly Dublin, where demand for homes outstrips supply. However, as a result of the previous dramatic contraction of the industry, the skills landscape has changed drastically. There has been a collapse in new entrants to the sector and as an industry it is no longer viewed as an attractive career option.

¹¹ Review of the Construction Industry 2008 and Outlook 2009-2011, Department of Environment & Housing.

¹² CSO, Quarterly National Household Survey

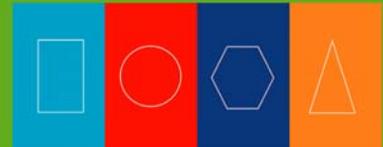
¹³ Modified Gross National Income (GNI*) is a new indicator designed to exclude globalisation effects that disproportionately impact the measurement of the size of the Irish economy in terms of GDP and GNP.

¹⁴ Sustaining Growth: AECOM Ireland Annual Review 2018



Over the last 10 years a number of reports have been completed by government and by industry which have outlined skills recommendations. They are:

- In 2008 the EGFSN completed '**A Review of the Employment and Skills Needs of the Construction Industry in Ireland**'. The analysis found that the construction sector would undergo a process of significant change in both quantitative and qualitative terms over the period 2007-2013. Analysis suggested that this restructuring of the sector would not occur in an even manner. The report concluded that, whilst new job opportunities would develop in the industry, a contraction in house-building would give rise to unemployment. It was suggested that the restructuring of the industry would represent an opportunity for education and training providers to adjust their scope to reflect changing skillsets. It also noted the need for the development of a formal career path structure and a more active role for industry in the education and training of workers at all levels.
- In 2013 Forfás published '**Ireland's Construction Sector: Outlook and Strategic Plan to 2015**'. This was developed in response to a request in the Action Plan for Jobs 2012 which called for the development of a national strategy for the construction sector. The report focussed on five key areas where action was required - one of which was skills. The report stated that there was some concern about future capacity to deliver in the context of a return to growth scenario. It noted that it was likely that the sector would encounter skills shortages in the future as a result of the existing supply demand configuration. The report put forward a series of recommendations for skills including targeted promotion of Skillnets trainings for SMEs, creating a coordinated approach to skills development, and the continuing of international graduate placement programmes.
- **Construction 2020** was published in 2014 by the Department of Housing, Planning and Local Government. It was a strategy for a renewed construction sector. The report emphasises the importance of the construction sector to the Irish economy both in terms of providing economic and social infrastructure and job creation. It builds on the work completed by Forfás the previous year and provides actions that aim to increase the capacity of the sector and maintain jobs and to deliver a sustainable sector operating at an appropriate level.
- In 2016, the Construction Industry Federation (CIF) commissioned a report by DKM Economic Consultants, **Demand for Skills in Construction to 2020**. It projected that direct employment in the sector would increase to 212,700 by 2020 and that combined direct and indirect employment from the sector over the same time period would reach 300,000 people. The report also contended that the industry will require an additional 36,000 skilled craftspersons (including apprenticeships) by 2020. These projections were based on expansion demand arising from increase in construction output to 2020. However, when the issue of replacement demand is considered, the total labour requirement was estimated at 112,000 workers over the next four years (2017-2020). The report provides a number of recommendations to enhance skills capacity. They include delivering an international recruitment drive to target Irish diaspora,

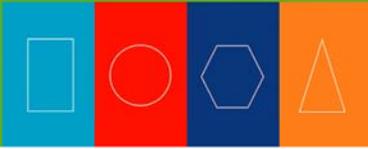


further engagement with Solas and the ETBs to deliver skills courses nationally and constantly benchmarking progress and year-on-year changes to skills in the sector.

- The Action Plan to Expand Traineeships and Apprenticeships 2016-2020 was launched in January 2017. Published as a key commitment under the Action Plan for Education, this action plan aims to significantly grow work-based learning over the coming five years using the apprenticeship and traineeship models of learning and skills development. The overarching goal for this Action Plan is to provide over 120 Apprenticeship and Traineeship Schemes and a total of 50,000 apprenticeship and traineeship registrations by 2020. It sets out a comprehensive list of all apprenticeships and traineeships which were available in 2016. This includes the range of courses available for the Construction sector. There were 8 construction related apprenticeships available in 2016 including plumbing, carpentry and electrics. In 2017 further construction related apprenticeships were approved in the areas of quantity surveying and scaffolding.
- A recent report, the Trades and Apprenticeships Skills Survey, completed by CIF and DIT in February of this year has found that skills gaps are emerging across the full range of construction skills. In particular, there is a lack of young people entering apprenticeships in the 'wet' trades - brick and blockwork; floor and wall tiling; painting and decorating; and plastering. Currently in these trades the numbers registering stand at approximately 10% of those in 2006 with the exception of floor and wall tiling where there is currently no (zero) apprentices registered. It takes four years for apprentices to qualify and so the current situation is not promising for the delivery of the goals of the National Development Plan. The report provides ten recommendations including introducing traineeship grants, increased apprenticeship engagement by the State and its bodies, and establishing a forum to collectively market the construction industry.
- In June 2018, Ibec released 'Better Housing: Improving Affordability and Sustainability'. The report states that the construction sector is facing an unprecedented labour and skills shortage which will require an additional 80,000 workers across the sector to meet current demand and an additional 110,000 to reach an output of 36,000 housing units annually. The report identifies that skills shortages exist across the sector from specialist skills to general operatives. In the future the construction sector will be reliant on developing new skills, returning emigrants and using the work permit regime to attract workers from outside the EU. They have specifically recommended that the EGFSN conducts a comprehensive review of skills needs to ensure that the labour market needs for the sector will be prioritised by policymakers. Further recommendations suggest the improved marketing of apprenticeships, a review of the employment permits system in relation to the needs of the sector and a greater pooling of specialist skills between public bodies.

Aim of Project

This study will aim to determine what strategies and actions are in place for the construction sector and if they have been effectively implemented. The study will further seek to carry out a



productivity review of the sector over the last ten years and to understand the resulting skills implications of this. The final part of the study, will aim to assess the current and future skills demand for the construction sector and issue recommendations on any identified skills gaps.

This report will focus on the skilled occupations within the construction sector, including professional services (e.g. quantity surveyors, architects, engineers, etc.), craftspersons (e.g. plumbers, plasters, carpenters, etc.) and those in the skilled trades (e.g. scaffolders, steel fixers, glaziers, etc.)

Methodology

The proposed approach of the study is to undertake a three-part analysis as outlined below:

(A) Assessment of Existing Literature

The first part of the study is to undertake a review of the existing reports available on the sector as completed by both government and industry in the last ten years. An analysis of the recommendations arising from these reports will be carried out to determine if:

- there is duplication or areas of overlap in the recommendations
- if the recommendations were implemented and what progress has been made to date
- if the progress made has been effective

This initial step of desk-based research will be carried out in-house. It is expected that it would be completed by July 2019.

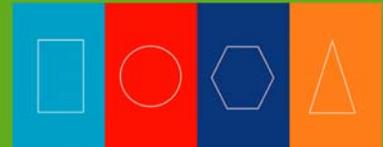
(B) Productivity Review

The second part of the analysis will consist of a productivity review of the sector. Labour productivity in the construction sector has been falling far behind other sectors in the last number of years (see appendix figs. 1&2). On the whole the Irish economy has 34% higher productivity than the euro area average - but construction is 5.4% lower - by far the largest sectoral drag on productivity. The focus of the review will be on both commercial and residential output and the resulting skills requirements. It will include international comparisons on productivity.

It has come to the attention of the EGFSN that the Investment Projects and Programmes Office (IPPO) in DPER are planning to apply for IGEES funding to, and will likely carry out, a wide-ranging analysis of productivity in the construction sector in Q2/Q3 of 2019. They are currently in the process of scoping the project. To this end, the EGFSN Secretariat attended an initial meeting in DPER, alongside the Departments of Finance, Housing, Planning and Local Government, and the National Competitiveness Council on December 5th.

(C) Skills Forecast Analysis, Recommendations and Implementation Plan

Further to the completion of part (A) and part (B), the EGFSN will be in a position to decide if further action needs to be undertaken. If such a decision is made, parts (A) and (B) will be used as inputs into a further study on the supply and demand of construction skills. This study will use a



methodology using various integrated elements. This would include the following elements, as deemed appropriate:

- a review of main trends and drivers of change impacting on the industry's current and future skills and competency requirements;
- a determination of the current workforce profile of the sector;
- a profile of the current supply of relevant skills from training and education provision;
- a modelling exercise to determine the future skills requirements needed over a five-year period - this will include the implications of Brexit and any other identified factors that will influence skills demand during this time period;
- consideration of how any identified gaps in skills provision, including quantity and diversity, may be addressed;
- consideration of the scope for the upskilling of jobseekers to fill potential job openings;
- a review of the actions taken by other countries to develop a supply of relevant talent;
- undertake a structured survey of key informants on skills demand needs, identify how they may differ regionally and how to best address this;
- conduct thematic workshops on national and regional skills needs and supply provision with selected companies, organisations, training and education providers, and State agencies;
- recommend responses to address any identified skills gaps in skills provision taking into account the skills needs requirements of the construction sector

Based on the results of this study, a final set of recommendations and an implementation plan would be provided to address the needs of the sector. Part (C) of this study would be an outsourced piece of work.

Outputs Expected

The primary output of this research will provide a strong set of recommendations and an implementation plan that will help the continued development of the sector in terms of meeting current and future skills demand.

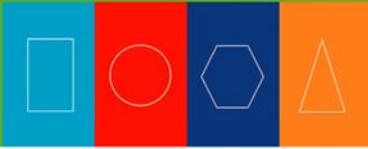
Project Time Line

The project will commence in early Q1 2019 and depending on the completion of part (B) could be completed by July 2019. Parts (A) and (B) of the study are expected to commence in early 2019 and will run concurrently. Part (C) would be undertaken following this with the expected deadline of Q4 2019.

Project Governance

Relevant industry and policy figures would be invited to join a Steering Group designed to guide the shape and development of the study. Ideally the Steering Group membership will include those with a responsibility for the implementation of recommendations. The Steering Group will meet a number of times over the duration of the study to provide an oversight function and key insights.

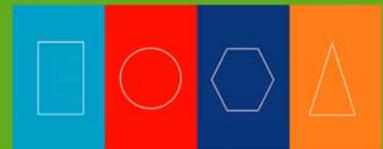
Resource Implications



80 staff days will be required for project management, steering group meetings, review of literature and research, writing up of the report and input into agreed action plan.

The total consultancy spend for this project is expected to be €90,000 (including VAT). The breakdown of this is as follows:

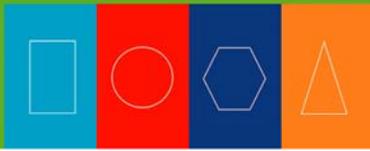
- Part (A) will be carried out in-house and as such will need no budget
- Part (B) will require an estimated €15,000 investment towards the productivity review being carried out by DPER
- Part (C) if undertaken, will require a budget of €75,000



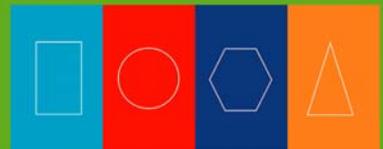
Appendix II: Higher and Further Education Training Provision in Construction

Higher Education course provision in Built Environment/Construction

Provider	Course Title	NFQ Level
Athlone Institute of Technology	Construction Management	8
Athlone Institute of Technology	Engineering- Civil Engineering	6/7/8
Athlone Institute of Technology	Quantity Surveying	8
Cork Institute of Technology	Architectural Technology	7/8
Cork Institute of Technology	Construction	6
Cork Institute of Technology	Construction Management	7/8
Cork Institute of Technology	Construction Project Management	9
Cork Institute of Technology	Engineering- Civil Engineering	6/7
Cork Institute of Technology	Engineering- Civil Engineering- Environment and Energy	9
Cork Institute of Technology	Engineering- Sustainable Energy Engineering	8
Cork Institute of Technology	Quantity Surveying	7/8
Dundalk Institute of Technology	Architectural Technology	7/8
Dundalk Institute of Technology	Building Surveying	8
Dundalk Institute of Technology	Construction Management	7/8
Dundalk Institute of Technology	Construction Project Management	8
Dundalk Institute of Technology	Engineering- Civil Engineering	7/8/9
Galway Mayo IT	Architectural Technology	7
Galway Mayo IT	Construction Management	7/8
Galway Mayo IT	Engineering- Civil Engineering	7/8
Galway Mayo IT	Quantity Surveying and Construction Economics	7/8
Institute of Technology Carlow	Architectural Technology	7
Institute of Technology Carlow	Construction	8
Institute of Technology Carlow	Construction Management with Building Services	7
Institute of Technology Carlow	Energy Management- Buildings	7
Institute of Technology Carlow	Engineering- Civil Engineering	7/8
Institute of Technology Carlow	Management in the Built Environment	9
Institute of Technology Sligo	Applied Construction Technology	6
Institute of Technology Sligo	BIM and Lean Construction Management- Online	9
Institute of Technology Sligo	Construction Economics (including online option)	6
Institute of Technology Sligo	Construction Law Procurement and Finance- Online	9
Institute of Technology Sligo	Construction Management- Online	7
Institute of Technology Sligo	Construction Project Management (including online option)	8



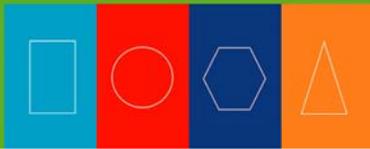
Institute of Technology Sligo	Construction Project Management and Applied Technology	8
Institute of Technology Sligo	Engineering- Civil Engineering	6/7/8/9
Institute of Technology Sligo	Quantity Surveying	7/8
Institute of Technology Sligo	Strategic Construction Management (including online option)	9
Institute of Technology Tralee	Building Information Modelling- BIM with Revit	6
Institute of Technology Tralee	Construction Management	7/8
Institute of Technology Tralee	Engineering- Civil and Environmental Engineering	7/8
Letterkenny Institute of Technology	Architectural Technology	7
Letterkenny Institute of Technology	BIM 4D- Navisworks	6
Letterkenny Institute of Technology	Building Services and Renewable Energy	7
Letterkenny Institute of Technology	Construction Contracts Management	8
Letterkenny Institute of Technology	Construction Economics and Land Survey- Introduction	6
Letterkenny Institute of Technology	Construction Management	8
Letterkenny Institute of Technology	Engineering- Civil Engineering	7
Letterkenny Institute of Technology	Quantity Surveying	7
Letterkenny Institute of Technology	Sustainable Construction Management	8
Limerick Institute of Technology	Built Environment- Common Entry	8
Limerick Institute of Technology	Construction	6
Limerick Institute of Technology	Construction- Health and Safety	7
Limerick Institute of Technology	Construction Management	8
Limerick Institute of Technology	Construction Project Management- Online	6
Limerick Institute of Technology	Construction- Site Management	7
Limerick Institute of Technology	Energy Management- Built Environment	8
Limerick Institute of Technology	Engineering- Civil Engineering Management	7/8
Limerick Institute of Technology	Quantity Surveying	8/9
NUI Galway	Project and Construction Management	8
NUI Galway	Engineering- Civil Engineering	8/9
NUI Galway	Engineering- Civil Engineering- Research	9/10
NUI Galway	Engineering- Civil Engineering- Structured	10
Technological University Dublin	Architecture	8
Technological University Dublin	Architectural Technology	8
Technological University Dublin	Building Engineering	6/7



Technological University Dublin	Construction Management	8
Technology University Dublin	Construction Site Management	7
Technological University Dublin	Construction Technology	6/7
Technological University Dublin	Engineering- Civil	6/7
Technological University Dublin	Information Technology for Site Workers	
Technological University Dublin	Quantity Surveying	9
Technological University Dublin	Quantity Surveying and Construction Economics	8
Technological University Dublin	Sustainable Development	9
Technological University Dublin	Sustainable Infrastructure	9
Trinity College Dublin	Building Repair and Conservation- Applied	9
Trinity College Dublin	Construction Law and Contract Administration	9
Trinity College Dublin	Health and Safety in Construction	9
University College Cork	Safety Health and Welfare at Work- Construction	7
University College Dublin	Architecture	8/9
University College Dublin	Civil Engineering- Research	9/10
University College Dublin	Engineering- Civil Structural and Environmental Engineering	9
University of Limerick	Architecture	8
University of Limerick	Engineering- Biomedical or Civil or Design and Manufacture or Mechanical	8
University of Limerick	Engineering- Construction Management and Engineering	8
Waterford Institute of Technology	Architectural Technology	7/8
Waterford Institute of Technology	Building Information Modelling	8
Waterford Institute of Technology	Construction Project Management	9
Waterford Institute of Technology	Engineering- Civil Engineering	7
Waterford Institute of Technology	Engineering- Construction Management and Engineering	8
Waterford Institute of Technology	Quantity Surveying	8

Springboard + 2019/20 courses

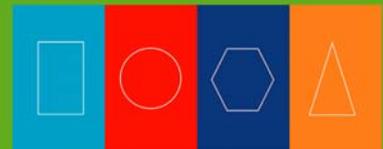
Provider	Course Title	Number of Places
Athlone Institute of Technology	HDIP in BIM for Civil Engineering and Construction (NFQ L8)	20
Athlone Institute of Technology	SPA Construction Management (NFQ L8)	20
Cork Institute of Technology	Certificate in Building Information Modelling (BIM) Technologies (NFQ L7)	20
Galway Mayo Institute of Technology	Certificate in Sustainable Building Technology (NFQ L8)	24



Institute of Technology Carlow	Certificate in Introduction to CAD and 3D Modelling (NFQ L6)	20
Institute of Technology Tralee	Certificate in Building Information Modelling (BIM) with Revit (NFQ L6)	64
IT Sligo	Certificate in BIM and Lean Construction Management (NFQ L9)	25
Letterkenny IT	Certificate in BIM (Revit) (NFQ L6)	20
Limerick Institute of Technology	Bachelor of Science in Construction Health and Safety (NFQ L7)	24
Limerick Institute of Technology	Certificate in Construction Project Management (Online) (NFQ L6)	48
Limerick Institute of Technology	Certificate in Near Zero Energy Buildings (NFQ L6)	24
Limerick Institute of Technology	Certificate in Building Information Modelling (BIM)- with Revit Architecture (Online) (NFQ L6)	32
Limerick Institute of Technology	Certificate in Building Information Modelling (BIM)- with Revit MEP (Online) (NFQ L6)	32
Technological University Dublin	Postgraduate Certificate in Building Performance (Energy Efficiency in Design) (NFQ L9)	40
Technological University Dublin	Certificate in Low Energy Building Construction (Foundation Energy Skills) (NFQ L6)	30
Technological University Dublin	BSc (Hons) in BIM (Digital Construction) (NFQ L8)	24
Technological University Dublin	Postgraduate Certificate in BIM Technologies (2019-2020) (NFQ L9)	40
Technological University Dublin	Postgraduate Certificate in Digital Construction Analytics/Engineering Analytics (NFQ L9)	16
Waterford Institute of Technology	Certificate in NZEB Design (Postgraduate) (NFQ L9)	12
Waterford Institute of Technology	Bachelor of Engineering in Fire Engineering (NFQ L7)	15
Waterford Institute of Technology	BSc in Construction Site Management (NFQ L7)	20

Apprenticeship programmes (active):

Apprenticeship	NFQ Level/Duration	Coordinating Provider	Collaborating Provider
Brick and Stonelaying	6/ 4 years	SOLAS	ETBs and IoTs
Carpentry and Joinery	6/ 4 years	SOLAS	ETBs and IoTs
Construction Plant Fitting	6/ 4 years	SOLAS	ETBs and IoTs
Electrical	6/ 4 years	SOLAS	ETBs and IoTs
Electrical Instrumentation	6/ 4 years	SOLAS	ETBs and IoTs
Industrial Insulation	6/ 4 years	SOLAS	ETBs and IoTs
Metal Fabricaion	6/ 4 years	SOLAS	ETBs and IoTs
Painting and Decorating	6/ 4 years	SOLAS	ETBs and IoTs
Pipefitting	6/ 4 years	SOLAS	ETBs and IoTs
Plastering	6/ 4 years	SOLAS	ETBs and IoTs
Plumbing	6/ 4 years	SOLAS	ETBs and IoTs



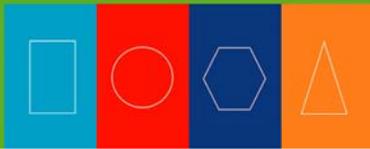
Sheet Metalworking	6/ 4 years	SOLAS	ETBs and IoTs
Stonecutting and Stonemasonry	6/ 4 years	SOLAS	ETBs
Wood Manufacturing and Finishing	6/ 4 years	SOLAS	ETBs and IoTs

Apprenticeship programmes (under development):

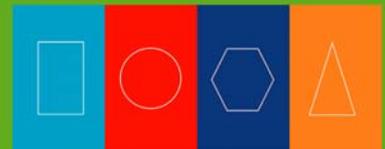
Apprenticeship	NFQ Level/Duration	Coordinating Provider	Collaborating Provider
Advanced Quantity Surveyor	9/ 2 years	Society of Chartered Surveyors Ireland	Limerick Institute of Technology
Scaffolding	6/ 3 years	Construction Industry Federation	Laois and Offaly ETB

Other Further Education and Training provision

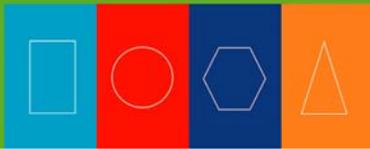
Course Title	Provider	Type
Advanced Scaffolding CSCS	Cork Training Centre (Rossa Avenue, Bishopstown Cork)	Full Time
Advanced Certificate in Architectural Technology and Design	Dun Laoghaire Further Education Institute (DFEI)	Full Time
Applied Construction Skills LTI, Banagher	Training Offaly (Banagher)	Full Time
Apprenticeship Preparation in Trades	Galway Community College (Galway City)	Full Time
Architectural Design and Technology Foundation	Colaiste Dhulaigh, Coolock	Full Time
Architecture: Design and Technology	Bray Institute of Further Education	Full Time
Architectural Draughting/Advanced CAD (Level 5)	St John's Central College, Cork City	Full Time
Architectural Technology-Advanced HND	Bray Institute of Further Education	Full Time
Architectural Technology and Design Year 1 and 2	Pearse College, Crumlin	Full Time
Building Construction (Pre-Apprenticeship)	Drogheda Institute of Further Education (Drogheda Town)	Full Time
Building Construction (Pre-Apprenticeship)	Kerry College of Further Education (Tralee)	Full Time
Carpentry (BTEI)	Plunket College, Whitehall	Part Time
Carpentry and Joinery	Plunket College, Whitehall	Full Time
Carpentry and Joinery (Pre-Apprenticeship)	Kerry College of Further Education (Tralee)	Full Time
Carpentry L3 SFRC	CE- Limerick City	Part Time
Certificate in Sustainable Construction	City of Dublin Education and Training Board Ballyfermot Training Centre	Full Time
Construction and Apprenticeship Preparation 2019-2020 (early school leavers)	Training Kilkenny (Kilkenny City)	Full Time
Construction and Building	Carlow Institute of Further Education	Full Time



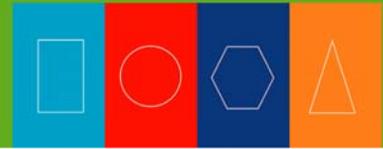
Construction CTC	Kerry Training Centre (Tralee)	Full Time
Construction Employment Skills	Cavan Training	Full Time
Construction and Engineering Technology	Dun Laoghaire Further Education Institute (DFEI)	Full Time
Construction Ground Work Skills- Claremorris	Ballina Training Centre	Full Time
Construction Ground Work Skills	Kerry Training Centre (Listowel)	Full Time
Construction Ground Work Skills	Leitrim Training (Carrick on Shannon)	Full Time
Construction Ground Work Skills	Sligo Training Centre	Full Time
Construction Ground Work Skills- SP4	Waterford Training Centre	Full Time
Construction Operative with Tickets	Galway Roscommon Education and Training Board (Gort)	Full Time
Construction Operative with Tickets	Gweedore Training Centre	Full Time
Construction Operative with Tickets (QQI Level 4)	Letterkenny Training Centre, Buncrana	Full Time
Construction Skills Drogheda Training Initiative LTI	Louth Meath Regional TC (Drogheda Town)	Full Time
Construction Skills for Employment Traineeship	Training Offaly (Mount Lucas)	Full Time
Construction Skills Level 4	Wicklow Training (Arklow)	Full Time
Construction Technology	Limerick College of Further Education (Cappamore)	Full Time
Construction Technology	Waterford College of Further Education	Full Time
Construction Technology with Draughting	Plunket College, Whitehall	Full Time
Construction Technology Level 5	Mary Immaculate, Lisdoonvarna	Full Time
Construction Technology Level 5 Part-Time	Mary Immaculate, Lisdoonvarna	Part Time
Construction Technology with Renewable Energy Systems (Full Time QQI L5) (PLC Sligo)	Sligo College of Further Education (Ballinode CC)	Full Time
Construction Technology and Sustainable Energy	Bray Institute of Further Education	Full Time
CSCS- Scaffolding Basic	Cork Training Centre	Full Time
Diploma in Steel Fixing Occupations	Cavan Training	Full Time
Diploma in Steel Fixing Occupations	City of Dublin Education and Training Board Ballyfermot Training Centre	Full Time
Dry Lining	Cavan Training	Full Time
Dry Lining	Monaghan Training	Full Time
Dry Lining	Tallaght Training Centre	Full Time
Dry Lining	Tipperary Training (Clonmel, Nenagh Town, Tipperary Town)	Full Time
Employability Skills 3M0935-BTEI- Construction Skills	South Kildare (Athy)	Part Time



Employability Skills Kildare FET Level 3- BTEI- Construction Skills	South Kildare (Kildare Town)	Part Time
Employment Skills: Forklift, Safepass and Manual Handling	Galway Roscommon Education and Training Board Training Centre (Galway City)	Full Time
Employment Skills: Forklift, Safepass and Manual Handling Kells	Meath Training (Kells)	Full Time
Employment Skills: Forklift, Safepass and Manual Handling	Roscommon Training	Full Time
Engineering, Manufacturing and Construction	Colaiste an Chreagain, Mountbellew	Full Time
Fascia, Soffit, Gutter and Rainwater Harvesting Installation- Short Course	City of Dublin Education and Training Board Ballyfermot Training Centre	Full Time
Forklift, Safepass and Manual Handling	Baldoyle Training Centre (Balbriggan, Baldoyle)	Full Time
Forklift, Safepass and Manual Handling- Employment Skills	Louth Meath Regional TC (Drogheda Town, Dundalk (East))	Full Time
General Construction Skills- Concreting	City of Dublin Education and Training Board Ballyfermot Training Centre	Full Time
General Learning Level 4- Construction Skills	South Kildare (Kildare Town)	Part Time
Hard Landscape Construction	Athlone Training Centre (Garycastle)	Full time
Hard Landscape Construction	City of Dublin Education and Training Board Ballyfermot Training Centre	Full Time
Kerb Flag and Pavior Laying	Athlone Training Centre	Full Time
Kerb Flag and Pavior Laying	City of Dublin Education and Training Board	Full Time
Nearly Zero Energy Building (NZEB) Fundamental Awareness	Waterford Training Centre (Enniscorthy)	Evening
Occupational Health and Safety (Full Time QQI Level 5) (PLC Sligo)	Sligo College of Further Education (Ballinode CC)	Full Time
Pre-Apprenticeship- Carpentry and Joinery	Plunket College, Whitehall	Full Time
Pre-Apprenticeship- Construction	Plunket College, Whitehall	Full Time
Pre-Apprenticeship Construction QQI Level 5	Colaiste Phobail Roscre, Roscrea Town	Full Time
Pre-employment skills for hairdressing, catering and carpentry	Ballingcoolig Youthreach	Full Time
Preliminary Building Surveying	Colaiste Dhulaigh, Coolock	Full Time
Preliminary Building Surveying VTOS	Colaiste Dhulaigh, Coolock	Full Time
Revit Technician	City of Dublin Education and Training Board Finglas Training Centre	Full Time



Safepass	BTEI- Co Clare (Kilrush, Lisdoonvarna, Shannon Town Centre)	Part Time
Safepass- Evenings	Cork Training Centre (Bishop Avenue, Bishopstown Cork)	Evening
Safepass- Evenings	Waterford Training Centre	Evening
Shuttering Skills	Monaghan Training	Full Time
Smart Building Technologies	Bray Institute of Further Education	Full Time
Smart Building Technologies (FIT)	Cavan Training	Full Time
Sustainable Energy and Construction Technology	Cavan Institute	Full Time
3D Mechanical Modelling using Solidworks (CAD)	Athlone Training Centre (Garrycastle)	Online
Traditional Stonewall Construction	Kerry Training Centre (Tralee)	Full Time
Traditional Stonewall Construction	Tipperary Training (Tipperary Town)	Full Time
Traditional Stone Wall Construction 2019	Waterford Training Centre (Waterford City)	Full Time
Wood Fabrication	FET Centre, Shannon Campus (Kilrush)	Evening



Appendix III: Department of Employment Affairs and Social Protection Employment Engagement Services and Supports

The Department of Employment Affairs and Social Protection has, since the downturn in the economy, introduced supports for both employers and jobseekers, to assist employers with the cost of hiring employees and to assist jobseekers to return to the labour market. These measures are supported by Pathways to Work 2016 - 2020, the Departments overarching policy framework. The Department's commitment to these measures is extended in the Future Jobs strategy.

The Department also provides a Public Employment Service to all citizens which helps match supply and demand on the labour market through information, placement and active support measure at local, national and European level. Some of these supports are set out below:

JobBridge

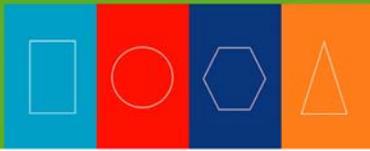
JobBridge was officially launched in June 2011 in a period of high unemployment, with the aim of providing jobseekers the opportunity to gain valuable work experience, to maintain close links with the labour market and to improve their skills and subsequently improve future employment prospects. The scheme comprised of six and nine month placements in organisations in the private, public and community and voluntary sectors.

An evaluation of the JobBridge scheme was undertaken by Indecon International Economic Consultants. One of the key findings of that evaluation states that "Compared with a control group of individuals on the live register, our econometric analysis demonstrates that the Scheme provides additionality in terms of the probability of being employed of 32%.", and "On the experience of interns post the Scheme there were high levels of progression to employment with 64.2% of interns currently employed and 9.6% pursuing further education or training."

A profile of the sectors in which Job Bridge host organisations operate shows that 1,057 or 2.71% of Internships were in the Construction sector, with a further 987 or 2.53% in the Engineering sector.

The JobBridge scheme ended in 2016. It has since been superseded by the Youth Employment Support Scheme (YESS), a new work experience programme targeted at young jobseekers who are long-term unemployed or who face significant barriers to gaining employment. YESS aims to provide them with the opportunity to learn basic work and social skills in a supportive environment while on a work placement. The new scheme replaces both JobBridge and First Steps, both of which are now closed to new applications.

YESS is open to jobseekers and other eligible cohorts who are aged between 18 and 24 and have been out of work and in receipt of a qualifying payment for at least 12 months or, if unemployed for less than 12 months, are considered by a case worker to face a significant barrier to employment. Candidates must be in receipt of one of the following qualifying payments: Jobseekers Allowance, Jobseekers Benefit, One Parent Family Payment, Jobseeker Transition Payment, Disability



Allowance, Blind Person's Pension, Supplementary Welfare Allowance; or signing for Credits. Although people are encouraged and supported to avail of suitable placements, participation on YESS is entirely voluntary - there are no financial penalties for jobseekers who do not wish to participate or who do not complete a placement.

There are clear eligibility requirements for Participant Hosts wishing to participate in the scheme. They are required to sign up to Terms and Conditions when they advertise a placement. The standard duration of the work experience programme is 3 months, with an option to extend the placement further to 6 or 9 months following a review of progress by a Departmental case officer. The attendance requirement is 24 hours per week. Participants will receive a weekly payment of €229.20. A designated case officer liaises with the participant and the Participant Host throughout the period of the placement, to monitor how well it is progressing for both parties and to provide appropriate advice and support.

Participant Hosts are encouraged to offer paid employment to participants who have performed well. Participants may qualify for a financial subsidy under JobsPlus Youth.

Jobs Plus

JobsPlus was introduced in July 2013 as a financial incentive to encourage employers to provide employment to the long term unemployed. The scheme is part of a range of measures aimed at employers in Strand 4 of the Government's "Pathways to Work" programme. Strand 4 is about "Incentivising employers to provide more jobs for those who are unemployed", reflecting the difficulties faced by those who are long-term unemployed in returning to the workforce. A survey of employers (2017) indicated a positive reaction from them to their experience of using Jobs Plus. There are currently 576 persons employed in the construction sector whose employer is supported by JobsPlus.

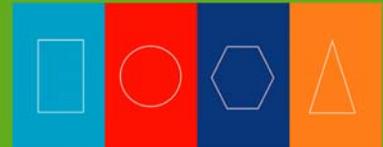
Employers receive different levels of payment depending on an employee's circumstances.

The eligibility criteria for JobsPlus changed on 1 January 2018 and the employees starting after this date:

A grant of €7,500 will be paid to employers over two years for the following categories of jobseeker:

- Jobseekers under 25 years of age, who have been on the live register for at least 4 months (104 days) in the previous 6 months.
- Jobseekers over 25 years of age and under 50, who are on the live register and have been unemployed for at least 12 months (312 days) in the previous 18 months.
- People who used to get the One-Parent Family Payment, whose youngest child is at least 7 years of age and under 14, who transferred to the live register and are now getting Jobseekers Allowance Transitional Payment (no qualifying periods applies).
- People with refugee status who are getting Jobseekers Allowance (no qualifying period applies).

A grant of €10,000 will be paid to employers over two years for the following categories of jobseeker:



- Jobseekers under 50 years of age, who are on the live register and have been unemployed for at least 36 months (936 days) of the last 42 months.
- Jobseekers over 50 years of age, who are on the live register and have been unemployed for at least 12 months (312 days) in the last 18 months.

Raising awareness of Incentives

The Department is working with the Construction Industry Federation (CIF), Irish Concrete Federation (ICF) and with major contractors to ensure that job opportunities across the sector area are available to and accessible by jobseekers, in particular the long term unemployed.

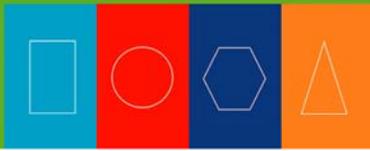
Recently-awarded social housing contracts include a social clause where the contractor is required to recruit 5% of those employed from the EU Live Register. This advances Action 20 of the Pathways to Work strategy. In addition to the national network of officers who work with Employers, the Department provides a dedicated Key Account Manager to work closely with large construction contractors to assist them in fulfilling the requirements of this social clause which is at the commencement stage. Contractors who were granted private public partnership projects (PPP's), advised the Department of the following outcomes in terms of the social clause recruitment drives from 2016 - 2018 inclusive:

Primary Care	5% achieved
Courts	5% achieved
Schools bundle	10% achieved

A total of 534 houses and apartments will be constructed over 6 sites across the greater Dublin area under The Social Housing Bundle 1 contract, awarded in March 2019. The project is due for completion in December 2020.

Furthermore, the Key Account Manager, in conjunction with Employer Relations staff in the Department's 10 Divisions, are working with various construction companies in assisting them to recruit for job vacancies on an on-going basis. Interventions include but are not limited to:

- Tailored recruitment fairs for job vacancies and course vacancies
- Delivering information on incentives available from the Department
- Information and briefing sessions for Jobseekers
- Advertising of job vacancies on the Department's JobsIreland.ie recruitment website,
- Advertising job vacancies across the EU on the EURES jobs portal
- Bespoke and tailored recruitment drives for small, medium and large employers, both in Ireland and Europe
- Provision of interview rooms where required.



In order to maximise the identification of talent and potential talent to fill vacancies, the Key Account Manager and Divisional staff work actively with the various educational and training providers to identify suitable candidates for training, apprenticeship and third level programmes on a national basis. There are also various collaborative events involving other stakeholders to promote awareness and recruit for vacancies. For example the Department ran the third Building Your Career event in the National Construction Training Centre, Mount Lucas, in April 2018. It was a joint event between the Department of Employment Affairs & Social Protection, Irish Concrete Federation, Laois & Offaly Education & Training Board and Regional Skills Midlands. Some 200 jobseekers attended on the day along with 14 exhibitors, including nine local employers from the construction sector. 9 employers with vacancies exhibited and gave presentations in relation to vacancies and apprenticeships.

As a result:

- Two candidates were offered jobs on the day;
- Fourteen have completed or are currently in training,
- Ten are on a waiting list for training;
- One has taken up an apprenticeship and
- Five others are in the process of arranging apprenticeships.

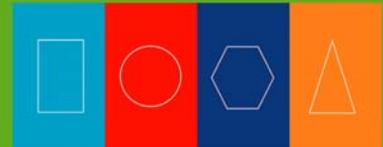
Jobs Week is now established as major annual event on the national recruitment calendar of the Department. It provides a great opportunity for the Department to showcase its employer and jobseeker supports. From 25th - 29 March this year over 82 individual events took place throughout the country, with a number of large recruitment fairs featuring construction companies as exhibitors offering job vacancies. There were also a number of educational and training events where the various educational opportunities were showcased including the range of opportunities in the construction industry. For example, a number of construction employers and education and training providers exhibited at the Dublin Castle Flagship event on 28th March, which had an attendance of 2645 job seekers. The online Careers Fair which ran from 18th February to the end of Jobs Week provided employers with the opportunity to advertise their job vacancies in Ireland online in order to reach a wider audience across the country and across Europe; over 1,200 jobs were advertised through this link.

It is envisaged that a variety of events will continue to be delivered in 2019 to support the Construction industry, and other sectors, in filling job shortages.

Spotlight on Construction-related Initiatives

North Inner City

To ensure that unemployed jobseekers can effectively compete for jobs in the construction sector the Department's services includes referral to construction skills courses. For example, in the North East Inner City one of the Local Employment Services (St Andrews resource Centre) contracted by the Department have delivered. Since its inception this course has secured employment for over



70% of the participants way in front of our target of 40% and has managed to engage with the construction industry bringing real economic benefits to communities most impacted by disadvantage and extensive development.

- 10 Construction Skills Courses
- 80 Candidates have graduated
- 58 Graduates were placed in employment in construction sector
- 39 Graduates remain off the live register – so sustainment is very good
- At least 6 Graduates were homeless men and others had previously served time in prison.

This scheme is now being funded jointly by Dublin City Council and the Department of Housing, Planning and Local Government who have supported a further three iterations of the programme.

Midlands

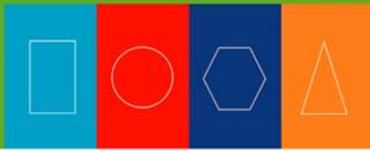
ETB collaboration

In order to provide some specific detail on the work being progressed across the country, the following shines a spotlight on the activities being advanced in the Department's Midlands Division which reflects the collaboration in place between Intreo and the ETB to provide opportunities for training and working in the construction sector. In this Division, the National Construction Training Centre is based (in Mount Lucas, Co. Offaly) which is run by the Laois Offaly Education and Training Board.

- The Department works closely with this Centre with referrals to courses in the Centre made by the Department's case officers. Additional referrals are routed from the Construction Industry Federation
- To facilitate attendance, bus routes are organised through the local link service to facilitate start and finish times at the centre from the surrounding areas.
- 531 persons completed courses in Mount Lucas in 2016. The types of courses that have been provided in Mount Lucas include:

- Telescopic Handler Operations (new entrants), commenced 19/11/2018
- Tower Crane Operations, (new entrants) commenced 3/12/2018
- 360° Excavator Operations, (experienced workers) commenced 11/12/2018
- Articulated Dumper Operations, (experienced workers) commenced 12/12/2018
- Slinger Signaller Operations, (experienced) commenced 13/12/2018
- Tower Crane operations (experienced) commenced 18/12/2018.
- Other courses completed during 2017 & 2018 include formwork & slabbing.
- The Centre also provides a wide range of short courses including 180 Excavator & 360 Excavator, Artic Dumper & Site Dumper, Telescopic Handler, Slinger Signaller

Technical Support Grants



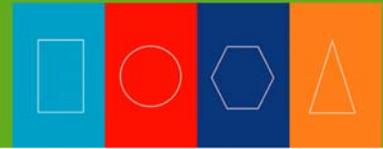
In 2018, 870 Technical Support Grants were awarded for construction-related training. These grants provide funding towards quick access to short term training or related interventions e.g. to obtain/renew certification/permits for individual jobseekers that have identified work opportunities or where Safepass, Forklift/ Warehouse, Safety Training and Construction courses. A review of the 112 TSG awards made to support Safe Pass training during 2017 in Offaly indicate that all customers with the exception of one had left the live register and were in employment.

Community Employment

From Sept 2015 to May 2016, Kilbeggan Community Group CLG and South Westmeath G.A.A. C.E. schemes worked in collaboration with Longford Westmeath Educational Training Board to provide Major Award training in Construction related Employability Skills. The training programme was a specially designed Q.Q.I. Major Award Level 3 and comprised 8 minor component modules of classroom based learning and practical skills training. Practical skills training related to painting and decorating, floor and wall tiling, brick and block laying. The C.E. schemes identified suitable project sites with local voluntary groups for the practical skills demonstration from within their schemes. The programme has continued subsequent to the pilot phase and is availed of by CE participants across a number of schemes in the Midlands.

Local Training Initiative

Local Training Initiative in 'Applied Construction Skills Local Training Initiative' (LTI) in Banagher commenced on 18/2/2019.



Appendix IV: European Employment Services (EURES)

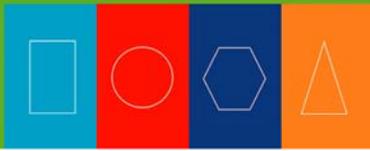
One of the other services offered by the Department of Employment Affairs and Social Protection is the **European Employment Service (EURES)**, established by the European Commission to facilitate the free movement of workers between EU/EEA countries. The EURES unit within the Department of Employment Affairs and Social Protection has confirmed that there has been limited engagement with the service by the Construction sector. EURES has been particularly successful in sourcing healthcare and hospitality workers for the Irish employers.

EURES is a co-operation network formed by public employment services in all EU/EEA countries, with 900+ specially trained European EURES advisers; this makes it a resource with potential for roles below the professional or managerial occupations within Construction. It allows for the advertisement of vacancies and European jobseekers on the EURES Job Mobility Portal (www.eures.europa.eu) for the attention of jobseekers in Europe, via the Jobs Ireland website (www.jobsireland.ie). It also facilitates specially tailored recruitment projects for individual employers, meaning that vacancies can be advertised in one or more European countries; CVs are collected and screened and interviews can be organised in Europe on a company's behalf, and if required, individual jobs fairs can also be organised for companies in any of the EU/EEA countries.

EURES Ireland also holds European Jobs Fairs in various regions of Ireland throughout the year, with similar fairs, including industry or sector specific onsite or online jobs fairs and recruitment events, held across Europe. Further information on accessing the EURES services is available via the network of EURES advisers, who are trained specialists in European recruitment and job mobility matters. They are available to assist employers by offering expert advice on recruiting in Europe for specialised or hard to fill vacancies. EURES Ireland have confirmed that there are 3 advisers working on Construction, but little is happening in terms of engagement.

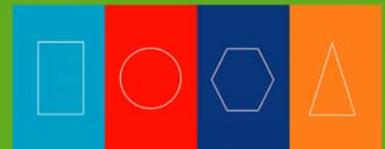
EURES also offered supports for European job mobility, making it easier for jobseekers to relocate for work. This includes information, job matching, recruitment assistance and financial support to help cover the costs of relocating for work in another EU country. This is through the "Your First EURES Job" and "Reactivate" schemes. "Your First EURES Job" helps EU citizens aged 18 to 35 to find a job in another EU or EEA (Norway, Iceland) country, and employers to find skilled workers. "Reactivate" meanwhile is designed to support EU citizens aged 35 and over in finding a job in another EU country.

Both schemes include provision of information, job matching and recruitment assistance at no cost. Jobseekers may also be eligible for financial support to cover costs such as: an interview trip abroad (travel and accommodation costs), relocation to the destination country, language training, recognition and qualifications, and supplementary relocation allowance (Your First EURES Job only) or extra family support if bringing family along (Reactivate only). SME Employers can also apply for financial support under both schemes- financial support can be given for Integration Programmes that include the provision of induction training and possibly language training, job introduction or in-house training.



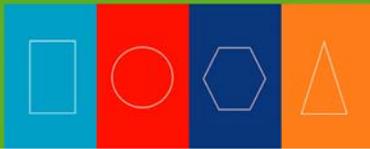
Appendix V: Undergraduate and postgraduate courses in energy efficiency and renewable energy

- Athlone Institute of Technology: Energy and Business Management (NFQ L8), Engineering- Mechanical Engineering and Renewable Energy (NFQ L7)
- Cork Institute of Technology: Building Energy Systems, Building Regulatory Engineering, Engineering- Civil Engineering- Environment and Energy (NFQ L9), Engineering- Sustainable Energy Engineering (NFQ L8)
- Dundalk Institute of Technology: Building Energy Management (NFQ L6), Renewable Energy (NFQ L6)
- Galway Mayo Institute of Technology: Engineering- Energy Engineering (NFQ L7/8)
- Institute of Technology Carlow: Energy Management- Buildings (NFQ L7)
- Letterkenny Institute of Technology: Building Services and Renewable Energy (NFQ L7)
- Limerick Institute of Technology: Building Services and Renewable Energy (NFQ L7), Energy Efficiency in Industry, Energy Management- Built Environment (NFQ L8), Engineering- Renewable and Electrical Energy Engineering (NFQ L7/8), Near Zero Energy Buildings (NFQ L6)
- NUI Galway: Engineering- Energy Systems Engineering (NFQ L8/9)
- Technological University Dublin: Building Performance- Energy Efficiency in Design (NFQ L9), Electrical Services and Energy Management (NFQ L8), Energy Management (NFQ L9), Engineering- Sustainable Energy and Environmental Engineering (NFQ L6/7), NZEB- Design Tools, NZEB- Policy and Technology, Sustainable Electrical Energy Systems (NFQ L9)
- Trinity College Dublin: Sustainable Energy (NFQ L9)
- University College Cork: Climate Change Impacts on Water, Energy, Carbon Cycles and Renewable Energy, Engineering- Sustainable Energy (NFQ L9)
- University College Dublin: Electrical Energy Engineering (NFQ L9), Energy Systems (NFQ L9), Sustainable Energy and Green Technologies (NFQ L9)
- Waterford Institute of Technology: Sustainable Energy Engineering (NFQ L9)

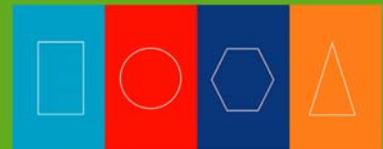


Appendix VI: Enterprise Ireland: Key Construction Events 2018

Title	Month	Type	Sector	Country	Markets Served
Infrastructure/ Construction South Africa/ Kenya	January	Sales Lead	Construction Products/ Systems	South Africa	Southern Europe, Middle East, Africa and India
Global Energy Management Opportunities	February	Client Knowledge Forum	Energy Products	Ireland	Central Europe, Russia, CIS and Latin America/ North America
UK Construction Market	March	Client Knowledge Forum	Construction Products/ Systems	Ireland	UK and Western Europe
Participation at PDAC Mining	March	Client Knowledge Forum	Professional Consultancy Services	Canada	North America
UK Housing Challenge 2018	March	Client Knowledge Forum	Construction Products/ Systems	United Kingdom	UK and Western Europe
Clean Tech- Nigeria/ Lagos	March	Outward Mission	Environmental Tech/ Equipment	Nigeria	Southern Europe, Middle East, Africa and India
Oceanology International 2018	March	Trade Fair	Multi-sectoral	United Kingdom	Asia Pacific/ Central Europe, Russia, CIS and Latin America/ North America/ Ireland
UK infrastructure show	April	Trade Fair	Construction Products/ Systems	United Kingdom	UK and Western Europe
Access to EDP Renovates	April	Outward Mission	Energy Products	Portugal	Southern Europe, Middle East, Africa and India
Participation in EI Asia-Pacific Week	April	Inward Buyer Visit	Construction Products/ Systems	Ireland	Asia- Pacific
Inward Buyer Event- Canada and US	May	Inward Buyer Event	Construction Products/ Systems	Ireland	Canada, US

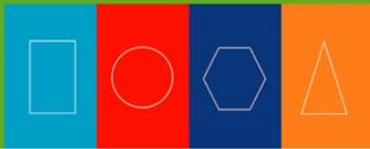


Building Competitive Advantage	May	Client Knowledge Forum	Energy Products	Ireland	Central Europe, Russia, CIS and Latin America/ North America/ Southern Europe
Trade Mission to Texas	June	Trade Mission	Construction Products/ Systems	US	US
Construction MSV	June	Market Study Visit	Construction Products/ Systems	Canada	North America
Achema-Biopharma Construction and Engineering	June	Market Study Visit	Construction Products/ Systems	Germany	UK and Western Europe
Swiss Construction sales lead programme with reception	June	Sales Lead	Construction Products/ Systems	Switzerland	UK and Western Europe
High Tech Construction in Pharma and Biotech	June	Sales Lead	Multi-sectoral	Belgium	UK and Western Europe
ArchXpo 2018	September	Trade Fair	Construction Products/ Systems	Singapore	Asia Pacific
Water, Energy, Technology and Environment Exhibition 2018	October	Trade Fair	Energy Services	United Arab Emirates	Southern Europe, Middle East, Africa and India
Digital Construction Week Reception 2018	October	Sales Lead	Construction Products/ Systems	United Kingdom	UK and Western Europe
Digital Construction Show 2018	October	Trade Fair	Construction Products/ Systems	United Kingdom	UK and Western Europe
Mining Indaba		Client Knowledge Forum	Professional Consultancy Services	South Africa	Southern Europe, Middle East, Africa and India

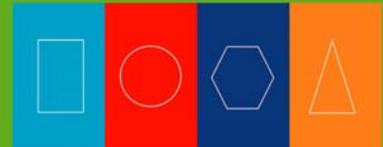


Appendix VII: Representation of International Business and Government Tendering modules in Built Environment/Construction undergraduate programmes

Institution	Course	International Business/Sales	Government Tendering
Cork Institute of Technology	Bachelor of Science in Construction Management (NFQ L7)		Measurement and Tendering module, Construction Procurement module
Cork Institute of Technology	Construction Project Management (NFQ L9)	New Venture Management and Growth Global Project Management Commercial Management International Strategies and Organisation Managing Innovation	
Dundalk Institute of Technology	BSc (Hons) in Construction Management (NFQ L8)		Procurement and Tendering Module
	BSc (Hons) in Construction Management (add on) (NFQ L8)	Professional Practice and Entrepreneurship	
Galway Mayo Institute of Technology	Construction Management (NFQ L8)	Innovation and Enterprise in the Built Environment	
Institute of Technology Carlow	Construction (NFQ L8)	Accounting, Financial Planning and Control module in Year 3	Measurement, Tendering and Valuation module in Year 4 (for Quantity Surveying) Law, Procurement and Contract Practice in Year 4 (for both Quantity Surveying and Facilities and Building Services Management)
Institute of Technology Sligo	BSc (Hons) Construction Project Management (add-on) (NFQ L8)	Construction Corporate Management, International Construction modules	Construction Contracts and Dispute Resolution modules
	Strategic Construction Management (NFQ L9)	Business Management and Entrepreneurship module	Contracts and Procurement
Institute of Technology Tralee	Construction Management (NFQ L8)	Marketing and Strategic Planning module in Year 4	Estimating and Tendering module in Year 3

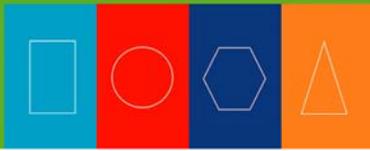


Letterkenny Institute of Technology	Construction Management (NFQ L8)		Document Control and Public Procurement module in Year 3
Technological University Dublin	Construction Management		Estimating, Tendering and Measurement module in Year 2
Trinity College Dublin	Construction Law and Contract Administration (NFQ L9)		Contracts in Construction-Procurement Methods, Engineering and Building Contracts, Tenders, Claims, Insurance, Subcontracts, Case Law, Public Procurement, Contracts for other professions



Appendix VIII: Construction firm engagement with Enterprise Ireland Graduate Mobility Programmes, 2010-18

	2010	2011	2012	2013	2014	2015	2016	2017	2018
Graduates 4 International Growth	10	15	7	6	8	6	0	9	
Construction Products/Systems	2	2	3	2	1	1		2	
Environmental Services	1					1		1	
Environmental Technology/Equipment	1								
Internationally Traded Construction Services	6	13	4	3	7	4		6	
Timber Products				1					
Graduate Business Growth Initiative						5	4	2	1
Construction Products/Systems						3	2	1	1
Internationally Traded Construction Services						1	2		
Timber Frame						1		1	
GradStart									2
Construction Products/Systems									1
Internationally Traded Construction Services									1



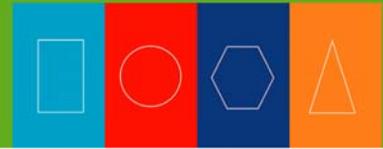
Appendix IX: Roadmap to a Digital Transition for Ireland's Construction Sector, 2018-2021

The National BIM Council highlighted the following actions as necessary to advance the BIM agenda in its 2017 roadmap:

- **Leadership:** This would facilitate the formation of a resourced National BIM Centre of Excellence with a focus on driving the digital transformation of the sector. Its recommendations were for:
 - Establishment of a national central resource to support the roll out of digital tools and processes in Ireland.
 - Identification of a suitable individual or executive and support team to lead the implementation programme.
 - Creation of a platform for leadership to drive the digital transformation in the Irish AEC and FM sector
 - International collaboration to make the case for structured, validated, comparable data sets for improved analysis and decision making across the industry
 - Setting and communication of a clear vision through a regional cluster of BIM communities of practice throughout Ireland

- **Standards:** This would strengthen and support Ireland's commitment to adopt a common collaborative framework for Open BIM Standards- viewed as under-utilised in Ireland- and to seek to play a proactive role in the ongoing development of international information management standards in construction. Its recommendations were for:
 - Consultation with key stakeholder groups to determine commitment, resistance or identification of the roadblocks to adopting open, internationally recognised information standards
 - Support for Ireland's involvement in international and European standards development.
 - Government and industry support for NSAI and other recognised institutes in developing industry standards training and certification programmes
 - Implementation of 'National Tools' (e.g. digital toolkit and national BIM library) to help drive general conformance with standards.
 - Alignment of planning, building control and public asset information with standards, and require/incentivise the submission of digital information in compliance with standards

- **Education and Training:** This would see the development of a consistent, seamless, and coherent digital experience for students in Irish education and industry, to help grow industry capacity and maturity in the use of BIM and other innovative technologies. Its recommendations were for:
 - The establishment of a National Education Taskforce, to deliver a broad awareness and upskilling learning framework for both educators and industry through a National Education Taskforce based on a core multi-disciplinary digital curriculum.
 - Development of an online BIM self-assessment tool for companies to help them define where training needs are required
 - Development of a base level of learning outcomes targeted at alternative NFQ levels
 - Development of a BIM certification programme to be managed by the NSAI



- Inclusion of Digital Design and Construction in the second level curriculum, and presenting the broad and diverse range of career choice opportunities in the construction sector
- Consistency from professional institutes and bodies in specifying BIM competencies when accrediting built environment programmes
- **Procurement:** This would support a public sector BIM adoption mandate to facilitate the implementation of Government policy objectives in the procurement of public works projects, in their construction and in their maintenance upon completion. Its recommendations were for:
 - Determination of a clear framework for procurement of BIM on public sector construction projects
 - Identification of a champion body who would act as a focal point to support its adoption and provide a central resource with expert advice for public and private sector account clients, construction professionals, contractors, subcontractors and suppliers.
 - Efficient and effective management of the national building stock using digital information, tools, and processes

The roadmap also set out a number of key performance targets that would arise out of its implementation:

- 20% reduction in project delivery programme
- 20% increase in construction exports- Through enhanced productivity and knowledge leadership, Ireland will drive and support the advancement of digital construction across overseas markets
- 20% reduction in capital costs
- Incentives in place for the submission of open standards based 3D models as part of a planning or building control application
- Reduction in wasteful practices in construction reduced bringing construction costs by at least 20%
- Every construction project will contribute valuable digital data to Ireland's smart communities, smart cities and smart economy, positioning Ireland to the forefront of digital transition across Europe and globally

Expert Group on Future Skills Needs

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