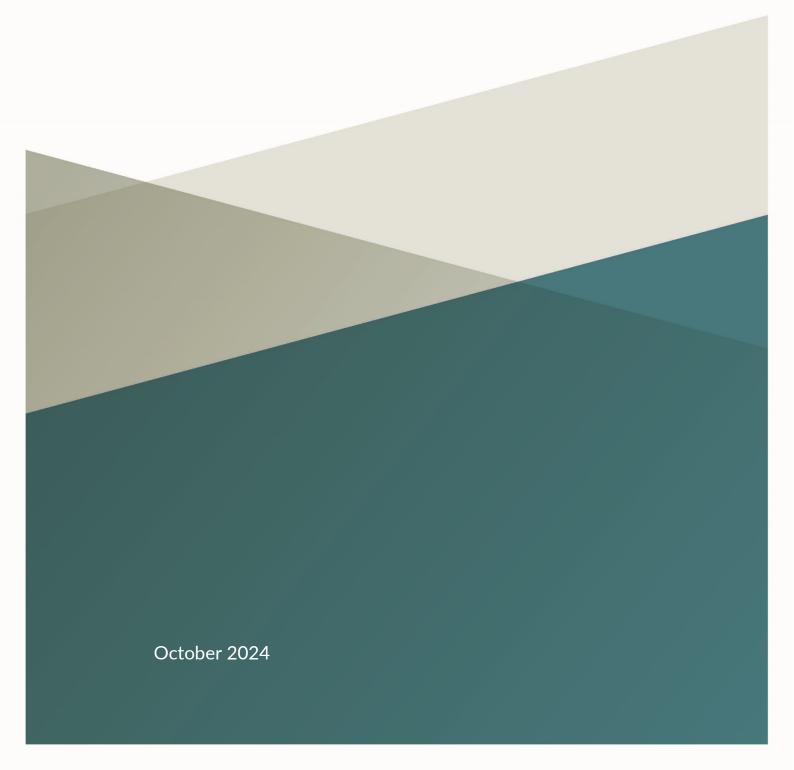


Offshore Wind Skills Action Plan



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Glossary of key terms

Glossary o	r key terms
Term	Definition
BST	Basic safety training
CAD	Computer Aided Design
CILT	Chartered Institute of Logistics and Transport
CoC	Certificate of Competency
DECC	Department of the Environment, Climate and Communications
DETE	Department of Enterprise, Trade and Employment
DFHERIS	Department of Further and Higher Education, Research, Innovation and Science
El	Engineers Ireland
ETB	Education and Training Board
FE	Further education
FET	Further education and training
FTE	Full time equivalent
GIS	Geographic Information System
GW	Gigawatt
GWO	Global Wind Organisation
HCI	The Human Capital Initiative
HE	Higher education
HEA	Higher Education Authority
HVAC	High voltage alternating current
HVDC	High voltage direct current
MAG	Metal active gas
MIG	Metal inert gas
MW	Megawatt
NEBOSH	National Examination Board in Occupational Safety and Health
NFQ	National Framework of Qualification
NMCI	National Maritime College of Ireland
OMS	Operations, maintenance and service
ORESS	Offshore Renewable Electricity Support Scheme
PD	Professional development
PMP	Project Management Professional
PSCRB	Proficiency in Survival Craft & Rescue Boats
RAG	Red-amber-green
SOLAS	An tSeirbhís Oideachais Leanúnaigh agus Scileanna
STCW	Standards of Training, Certification and Watchkeeping for Seafarers

TIG	Tungsten inert gas
WTMT	Wind Turbine Maintenance Technician

Executive summary Introduction

Ireland has an ambition to deliver at least 5 GW of installed offshore wind capacity by 2030 with a further 2 GW in development for non-grid uses, including green hydrogen. It also has a long-term target of 37 GW of installed offshore wind by 2050. This presents the challenge of meeting the growing need to train Irish workers to meet the demands of the offshore wind industry.

This report is a key output of the Skills and Workforce Workstream of the Offshore Wind Energy Programme, which outlines the activities required to drive delivery of offshore wind targets in Ireland.¹ It also follows on from the report *Building Our Potential: Ireland's Offshore Wind Skills and Talent Needs* by BVG Associates (BVGA), in collaboration with Green Tech Skillnet, Wind Energy Ireland, Gavin and Doherty Geosolutions, and Beauchamps.² It identifies Ireland's training provision and the potential gaps in provision, which could hinder the development of offshore wind in Ireland. This analysis informs our recommendations and skills action plan for the Department of Further and Higher Education, Research, Innovation and Science (DFHERIS).

Methodology

The *Building Our Potential* report identified 42 job roles anticipated to be key in helping to develop the emerging offshore wind industry in Ireland. Of these, 33 were identified by industry as being associated with significant recruitment challenges. To identify any potential gaps in Ireland's training provision, we consulted with industry to understand the essential and desirable qualifications and experience sought for each of the 33 job roles. We then consulted with relevant educational institutes to gather course statistics, such as enrolment numbers and the National Framework of Qualification (NFQ) levels, on courses relevant to each job role. We analysed degree courses, including micro-credential courses, at NFQ level 7 to 8, and further education and training (FET) and professional development (PD) courses at NFQ level 3 to 6, reflecting the range within which most qualifications specified by industry

¹ Offshore Wind Energy Programme, Offshore Wind Delivery Taskforce, April 2024, available online at https://www.gov.ie/pdf/?file=https://assets.gov.ie/291904/5612b93e-f616-4881-8194-250656f0cea1.pdf#page=null.

² Building Our Potential: Ireland's Offshore Wind Skills and Talent Needs, BVG Associates on behalf of Green Tech Skillnet, January 2024, available online at https://bvgassociates.com/wp-content/uploads/2024/03/Building-Our-Potential-Irelands-Offshore-Wind-Skills-and-Talent-Needs_Jan-2024.pdf

fell. We grouped similar skills into 20 subject classifications and compared this data to the overall job demand to 2040, taken from *Building Our Potential*, for each subject classification. We assigned a risk level of low, medium, or high to identify potential training provision shortfalls in upskilling the Irish workforce to meet the demand of the offshore wind industry in Ireland. Our risk system also considers, at a high level, the increasing competition for similar skills or jobs from other industries.

We also considered existing schemes in Ireland which could provide an appropriate vehicle to deliver interventions. Our recommendations and skills action plan were derived from these results and conclusions.

Conclusions

The following subjects were identified as having a potential provision shortfall within public education institutes in Ireland.

Degree level courses

- Meteorology and atmospheric science courses.
- Electrical and engineering courses.

FET and PD level courses

- Electrical (NFQ level 6), high voltage alternating current (HVAC) and high voltage direct current (HVDC) courses.
- Engineering and renewable energy courses, especially apprenticeships and other NFQ level 6 courses relevant to the wind turbine technician role.
- Health and safety management courses, especially National Examination Board in Occupational Safety and Health (NEBOSH) courses.
- Maritime and seafaring courses, especially boat maintenance courses and Certificate of Competency (CoC) provision.
- Software courses, especially geophysical software.
- Workplace health and safety courses, especially the Proficiency in Survival Craft & Rescue Boats course (PSCRB).

For FET and PD courses, other Irish third-party training providers offer many relevant courses necessary to fulfil the qualification requirements of the key job roles found in Appendix A. Levels of third-party provision have been considered at a high level as part of our assessment of FET and PD course provision, though enrolment data was not gathered from these providers.

Recommendations

We recommend that the Irish Government collaborates closely with the Irish offshore wind industry, relevant government departments and third-party course providers for any intervention in skills development within Ireland. This will help to align the timing of intervention with the demand of offshore wind projects and maximise benefits to the Irish offshore wind industry. It is also important that there is public visibility of training provision and job opportunities. Our recommendations and skills action plan are split into the following thematic categories:

- Attracting experienced workers to meet immediate skills needs
- Addressing provision gaps
- Promoting long-term workforce growth through attracting inexperienced hires, and
- Adapting skills response to meet emerging needs.

Attracting experienced hires to meet immediate skills need

We recommend that DFHERIS:

- 1. Provide appropriate input into industry strategic marketing campaigns through, for example, supplying information on state-supported training opportunities for workers.
- 2. Assist experienced career movers to enter the offshore wind industry through short, targeted courses such as micro-credentials to provide a grounding in offshore wind skills. Where possible, experienced industry staff should teach such modules to enhance relevancy. This could be delivered through the Skillnet Ireland Offshore Wind Skills Programme, and expansion of relevant courses through programmes such as the Human Capital Initiative (HCI) and Springboard+.
- 3. Work with DETE and the Department of Foreign Affairs to provide appropriate information to industry campaigns to attract experienced offshore wind workers, including Irish nationals, working abroad to relocate to Ireland.

Addressing potential provision gaps

We recommend that DFHERIS:

- 4. Work with industry, Met Éireann, and the higher education (HE) sector to assess whether additional provision of meteorology and atmospheric science degree courses or microcredentials is required.
- 5. Work with industry, the HE and FET sectors to assess whether there is a need for additional provision of electrical, engineering, environmental and planning, geology and geophysics and maritime and seafaring degree courses or micro-credentials, or if increasing demand for existing courses is the more appropriate intervention.

- 6. Work with industry, An tSeirbhís Oideachais Leanúnaigh agus Scileanna (SOLAS) and other training providers to assess whether there is a need for additional provision of training in key software packages, including geophysical software.
- 7. Work with industry, SOLAS and other further education (FE) providers to assess whether additional provision of NEBOSH and similar health and safety management courses is sufficient.
- 8. Work with Engineers Ireland (EI), SOLAS, technological universities and other relevant training providers to assess if there is a need for additional provision of electrical (NFQ level 6), HVAC and HVDC courses.
- Work with the National Maritime College of Ireland (NMCI) and other providers to explore whether and how to extend accessibility of the PSCRB course in line with strategic objectives.
- 10. Work with industry, SOLAS, NMCI and other relevant training providers to ensure there is sufficient provision of maritime and seafaring FET and PD courses to meet demand, including boat maintenance courses and qualifying courses to achieve various levels of the Certificate of Competency certification.
- 11. Consider whether and how to extend Wind Turbine Maintenance Technician (WTMT) training within the FET sector.
- 12. Collaborate with HE and FE providers to raise awareness of the opportunities and training needs of the offshore wind industry.

Promoting long-term workforce growth through attracting inexperienced hires

We recommend that DFHERIS:

- 13. Engage with industry and the HE sector to encourage HE institutions to introduce offshore-specific modules into relevant HE courses.³ This should align with ongoing work by Green Tech Skillnet in this area.
- 14. Together with DETE and relevant government agencies, encourage the offshore wind industry to take on more staff without relevant industry experience, through initiatives such as apprenticeship schemes or publicly funded training for new industry entrants. This could be delivered through the Skillnet Ireland Offshore Wind Skills Scheme.
- 15. Collaborate with industry, FE providers and HE institutions to establish outreach programmes to engage with students in primary and secondary level education, FE and

³ Offshore specific modules are not required to enter the industry, but they can help increase job-readiness of inexperienced hires and raise awareness of opportunities. Where possible, experienced industry staff could teach these modules to enhance relevancy and real-world applicability.

HE to build awareness of the opportunities in the offshore wind industry and help them make the right choices in their educational pathway to obtain a job in the industry.

Adapting skills response to meet emerging needs

We recommend that DFHERIS:

- 16. Collaborate with DETE, DECC and industry to monitor local participation and emerging skills needs in the offshore wind supply chain, to help enable an adaptive skills response as the industry grows.
- 17. Continue to monitor and promote the need for short, targeted courses such as microcredentials in areas of emerging skills need as the industry grows.

1. Introduction

Ireland has an ambition to target at least 5 GW of installed offshore wind by 2030 (with a further 2 GW in development for non-grid uses, including green hydrogen), 20 GW by 2040, and 37 GW by 2050. Ireland has about 4.2 GW of offshore wind projects that are in development with exclusive development rights via Maritime Area Consents and approximately 25 MW of offshore wind currently installed. ORESS 2.1 is expected to launch in 2025 and deliver a further 900 MW of offshore wind capacity.

Ireland's offshore wind ambition presents challenges and opportunities for the Irish workforce. Ireland has several industries that employ a workforce with many similar and transferable skills to the offshore wind industry, such as construction, maritime, and onshore wind. However, Ireland could face a significant challenge in both developing offshore wind specific skills and facilitating the transfer of existing skills to this emerging industry. There is a growing need to train Irish workers to meet the demands of this rapidly growing industry.

In 2023, BVG Associates (BVGA), in collaboration with Green Tech Skillnet, Wind Energy Ireland, Gavin and Doherty Geosolutions, and Beauchamps, produced *Building Our Potential: Ireland's Offshore Wind Skills and Talent Needs.*⁴ The report assessed both the overall employment opportunity associated with Ireland's offshore wind ambitions to 2040, as well as the specific requirements for 42 key job roles required within the Irish offshore wind industry. The 42 jobs were identified from analysis of the critical skills needed to develop offshore wind projects in Ireland, and consideration of the lasting legacy of sustainable benefits which is sought from Ireland's offshore wind energy programme. The report identified gaps in skills availability for 33 of these 42 key job roles, based on industry feedback, in which the Irish offshore wind industry is likely to face recruitment challenges in Ireland.

Following the publication of *Building our Potential*, the Department of Further and Higher Education, Research, Innovation and Science (DFHERIS) commissioned BVGA to develop a skills action plan to address the skills shortages in Ireland, in alignment with industry needs. This report assesses the nature of the challenge for each of the 33 job roles, through examination of specific training requirements and the typical training provision in Ireland. It

⁴ Building Our Potential: Ireland's Offshore Wind Skills and Talent Needs, BVG Associates on behalf of Green Tech Skillnet, January 2024, available online at https://bvgassociates.com/wp-content/uploads/2024/03/Building-Our-Potential-Irelands-Offshore-Wind-Skills-and-Talent-Needs_Jan-2024.pdf

also identifies where there may be gaps in training provision and provides recommendations for DFHERIS and relevant stakeholders to take forward to address these gaps.

This report is structured as follows:

- Section 2 presents the methodology used to approach our analysis to identify where there may be gaps in Ireland's training provision for each of the 33 job roles found in Appendix A.
- Section 3 presents the findings and analysis of our assessment of the job role qualification requirements and Ireland's training provision.
- Section 4 sets out our conclusions by identifying subject areas with a potential provision shortfall and a summary of recommended interventions for each job role. It also highlights the existing funding schemes in Ireland that support the creation, development or provision of skills relevant to offshore wind.
- Section 0 sets out the recommended skills action plan for DFHERIS and relevant stakeholders to address potential skills gaps in Ireland.

2. Methodology

The assessment of skills challenges upon which our recommendations are based was carried out in the following stages:

- Gather and analyse the job role requirements and public training provision in Ireland
- Analyse the data, matching the job role requirements to course provision in Ireland, and
- Recommend an offshore wind skills action plan including suggested interventions and actions for DFHERIS and relevant stakeholders to take forward.

2.1. Job role requirements

Building our Potential identified 33 of the 42 key job roles analysed as likely to face recruitment challenges, being rated either as an amber or red for skills availability. To assess the requirements for each of these 33 roles, we engaged with industry via a survey to gather the following information:

- Essential and desirable qualifications
- Essential and desirable years of experience, and
- The transferability of skills from other industries employing similar job roles.

Essential qualifications and experience are minimum requirements to be qualified for the job. Desirable qualifications and experience can enhance a candidate's ability to perform the job or bring additional value to the organisation. A full list of profiles for each job role can be found in Appendix A.

In some cases, roles require unique or specialist qualifications. In most cases, however, the industry expressed qualification requirements in terms of thematic skills categories such as engineering degrees or project management certifications. To address this, we grouped similar skills into 20 subject classifications. We split the qualification type into degree level and further education and training (FET) and professional development (PD) level corresponding to the National Framework of Qualifications (NFQ) system. The degree level qualifications examined in this report typically corresponded to NFQ levels 7 and 8 and include both full-time degree programmes and micro-credentials. FET and PD qualifications typically correspond to NFQ levels 3 to 6. FET and PD courses offered by further education (FE) providers include those offered by the 16 Irish Education and Training Boards (ETBs), overseen by An tSeirbhís Oideachais Leanúnaigh agus Scileanna (SOLAS), Engineers Ireland (EI), the National Maritime College of Ireland (NMCI) and other providers. Our consideration of course provision also includes apprenticeship schemes.

Demand for key roles

For each job role, we took projections of the number of full time equivalent (FTE) years required per GW of Irish offshore wind capacity up to 2040 and red-amber-green (RAG) ratings, denoting the severity of the skills challenge in the eyes of industry, from *Building Our Potential*. We used the modelling of skills demand up to 2040 from *Building our Potential* for each of the key roles, to prioritise interventions.

Deployment forecast

The skills demand forecast from *Building our Potential* assumed offshore wind deployment in line with the ambitions set out by the Government for at least 5 GW of offshore wind installations by 2030, 20 GW by 2040 and 37 GW by 2050. Although the skills forecast extends only to 2040, it includes skill requirements for the development and consenting stages of projects deploying from 2040.

Figure 1 shows the Irish offshore wind deployment projection in line with the ambitions set out by the Irish Government to 2050. It shows the total annual installed capacity per year, split by fixed and floating offshore wind, and reflects the level of job demand per year by the Irish offshore wind industry. Should deployment proceed to a different timeline, skills needs will remain broadly similar, though levels of demand and their distribution over time may differ.

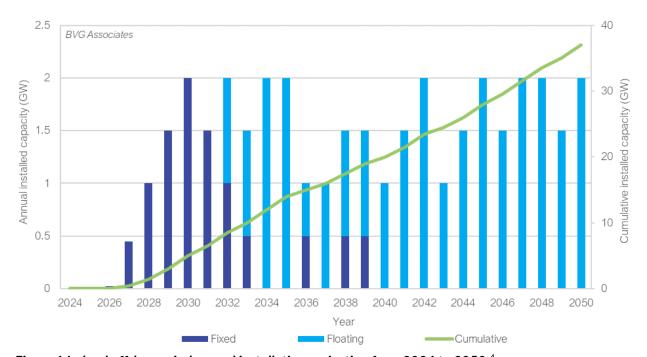


Figure 1 Ireland offshore wind annual installation projection from 2024 to 2050.⁴

Measuring demand

When estimating labour demand, both on an overall and individual job role basis, this report, like *Building our Potential*, uses FTE years as a unit of measure. One FTE year is the equivalent of one person working full time for one year, for example two people working full time for six months. For seasonal roles therefore, filling one FTE year will require multiple employees in a given year. This applies equally where part time working, or job share arrangements are in place.

One FTE year does not equate to one job. One person working for multiple years may fulfil demand for multiple FTE years. Equally, a single person working in the industry for less than a year before moving on may fulfil less than one FTE year. FTE year demand figures therefore cannot be translated precisely into headcount job numbers or specific numbers of qualifications required, due to uncertainty over the nature of working arrangements and how long individual workers are likely to remain in post.

Throughout, total FTE year demand figures are to 2040. As an indicative example of job numbers, this figure can be divided by the 17 years from 2024 and 2040 to obtain an annual average FTE year figure, denoting the average number of concurrent full time equivalent workers required in any given year. This figure does not account for seasonality, part time working or variations over time in FTE year demand.

2.2. Matching training provision to demand

To understand where there may be a bottleneck in course provision for the qualification requirements outlined in Section 2.1, we engaged with the Higher Education Authority (HEA) with regard to degree level qualifications, and with EI, the NMCI and SOLAS with regard to FET and PD qualifications. We captured information pertaining to the level of training provision for each of the 20 subject classifications.

This information was gathered by providing the HEA, EI, NMCI and SOLAS with a list of relevant key words and examples of courses to search within their databases. The list of key words used can be found in Appendix B. We requested the following information for each relevant course:

- Course title
- Name of provider
- Awarded NFQ level, and
- Course statistics, covering enrolments, graduations and course capacity for 2022 (the most complete year for which data was available).

In each case, we analysed the provided data in detail to assess the relevancy of each course and remove those which were not relevant to employer's needs.

In many cases, we found that some enrolment, graduation and course capacity information was missing or incomplete. We therefore based our analysis of provision levels on enrolment data alone, as this represented the most complete data set available across the various different sources.

For each subject classification, we assigned a risk rating of low, medium or high to highlight job roles that may face a provision challenge. The rating is based on an assessment of the total FTE year demand for each subject classification divided into essential and desirable qualification demand. This is compared with the 2022 enrolment data for each respective subject classification.

In the case of FET and PD qualifications, our assessment was also informed at a high level by the volume of other third-party providers offering relevant courses, excluding EI, the NMCI and SOLAS, for which enrolment data was not collected.

Where employers had identified specific FET and PD training requirements for certain roles, which did not align with the wider subject classifications outlined in Appendix B, we considered these in detail in our analysis of each classification.

2.3. Existing schemes in Ireland to support skills development

To inform the development of a skills action plan, we assessed existing schemes within Ireland which could provide an appropriate vehicle to deliver interventions. In each case, we outlined:

- The name of the programme
- The responsible body, and
- A summary of the scheme's purpose.

2.4. Conclusions

Based on our assessment and analysis of training requirements, demand for roles, and current education and training provision, we laid out the areas of potential provision shortfall across degree and FET and PD courses. We also summarised the skills challenge and recommended interventions for each job role. We classified interventions into the following types:

- Increase course provision
- Attract experienced hires from relevant industries
- Hire from abroad, and
- Attract young people.

Recommended interventions considered:

- Our assessment of training provision compared to the skills demand
- The timing of skills needs
- The lead time to train Ireland's workforce, and
- Transferability of skills from relevant industries.

2.5. Skills action plan

Based on the outputs of previous stages, we developed a skills action plan including a range of recommended specific and timed actions. These considerations included:

- Ireland's offshore wind pipeline of projects
- The timing of skills needs
- The lead time to train Ireland's workforce
- Existing skills in relevant industries, and
- Suitable existing schemes through which to deliver interventions.

3. Assessment and analysis3.1. Job role requirements

We consulted with employers in the Irish offshore wind industry to assess training requirements of the 33 job roles identified in *Building our Potential* as likely to face skills shortages in Ireland. A full profile of each role can be found in Appendix A.

Table 1 summarises the qualifications which our engagement exercise identified as being either essential or desirable to fulfil these 33 job roles. In each case, the table identifies the roles which are associated with that subject classification and matches them with the expected cumulative FTE year demand to 2040 for staff with these qualifications.

FTE year demand numbers for each job role are not equivalent to the number of qualifications required. A worker with a single qualification, by working over a period of many years, may fulfil the need for multiple FTE years. Equally, a worker who obtains a qualification but works in the industry only for a short period, or only on a part time basis, may meet the

demand for less than a single FTE year. The FTE year demand numbers are therefore intended to demonstrate the scale of demand for a particular role and not the number of qualifications that are needed.

The STEM subject classification represents job roles that require a STEM degree, but not a specific STEM subject. The non-specific subject classification represents job roles for which a variety of degree types are acceptable, including non-STEM subjects.

Table 1 Total FTE year demand to 2040 for essential and desirable qualifications, categorised by subject classification.

Table I Total I IL year de	ilialia to 2040 foi Cosciitiai a	nu uesirable quanncations, catego	risca by subject class	incation.	
Type of qualification	Subject classification	Job roles with essential requirements	Total FTE year demand to 2040 for roles with essential requirements	Job roles with desirable requirements	Total FTE year demand to 2040 for roles with desirable requirements
Degree (NFQ level 7/8)	Computer science and automation	SCADA engineer	97		
Degree (NFQ level 7/8)	Electrical	Electrical engineer, grid package manager	679		
Degree (NFQ level 7/8)	Engineering	Civil engineer, geotechnical engineer, marine engineer, mechanical engineer, naval architect, structural engineer	6,100	Boat maintenance technician	310
Degree (NFQ level 7/8)	Environmental and planning	Marine ecologist, offshore consents manager, offshore EIA manager, ornithologist	770		
Degree (NFQ level 7/8)	Geology and geophysics	Geophysicist	320		
Degree (NFQ level 7/8)	Maritime and seafaring	Master mariner	89		
Degree (NFQ level 7/8)	Mathematics, business, management and finance	Commercial analyst	270		
Degree (NFQ level 7/8)	Meteorology	Resource analyst	210		
Degree (NFQ level 7/8)	Non-specific	Bid manager, project manager, supply chain manager	1,900		
Degree (NFQ level 7/8)	Project management	Construction project manager, offshore quality manager	200		
Degree (NFQ level 7/8)	STEM	GIS technician, mechanical technician	1,100		
Degree (NFQ level 7/8)	Supply chain and logistics	Offshore logistics manager	89		

Type of qualification	Subject classification	Job roles with essential requirements	Total FTE year demand to 2040 for roles with essential requirements	Job roles with desirable requirements	Total FTE year demand to 2040 for roles with desirable requirements
FET and PD (NFQ level 6)	Electrical	Cable jointer, electrical technician	830		
FET and PD (NFQ level 6)	Engineering and renewable energy	Wind turbine technician	2,400	Mechanical technician, naval architect, resource analyst	1,200
FET and PD	Health and safety management	Health and safety coordinator, offshore quality manager	470	Civil engineer	3,300
FET and PD	Maritime and seafaring	Able seafarer, boat maintenance technician, harbour pilot, master mariner	1,600		
FET and PD	Project management	Offshore logistics manager	89	Bid manager, construction project manager, grid package manager, offshore consents manager, offshore EIA manager, project manager	2,400
FET and PD	Software			Geophysicist, GIS technician, SCADA engineer	1,000
FET and PD	Welding	Welder	1,300		
FET and PD	Workplace health and safety	Able seafarer, boat maintenance technician, cable jointer, electrical technician,	7,200	Construction project manager, marine engineer	310

Offshore Wind Skills Action Plan

Type of qualification	Job roles with essentia requirements		Total FTE year demand to 2040 for roles with essential requirements	Job roles with desirable requirements	Total FTE year demand to 2040 for roles with desirable requirements
		harbour pilot, health and safety coordinator, master mariner, mechanical technician, offshore quality manager, welder, wind turbine technician			

Demand for essential qualifications by project phase

The development and project management phase of an offshore wind farm has the largest demand for workers requiring degree level qualifications (see Figure 2). Engineering degrees make up the largest component of this demand, at 56% of the 11,000 FTE year demand to 2040. This contrasts with the operations, maintenance and service (OMS) phase of an offshore wind farm, which has the largest demand for workers requiring FET and PD qualifications. The manufacturing phase has a relatively low demand for workers requiring degree level qualifications, but about 4,300 FTE years requiring FET and PD qualifications. Job roles requiring workplace health and safety qualifications, listed in Table 1, contribute to the FTE year demand shown in Figure 2. For example, the welder role makes up 63% of the 4,300 FTE year demand to 2040.

Of the total FTE year demand to 2040 for essential qualifications across all project phases, 54% are degree level qualifications and 46% are FET and PD qualifications.

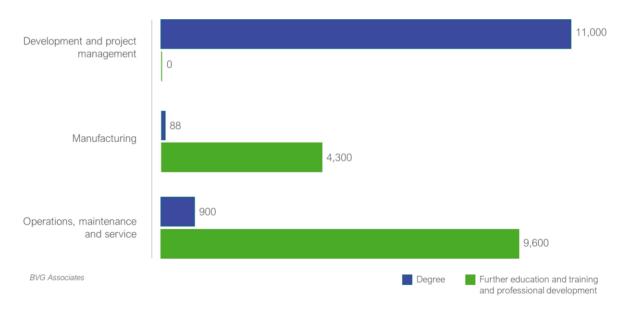


Figure 2 Total FTE year demand to 2040 by supply chain category for job roles with essential qualifications.

Demand for desirable qualifications by project phase

The development and project management phase has the largest demand for workers with FET and PD qualifications (see Figure 3). In this phase, the health and safety management classification, desirable for the civil engineer role, represent the largest demand, at about 45% of the 7,500 total FTE year demand. In the OMS phase, the demand for degree level qualifications represents engineering degrees, desirable for the boat maintenance technician role.

Job roles with a desirable demand for workplace health and safety qualifications contribute to the FTE year demand shown in the figure below. Of the total FTE year demand to 2040 for desirable qualifications across all project phases, 25% are degree-level qualifications and 75% are FET and PD qualifications.

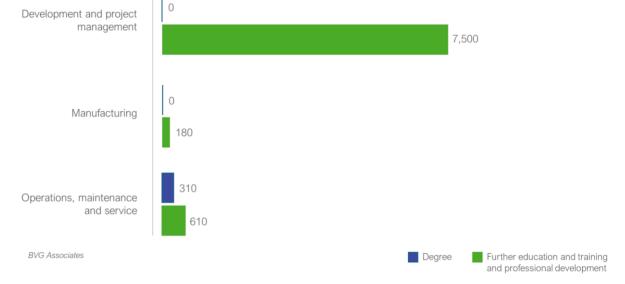


Figure 3 Total FTE year demand to 2040 by supply chain category for job roles with desirable qualifications.

Demand for essential qualifications over time

Figure 4 summarises the FTE year demand to 2040 for job roles with an essential degree level qualification. In total, these subject classifications have a requirement of about 12,000 FTE years up to 2040. The demand for degree qualified workers has an upwards trend to 2040, indicating a growing need for skilled workers with degree level qualifications as the offshore wind industry expands in Ireland.

As above, engineering degrees make up the largest grouping. The electrical, environmental and planning, STEM, and non-specific degree classifications have a moderate level of demand, making up 38% of the total FTE demand. Computer science and automation, maritime and seafaring and supply chain and logistics classifications have the least level of demand, at 2% of the total FTE demand.



Figure 4 Annual FTE year demand to 2040 for job roles with essential degree level qualifications by subject classification.

Figure 5 summarises the FTE year demand to 2040 for essential FET and PD qualifications. In total, these subject classifications have a requirement of about 14,000 FTE years up to 2040. The demand for FET and PD qualified workers has an upwards trend to 2040, with significant growth projected towards 2040, indicating a growing need for skilled workers with FET and PD qualifications as the offshore wind industry expands in Ireland.

This upward trend reflects the need for FET and PD qualifications in the OMS project phase. Job roles in the OMS phase run for the full 30 year and onwards operational life of a project. As more offshore wind is deployed in Ireland more workers with relevant qualifications are required. This contrasts with jobs in the development and project management and manufacturing stages where workers may transition to new projects once the project is deployed, resulting in a steadier level of demand.

The workplace health and safety classification comprises 52% of the essential FET and PD requirements to 2040. This indicates a growing need for workplace health and safety certifications, such as Global Wind Organisation (GWO) training, across the other subject classifications as the offshore wind industry expands.

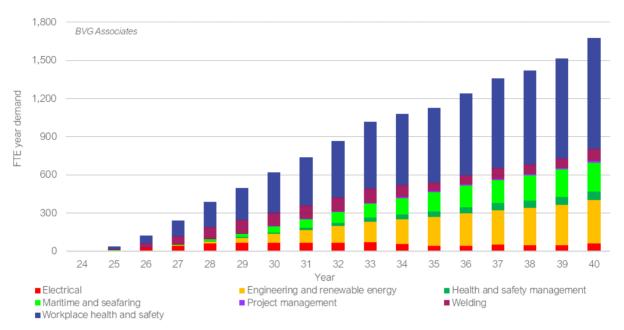


Figure 5 Annual FTE year demand to 2040 for job roles with essential FET and PD qualifications by subject classification.

Demand for desirable qualifications over time

Figure 6 summarises the FTE year demand to 2040 for job roles with desirable degree level qualifications. An engineering degree is a desirable requirement for the boat maintenance technician role, which has an FTE year demand of 310 to 2040.

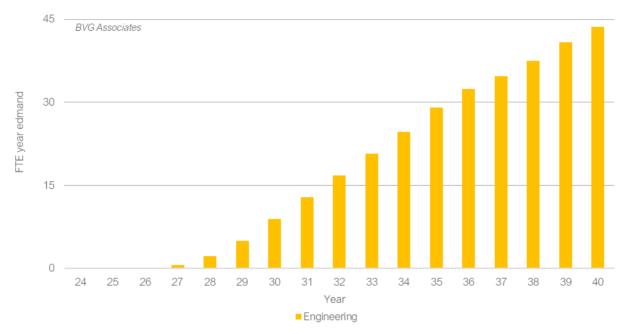


Figure 6 Annual FTE year demand to 2040 for job roles with desirable degree level qualifications by subject classification.

Figure 7 summarises the FTE year demand to 2040 for job roles with desirable FET and PD qualifications. Health and safety management qualifications are projected to see the greatest level of demand, at 40% of the total to 2040. Project management qualifications, desirable for a range of roles including project manager, bid manager and construction project manager, make up 29%. Engineering and renewable energy and software qualifications have a similar total level of future demand at 14% and 12% respectively. Workplace health and safety qualifications make up the remaining 5%.



Figure 7 Annual FTE year demand to 2040 for job roles with desirable FET and PD qualifications by subject classification.

3.2. Matching training provision to demand 3.2.1 Degree level courses

Table 3 shows a comparison of the total projected FTE year demand to 2040 for job roles requiring degree-level qualifications, as outlined in Section 3.1, and relevant provision using the number of annual enrolments in 2022.⁵

Each subject classification has been assigned a RAG rating to denote the level of risk of a shortfall in course provision. Definitions of these risk ratings are provided in Table 2. In each case, risk thresholds have been set, recognising that the offshore wind industry competes for the same graduates per year as other industries. Therefore, although graduate numbers may exceed the requirements of the offshore wind industry in almost all cases, capturing a significant proportion of graduates from any given cohort is a challenge for all industries, including offshore wind. As noted in section 2.1, FTE year demand is not analogous to demand for qualifications, therefore these risk ratings can be considered indicative only. Based on this rating system, geology and geophysics and meteorology, have been identified as the classifications with a high risk of a provision shortfall. Electrical, engineering,

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⁵ Data on annual graduations was sparse and incomplete in some cases, so it was not used in this report.

environmental and planning and maritime and seafaring classifications have been identified as having a medium risk of shortfall. The remaining four classifications have been identified as having a low risk of a provision shortfall.

Provision of the STEM and non-specific subject classifications has not been examined in this table as a separate entry as they overlap with other subject classifications. As shown in Table 1, the demand for graduates with STEM degrees is 1,100 FTE years to 2040 and for non-specific degrees, is 1,900 to 2040. In each case, provision of relevant degrees is well in excess of demand, even when considering only the degree courses captured here. For example, electrical, engineering and computer science degrees all qualify as STEM courses, with a combined enrolment figure of approximately 16,400 in 2022.

Table 2 Definition of risk of graduate shortfall classifications.

Risk Rating	Definition
High	Total FTE year demand to 2040 exceeds 100% of annual enrolments.
Medium	Total FTE year demand to 2040 is between 20% and 100% of annual
	enrolments.
Low	Total FTE year demand to 2040 is less than 20% of annual enrolments.

Table 3 Comparison of FTE demand to 2040 and course provision for degree qualifications.

#	Subject classification	Cumulative	e FTE year de 2040 ⁶	Annual enrolments	Risk of provision		
		Essential	Desirable	Total	in 2022	shortfall	
1	Computer science and automation	97	0	97	7,500	Low	
2	Electrical	680	0	680	2,100	Medium	
3	Engineering	6,100	310	6,400	6,800	Medium	
4	Environmental and planning	770	0	770	1,500	Medium	
5	Geology and geophysics	320	0	320	250	High	
6	Maritime and seafaring	89	0	89	120	Medium	
7	Mathematics, business,	270	0	270	23,000	Low	

⁶ FTE demand for 2040 includes jobs which require this qualification both as an essential and desirable requirement.

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#	Subject classification	Cumulative FTE year demand to Annual ssification 2040 ⁶ enrolments		Annual enrolments	Risk of provision	
		Essential	in 2022	shortfall		
	management and					
	finance					
8	Meteorology	210	0	210	0	High
9	Project management	200	0	200	1,500	Low
10	Supply chain and	89	0	89	780	Low
	logistics					

Insights from degree level data

The 2022 enrolment data shows that there is sufficient supply of suitable degree level courses within Ireland to fill most key offshore wind job roles to 2040. However, there are areas in which annual enrolments do not sufficiently exceed FTE year demand to provide certainty that course provision is sufficient, given demand for workers with these qualifications from other industries.

Computer science and automation

Computer science and automation degrees are essential for the SCADA engineer role. We project that the total FTE-year demand to 2040 will be 97 to meet the demand for essential computer science and automation degree qualifications. This translates to an average of about 6 FTEs each year from 2024 to 2040. About 7,500 people enrolled in relevant computer science and automation courses in Ireland in 2022.

Given the number of annual enrolments far outweighs the demand for these qualifications from key roles, we consider the risk of provision shortfall in this area low.

Electrical

Electrical degrees are essential for the electrical engineer and grid package manager roles. We project that the total FTE-year demand for all these roles to 2040 will be about 680 to meet the demand for essential electrical degree qualifications. This translates to an average of about 40 FTEs each year from 2024 to 2040. About 2,100 people enrolled in relevant electrical courses in Ireland in 2022.

Given the number of annual enrolments moderately outweighs the demand for these qualifications from key roles, we consider the risk of provision shortfall in this area medium.

Engineering

Engineering degrees are essential for the civil engineer, geotechnical engineer, marine engineer, mechanical engineer, naval architect and structural engineer roles. They are desirable for the boat maintenance technician role. We project that the total FTE-year demand for all these roles to 2040 will be about 6,400 to meet the demand for essential and desirable engineering degree qualifications. This translates to an average of about 380 FTEs each year from 2024 to 2040. About 6,800 people enrolled in relevant engineering courses in Ireland in 2022.

Given the number of annual enrolments moderately outweighs the demand for these qualifications from key roles, we consider the risk of provision shortfall in this area medium.

Environmental and planning

Environmental and planning degrees are essential for the marine ecologist, offshore consents manager, offshore EIA manager and ornithologist roles. We project that the total FTE-year demand for all these roles to 2040 will be about 770 to meet the demand for essential environmental and planning degree qualifications. This translates to an average of about 45 FTEs each year from 2024 to 2040. About 1,500 people enrolled in relevant environmental and planning courses in Ireland in 2022.

Given the number of annual enrolments moderately outweighs the demand for these qualifications from key roles, we consider the risk of provision shortfall in this area medium.

Geology and geophysics

Geology and geophysics degrees are essential for the geophysicist role. We project that the total FTE-year demand for to 2040 will be about 320 to meet the demand for essential geology and geophysics degree qualifications. This translates to an average of about 19 FTEs each year from 2024 to 2040. About 250 people enrolled in relevant geology and geophysics courses in Ireland in 2022.

Given the demand for these qualifications from key roles outweighs the number of annual enrolments, we consider the risk of provision shortfall in this area high.

Maritime and seafaring

Maritime and seafaring degrees are essential for the master mariner role. We project that the total FTE-year demand to 2040 will be about 89 to meet the demand for essential maritime and seafaring degree qualifications. This translates to an average of about 5 FTEs each year from 2024 to 2040. About 120 people enrolled in relevant maritime and seafaring courses in Ireland in 2022.

Given the number of annual enrolments moderately outweighs the demand for these qualifications from key roles, we consider the risk of provision shortfall in this area medium.

Mathematics, business, management, and finance

Mathematics, business, management and finance degrees are essential for the commercial analyst role. We project that the total FTE-year demand to 2040 will be about 270 to meet the demand for essential mathematics, business, management, and finance degree qualifications. This translates to an average of about 16 FTEs each year from 2024 to 2040. About 23,000 people enrolled in relevant mathematics, business, management and finance courses in Ireland in 2022.

Given the number of annual enrolments far outweighs the demand for these qualifications from key roles, we consider the risk of provision shortfall in this area low.

Meteorology

Meteorology degrees are essential for the resource analyst role. We project that the total FTE-year demand to 2040 will be about 210 to meet the demand for essential meteorology degree qualifications. This translates to an average of about 12 FTEs each year from 2024 to 2040. There is currently no provision of specific meteorology or atmospheric science degree level courses in Ireland. University College Dublin offers an NFQ level 9 course in Meteorology. Meteorology may also be offered as a module within related degree fields such as geography and earth science. However, there may be an opportunity to address a specific need for meteorology and atmospheric science degree level courses within Ireland.

Given the lack of specific degree level course provision within the Irish higher education (HE) system, we consider the risk of provision shortfall in this area high.

Project management

Project management degrees are essential for the construction project manager and offshore quality manager roles. We project that the total FTE-year demand for all these roles to 2040 will be about 200 to meet the demand for essential environmental and planning degree qualifications. This translates to an average of about 12 FTEs each year from 2024 to 2040. About 1,500 people enrolled in relevant project management courses in Ireland in 2022.

Given the number of annual enrolments far outweighs the demand for these qualifications from key roles, we consider the risk of provision shortfall in this area low.

Supply chain and logistics

Supply chain and logistics degrees are essential for the offshore logistics manager role. We project that the total FTE-year demand for all these roles to 2040 will be about 89 to meet the demand for essential environmental and planning degree qualifications. This translates to an average of 5 FTEs each year from 2024 to 2040. About 780 people enrolled in relevant supply chain and logistics courses in Ireland in 2022.

Given the number of annual enrolments far outweighs the demand for these qualifications from key roles, we consider the risk of provision shortfall in this area low.

3.2.2. Further education and training and professional development courses

Table 5 shows a comparison of the total demand for FET and PD qualifications in comparison with levels of course provision in Ireland. As in Section Error! Reference source not found., the projected FTE year demand for roles which have this qualification type as either essential or desirable is compared to the number of annual enrolments within this field in 2022.

Each subject classification has been assigned a rating to denote whether the risk of a shortfall in training provision impacting firms' ability to recruit for this role is low, medium, or high. Definitions of these risk ratings are provided in Table 4. Unlike for degree level courses, where data provided by the HEA covers all relevant provision in Ireland, our assessment of risk of provision shortfall in FET and PD courses includes consideration of the number of third-party training providers in Ireland advertising relevant courses. Third party provision is not included in the enrolment data gathered from DFHERIS, EI, the NMCI and SOLAS. Due to the number of third-party providers offering FET and PD qualifications, it was not possible to assess overall enrolment numbers at a national level. Data on additional third-party provision was gathered through desk-based research and used to make an additional assessment of levels of third-party provision which informs the overall risk assessment of provision shortfall.

Table 4 Definition of risk of FET and PD shortfall classifications.

Risk Rating	Definition
High	Total FTE year demand to 2040 exceeds 100% of annual enrolments
High	and/or level of third-party provision is assessed as low.
Medium	Total FTE year demand to 2040 is between 20% and 100% of annual
	enrolments and/or level of third-party provision is assessed as medium.
	Total FTE year demand to 2040 is less than 20% of annual enrolments
Low	and/or level of third-party provision is assessed as high.

Table 5 Comparison of FTE demand to 2040 and course provision for FET and PD

qualifications.

quu	qualifications:							
#	Subject	Cumulative FTE year demand to 2040			Annual enrolments	Third- party	Risk of provision	
	classification	Essential	Desiral	ole Total	in 2022	provision	shortfall	
1	Electrical (NFQ level 6)	830	0	830	2,400	Medium	Medium	
2	Engineering and renewable energy (NFQ level 6)	2,400	1,200	3,600	280	Low	High	
3	Health and safety management	470	3,300	3,800	110	Medium	Medium	
4	Maritime and seafaring	1,600	0	1,600	12	Low	High	
5	Project management	89	2,400	2,500	630	High	Low	
6	Software	0.0	1,000	1,000	110	Medium	Medium	
7	Welding	1,300	0	1,300	3,300	High	Low	
8	Workplace health and safety	7,200	310	7,500	4,300	High	Low	

Insights from FET and PD data

In contrast to degree level provision, some key offshore wind job roles require FET and PD qualifications that are competency based (such as the Certificate of Competency (CoC) and the seafarers offshore medical) which are not captured in the enrolment data found in Table 5. Specific requirements associated with each subject classification are assessed below on an individual basis.

Electrical

Electrical FET and PD qualifications are essential for the cable jointer and electrical technician roles. In each case, an NFQ level 6 qualification is sought. We project that the total FTE-year demand for all these roles to 2040 will be about 830 to meet the essential demand for electrical FET and PD qualifications. This translates to an average of about 49 FTEs each year from 2024 to 2040. Electrical qualifications include:

- Electrical Testing and Verification of Electrical Installations
- Electrical Systems, and
- Electrical Engineering.

Among the organisations surveyed, Ireland had about 2,400 annual enrolments, of which about 2,200 were apprenticeships, for relevant NFQ level 6 FET and PD electrical courses as well as 42 enrolments in HE NFQ level 7 apprenticeships in 2022, indicating a potential provision shortfall. However, there appears to be some third-party providers in Ireland offering electrical FET and PD courses, for example in Electrical Testing and Verification of Electrical Installations, which are not captured in Table 5. Examples of providers in Ireland include Celtic Safety Training, Electrical Skills, METAC Training, Kirby Group. Further engagement with public and third-party providers will be necessary to assess whether intervention is required to increase provision.

HVAC and HVDC skills

HV skills training is typically not included in general electrical courses because it requires specialised knowledge. In Ireland, there is a need for specific training in HVAC and HVDC skills which is typically required for working with subsea cables and substations in offshore wind farms. These HV skills are a desirable requirement for the electrical technician role, with a projected FTE year demand of about 390 to 2040, equating to an average of 24 FTEs each year from 2024 to 2040. El offers a range of courses to support high voltage learning, including:

- Compliance (Design and Construction) of HV Installations with Legislation and Standards
- HV Grid Connections for Generators
- Introduction to High Voltage Electrical Installations, and
- Operation and Management of High Voltage Installations.

Enrolment data in 2022 was not available for the above four courses, though El indicated that across these courses, there were 80 graduations in 2022. Data from the NMCl and SOLAS did not indicate any relevant course provision in this area. However, there appear to be instances of third-party provision for HVAC and HVDC courses that are not captured in Table 5. Examples of relevant HV course providers include Wind Energy Ireland, Suir Engineering and South East Technological University, though further provision may be needed in this area to address future skills needs.

Overall, we consider the electrical subject classification to have a medium risk of provision shortfall. Further engagement with public and third-party providers will be necessary to assess whether intervention is required to increase provision.

Engineering and renewable energy

Engineering and renewable energy FET and PD qualifications are essential for the wind turbine technician role. They are also a desirable for the resource analyst role. In each case, an NFQ level 6 qualification is sought. We project that the total FTE-year demand for all

these roles to 2040 will be about 3,600 to meet the essential and desirable demand for engineering and renewable energy FET and PD qualifications. This translates to an average of about 210 FTEs each year from 2024 to 2040. 67% of these are wind turbine technician roles. Engineering and renewable energy qualifications include:

- Renewable energy
- Wind energy, and
- Engineering.

Among the organisations surveyed, Ireland had about 280 enrolments in relevant NFQ level 6 FET and PD engineering and renewable energy courses in 2022, including 14 registrations on the NFQ level 6 Wind Turbine Maintenance Technician (WTMT) apprenticeship offered by Kerry ETB. This indicates a potential provision shortfall. However, there were about 510 enrolments on NFQ level 5 courses in this field. There appears to be few third-party providers in Ireland offering engineering and renewable energy courses, which are not captured in Table 5.

Overall, we consider the engineering and renewable energy subject classification to have a high risk of provision shortfall. There may be opportunities to transition workers with NFQ level 5 qualifications through bridging courses and on-the-job experience, which will help mitigate this risk. Further engagement with public and third-party providers may be necessary to assess whether intervention is required to increase provision.

Health and safety management

Health and safety management FET and PD qualifications are essential for the health and safety manager and offshore quality manager roles. They are desirable for the civil engineer role. The National Examination Board in Occupational Safety and Health (NEBOSH) certification is regarded as the industry standard in this area. We project that the total FTE-year demand for all these roles to 2040 will be about 3,800 to meet the essential and desirable demand for health and safety management FET and PD qualifications. This translates to an average of about 220 FTEs each year from 2024 to 2040.

Among the organisations surveyed, Ireland had 37 enrolments in NEBOSH courses through Cavan and Monaghan and Dublin and Dun Laoighaire ETBs in 2022, indicating a potential provision shortfall. However, there appears to be some third-party providers in Ireland offering NEBOSH courses, which are not captured in Table 5. Examples of providers in Ireland include Ayrton Group, Cita, The Knowledge Academy and Occupli.

Overall, despite the low level of enrolments within surveyed providers in comparison with FTE demand, given most of the demand for this qualification type is desirable rather than

essential, and the reasonable level of provision of NEBOSH training within third-party providers, we consider the health and safety management subject classification to have a medium risk of provision shortfall. Further engagement with public and third-party providers may be necessary to assess whether intervention is required to increase provision.

Maritime and seafaring

Maritime and seafaring FET and PD qualifications are essential for the able seafarer, boat maintenance technician, harbour pilot and master mariner roles. We project that the total FTE-year demand for all these roles to 2040 will be about 1,600 to meet the essential demand for maritime and seafaring FET and PD qualifications. This translates to an average of about 96 FTEs each year from 2024 to 2040. Maritime and seafaring qualifications include:

- CoC (varying levels for different job roles)
- · Marine mechanics, and
- Boat maintenance.

A Certificate of Competency (CoC) is issued under the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW). It is an official document that certifies a seafarer's qualifications to perform certain functions or duties aboard a ship. Elements of the CoC are competency based and require seafaring experience and STCW basic workplace health and safety training. The CoC is issued by the Marine Survey Office at varying levels that are applicable to different job roles. Enrolment data for the CoC is not available.

Among the organisations surveyed, Ireland had 12 enrolments in the course 'Certificate in Nautical Studies for Officer of the Watch and Master on Ships of Less Than 500 Gross Tonnage', relevant for the Master Mariner role, but no other relevant marine mechanics or boat maintenance FET and PD courses in 2022. However, there appears to be some third-party providers in Ireland offering marine mechanics and boat maintenance courses, which are not captured in Table 5. Examples of providers in Ireland offering maritime and seafaring courses include BIM, Cabinteely Adult Education, Mast Centre and The Seamanship Centre.

Overall, given the lack of comprehensive data, and uncertainty over the level and appropriacy of available training provision in Ireland, we consider the maritime and seafaring subject classification to have a high risk of provision shortfall. Coordination with the Department of Transport, NMCI, industry and other training providers is required to assess whether further training provision is required.

Project Management

Project management FET and PD qualifications are essential for the offshore logistics manager role. They are desirable for the bid manager, construction project manager, grid package manager, offshore consents manager, offshore EIA manager and project manager roles. The PMP qualification is regarded as an industry standard for these roles in project management. The PMP certification requires a bachelor's degree and at least three years of project management experience. For the offshore logistics manager role, employers indicated that the Chartered Institute of Logistics and Transport (CILT) certification is a suitable substitute for the PMP. We project that the total FTE-year demand for all these roles to 2040 will be about 2,500 to meet the essential and desirable demand for project management FET and PD qualifications. This translates to an average of about 150 FTEs each year from 2024 to 2040.

Among the organisations surveyed, Ireland had about 630 annual enrolments for relevant project management FET and PD courses in 2022. There appears to be many third-party providers in Ireland offering PMP courses, which are not captured in Table 5. Examples of providers in Ireland include the Institute of Project Management, College of Management and IT, CMI Ireland, Nexus-human and Velopi.

Overall, we consider the project management subject classification to have a low risk of provision shortfall.

Software

Software FET and PD qualifications are desirable for the geophysicist, GIS technician and SCADA engineer roles. We project that the total FTE-year demand for all these roles to 2040 will be about 1,000 to meet the desirable demand for software FET and PD qualifications. This translates to an average of about 60 FTEs each year from 2024 to 2040. Software qualifications include:

- GIS
- Computer Aided Design (CAD)
- SCADA, and
- Geophysical software (such as Kingdom Suite).

Among the organisations surveyed, Ireland had about 110 annual enrolments for AutoCAD FET and PD software courses. There is an absence of GIS, SCADA and geophysical software

⁷ Engineers Ireland, https://www.engineersireland.ie/Professionals/CPD-Careers/CPD-training-offerings-and-services/Project-Management.

FET and PD courses. However, there appears to be many third-party and education or training providers in Ireland offering relevant PD software courses (excluding geophysical software courses), which are not captured in Table 5. Examples of GIS software training providers in Ireland include Atlantic Technological University, University College Dublin, University College Cork, Technological University Dublin and NobleProg. Examples of SCADA software training providers in Ireland include Idana and SMEC.

We were not able to identify third-party providers in Ireland offering geophysical software courses. This indicates there may be a provision gap in this area, although providers outside Ireland may be able to deliver software courses online.

Overall, we consider the software subject classification to have a medium risk of provision shortfall. Further engagement with public and third-party providers may be necessary to assess whether intervention is required to increase provision.

Welding

Welding FET and PD qualifications are essential for the welder role. The majority of demand for the welder role is associated with the deployment of floating offshore wind, and especially with foundation assembly activity. We project that the total FTE-year demand for the welder role to 2040 will be about 1,300 to meet the essential demand for welding FET and PD qualifications. This translates to an average of about 78 FTEs each year from 2024 to 2040. Welding qualifications include:

- Metal inert gas (MIG) welding
- Metal active gas (MAG) welding
- Tungsten inert gas (TIG) welding
- Arc welding, and
- Orbital welding.

Among the organisations surveyed, Ireland had about 3,300 annual enrolments for relevant welding FET and PD courses in 2022. There appears to be many third-party providers in Ireland offering relevant welding courses, which are not captured in Table 5. Examples of providers in Ireland include National Welding Institute, Welding Academy and METAC Training.

Overall, we consider the welding subject classification to have a low risk of provision shortfall.

Workplace health and safety

Workplace health and safety FET and PD qualifications are essential for the able seafarer, boat maintenance technician, cable jointer, electrical technician, harbour pilot, health and safety coordinator, master mariner, mechanical technician, offshore quality manager, welder and wind turbine technician roles. They are also desirable for the construction project manager and marine engineer roles. We project that the total FTE-year demand for all these roles to 2040 will be about 7,500 to meet the essential and desirable demand for workplace health and safety FET and PD qualifications. This translates to an average of about 440 FTEs each year from 2024 to 2040. Workplace health and safety qualifications include:

- GWO basic safety training (BST)
- STCW BST, and
- Proficiency in Survival Craft & Rescue Boat (PSCRB).

Among the organisations surveyed, Ireland had about 4,300 annual enrolments for relevant workplace health and safety courses in 2022. In 2022, the NMCI had 100 enrolments and 4,000 total available places in the GWO BST course, 1,600 enrolments and over 1,500 total available places in STCW courses, and 560 enrolments and over 1,500 total available places in PSCRB courses. First aid courses are included in the GWO BST and in 2022, Ireland had about 1,300 annual enrolments for standalone first aid courses. There appears to be sufficient first aid courses in Ireland. There appears to be many third-party providers in Ireland offering workplace health and safety courses, which are not captured in Table 5. Examples of GWO course providers in Ireland include The Seamanship Centre, SWAT Academy, ASL Safety & Training, H&MV Engineering, Access Rescue Consulting at Height and Errigal training centre. Examples of STCW course providers in Ireland include The Seamanship Centre, STCW Direct, The National Fisheries College and Occupli.

PSCRB training

The NMCI is currently the only approved provider of PSCRB courses in Ireland. This course is essential for the able seafarer role. We project that the total FTE-year demand for able seafarers to 2040 will be about 1,100. This translates to an average of 69 FTEs each year from 2024 to 2040. Provision of the PSCRB course offered by the NMCI is sufficient to meet the demand of the offshore wind industry to 2040. However, the PSCRB course is delivered in person, and as the NMCI is based in Cork, it presents an accessibility challenge for those living outside Cork. There are, however, significant capital expenditure requirements associated with the establishment of a PSCRB facility which may impact the business case for establishing additional centres in Ireland.

Overall, we consider the workplace health and safety subject classification to have a low risk of provision shortfall, though there may be a need to explore whether the provision of this training at additional locations outside Cork could help improve accessibility.

3.3. Existing schemes in Ireland to support skills development

To inform development of the skills action plan, we list the existing support schemes for the development of skills or similar relevant to the 33 job roles identified in Appendix A.

Table 6 Existing support schemes relevant to offshore wind skills.

Scheme title	Responsible body	Summary
The Human Capital Initiative (HCI)	HEA	The HCI was established by the Irish government to enhance the capacity and responsiveness of the HE sector to meet priority skills needs. The HCI consists of 3 main pillars: Pillar 1 – Full-Time Graduate Conversion Courses Pillar 2 – Additional Places on Existing Full-Time Undergraduate Provision, and Pillar 3 – Innovation and Agility.
Green Tech Skillnet	Skillnet Ireland	Green Tech Skillnet supports businesses in the renewable energy and green technology sectors. The Network's mission is to support the optimisation of Ireland's renewables resources through subsidised learning and development programmes. These programmes are designed to facilitate thought leaders within the renewables sector, while contributing to Ireland's decarbonisation and energy transition. The Network is open to private enterprises in the renewable energy and green technology sector based in Ireland.
Offshore Wind Skills Scheme	Skillnet Ireland	A small amount of funding has been secured to develop a pilot scheme for short courses to transition workers into offshore wind.

Scheme title	Responsible body	Summary
Springboard+	HEA	Springboard+ is an initiative in Ireland aimed at providing free or subsidized HE courses to support job seekers and those looking to upskill or reskill. It focuses on areas with identified skills shortages and emerging sectors, offering opportunities in a wide range of fields including ICT, engineering, and business. It is funded by the Irish government. Programmes are offered by both public and private HE providers.

These schemes, and others aimed at workforce upskilling, receive funding through the National Training Fund (NTF). The NTF was established by the National Training Fund Act, 2000, as a dedicated fund to support the training of those in employment, and those seeking employment. The Act also provides funding for research on existing and potential future skills requirements of the Irish economy. The NTF is a crucial tool in skills development, providing a flexible mechanism to respond to changing economic and labour market conditions. The NTF allocation that DFHERIS has access to, is generally determined through an annual estimates process. Ensuring that skills development receives appropriate funding will be essential to support the delivery of offshore wind.

4. Conclusions

Our analysis of skills demand against educational provision in Ireland leads us to the following headline conclusions:

- In the HE sector, there is sufficient provision of degree level qualifications to meet the
 future demand of the Irish offshore wind industry in most cases. Recruitment challenges
 in this area are more likely to relate to competition from other industries and the
 availability of experienced staff, rather than a lack of training provision.
- For FET and PD courses, the picture is more complex. Further education provision in Ireland is decentralised and comprehensive data on course capacity, throughput and employment outcomes is not readily available. Other Irish third-party training providers offer many relevant courses necessary to fulfil the qualification requirements of the key job roles found in Appendix A. However, this may not necessarily satisfy the demand from the offshore wind industry for key job roles identified in this report.

4.1. Areas of potential training provision shortage

We recommend DFHERIS to explore actions relating to the following courses:

Degree level courses

- Meteorology and atmospheric science courses, where no Irish provision exists at undergraduate level.
- Electrical, engineering, environmental and planning, geology and geophysics and maritime and seafaring courses.

FET and PD level courses

- Electrical (NFQ level 6), HVAC and HVDC courses.
- Engineering and renewable energy courses, especially apprenticeships and other NFQ level 6 courses relevant to the wind turbine technician role. Possible geographical accessibility challenges are around the WTMT apprenticeship, which is currently only offered in Kerry.
- Health and safety management courses, especially NEBOSH courses.
- Maritime and seafaring courses, especially boat maintenance courses but also CoC provision.
- Software courses, especially geophysical software.
- Workplace health and safety courses, especially possible geographical accessibility challenges with the PSCRB course, which is currently only offered by the NMCI in Cork.

4.2. Addressing skills shortages where there is a low risk of provision shortfall

In most cases, there appears to be sufficient numbers coming through the Irish education and training system with relevant skills to take up employment in offshore wind job roles. However, this is not to say that firms will not encounter issues in hiring for these roles. Recruitment difficulties may emerge for a variety of other reasons:

- Competition for relevant skills from other industries, which leads to workers moving elsewhere, where they will often gain experience relevant to offshore wind work.
- A real or perceived lack of relevant opportunities for course graduates which leads them to move into other industries or job roles not relevant to their training.
- A need for new hires to come with significant (and often, offshore wind specific)
 experience, which can hold back the growth of the industry by restricting new entrants.

According to the HEA's graduate outcome data, in the three years between 2020 and 2022, about 66% of the 22,000 graduates with engineering, manufacturing and construction degrees entered into employment deemed relevant or very relevant to their degree. About 16% of graduates went into roles deemed irrelevant or very irrelevant to their degree.

Within natural sciences, mathematics and statistics courses, about 59% of 18,000 graduates entered relevant or very relevant roles. A total of about 22% entered irrelevant or very irrelevant roles.

The course classifications employed by the HEA in this data set are broad, and do not align with the classifications employed in this report. This data nevertheless indicates that most graduates from subjects of relevance to offshore wind within the Irish HE system are finding employment in roles relevant to their training. Despite this, there remains in each case a significant untapped pool of graduates which are entering roles with little relevancy to their training.

No national-level data is available on employment outcomes for FET and PD courses.

Possible interventions to address skills shortages where the provision of training is not an issue include:

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⁸ HEA Graduate outcomes data, available at https://hea.ie/statistics/graduate-outcomes-data-and-reports/graduate-outcomes-all-years/, accessed 24 June 2024.

- Setting up programmes to attract workers with relevant skills from other industries,
 including targeted micro-credential courses to provide a grounding in offshore wind skills
- Setting up programmes to attract experienced workers from outside Ireland, including returning Irish nationals
- Incentives to encourage the industry to take on more inexperienced workers with relevant training, and
- Public information and outreach campaigns to promote opportunities in the offshore wind industry, especially targeting young people and experienced career movers.

4.3. Summary of recommended interventions for each role

Table 7 summarises the skills challenge for each job role, and appropriate interventions to address shortfalls. In each case, the lead time corresponds to the lifecycle phase in which demand for this role peaks and is defined as follows:

- Short term indicates roles for which demand peaks in the earlier stages of the development and project management phase, indicating an immediate need for these roles.
- Short to medium term indicates roles for which demand peaks later in the development and project management phase, indicating an imminent need for these roles.
- Medium term indicates roles for which demand peaks in the manufacturing and installation phases, which show significant demand from 2026 onwards.
- Long term indicates roles for which demand peaks in the OMS phase, which show significant demand from 2028 onwards.

The table highlights suitable interventions to address the challenge on a RAG rating scale in which:

- Green interventions are those considered highly suitable to address the skills challenge.
- Orange interventions are considered somewhat suitable to address the skills challenge.
- Red interventions are considered unsuitable to address the skills challenge.

Table	7 Classificatio	n of skills cha	llenge for	each jol	role.		
					Recomme	nded interve	entions (RAG)
#	Job role	Skills availability (RAG)	Timing of skills need	Lead time	Attract experienced hires from other industries or abroad	Address provision gaps	Attract inexperienced hires
1	Offshore		Short	6			
	consents		term	years			
	manager			,			
2	Grid package		Short	8			
	manager		term	years			
3	GIS		Short	6			
	technician		term	years			
4	Bid manager		Short	6			
			term	years			
5	Offshore EIA		Short	8			
	manager		term	years			
6	Marine		Short	6			
	ecologist		term	years			
7	Ornithologist		Short	5			
			term	years			
8	Resource		Short	5			
	analyst		term	years			
9	Geophysicist		Short	5			
			term	years			
10	Electrical		Short to	5			
	engineer		medium	years			
			term				
11	Civil		Short to	6			
	engineer		medium	years			
			term				
12	Mechanical		Short to	6			
	engineer		medium	years			
			term				

					Recomme	nded interve	entions (RAG)
#	Job role	Skills availability (RAG)	Timing of skills need	Lead time	Attract experienced hires from other industries or abroad	Address provision gaps	Attract inexperienced hires
13	Geotechnical		Short	7			
	engineer		term	years			
14	Structural		Short to medium	6			
	engineer		term	years			
15	Naval		Short to	6			
	architect		medium	years			
			term				
16	Marine		Short to	8			
	engineer		medium	years			
			term				
17	Project		Short to	6			
	manager		medium	years			
18	Commercial		term Short	5			
10	analyst		term	years			
19	Supply chain		Short	8			
17	manager		term	years			
20	Construction		Medium	8			
20	project		term	years			
	manager			,			
21	Cable jointer		Medium	3			
			term	years			
22	Electrical		Medium	3			
	technician		term	years			
23	Welder		Medium	3.5			
			term	years			
24	Offshore		Long	8			
	quality		term	years			
	manager						

					Recomme	nded interve	entions (RAG)
#	Job role	Skills availability (RAG)	Timing of skills need	Lead time	Attract experienced hires from other industries or abroad	Address provision gaps	Attract inexperienced hires
25	SCADA		Long	5			
	engineer		term	years			
26	Health and		Long	6			
	safety		term	years			
	coordinator						
27	Wind		Long	5			
	turbine		term	years			
	technician			,			
28	Mechanical technician		Long	6			
29	Boat		term	years 3.5			
29	maintenance		Long term				
	technician		teiiii	years			
30	Able		Long	3.5			
	seafarer		term	years			
31	Offshore		Long	8			
	logistics		term	years			
	manager						
32	Master		Long	15			
	mariner		term	years			
33	Harbour		Long	9			
	pilot		term	years			

5. Skills action plan

We recommend that the Irish Government collaborates closely with the Irish offshore wind industry and relevant third-party course providers for any intervention in skills development within Ireland. This will help to align the timing of intervention with the demand of offshore wind projects and maximise benefits to the offshore wind industry. It is also important that there is visibility to the Irish workforce of training provision and job opportunities.

Our recommendations are presented below.

5.1 Attracting experienced workers to meet immediate skills need

Immediate skills needs relate to those job roles classified as having a short term and short to medium term timing of skills needs (number 1 to 19) in Table 7. They are employed in the development and consenting stage and therefore, it is likely too late to train young people from scratch to fill these skills gaps, given average lead times of 5 years to 8 years. Key skills required in the short term include:

- Commercial analysts
- Engineers, including electrical engineers
- Environmental and planning experts
- Geophysicists
- Meteorologists, and
- Project managers.

We recommend addressing these short-term shortages through:

- Attracting experienced hires from other industries, and
- Attracting workers from abroad.

In light of the above, we recommend that DFHERIS:

- 1. Provide appropriate input into industry strategic marketing campaigns through, for example, supplying information on state-supported training opportunities for workers.
- 2. Assist experienced career movers to enter the offshore wind industry through short, targeted courses such as micro-credentials to provide a grounding in offshore wind skills. Where possible, experienced industry staff should teach such modules to enhance relevancy. This could be delivered through the Skillnet Ireland Offshore Wind Skills Programme, and expansion of relevant courses through programmes such as the Human Capital Initiative (HCI) and Springboard+.

3. Work with DETE and the Department of Foreign Affairs to provide appropriate information to industry campaigns to attract experienced offshore wind workers, including Irish nationals, working abroad to relocate to Ireland.

5.2 Addressing potential provision gaps

It will also be important to ensure the right training provision is in place to ensure the industry can grow to meet future skills demand through addressing the potential provision gaps identified in this report.

In light of the above, we recommend that DFHERIS:

- 4. Work with industry, Met Éireann and the HE sector to assess whether additional provision of meteorology and atmospheric science degree courses or micro-credentials is required.
- 5. Work with industry, the HE and FET sectors to assess whether there is a need for additional provision of electrical, engineering, environmental and planning, geology and geophysics and maritime and seafaring degree courses or micro-credentials, or if increasing demand for existing courses is the more appropriate intervention.
- Work with industry, SOLAS and other training providers to assess whether there is a need for additional provision of training in key software packages, including geophysical software.
- 7. Work with industry, SOLAS and other FE providers to assess whether additional provision of NEBOSH and similar health and safety management courses is sufficient.
- 8. Work with EI, SOLAS, technological universities and other relevant training providers to assess if there is a need for additional provision of electrical (NFQ level 6), HVAC and HVDC courses.
- 9. Work with the NMCI and other providers to explore whether and how to extend accessibility of the PSCRB course in line with strategic objectives.
- 10. Work with industry, SOLAS, NMCI and other relevant training providers to ensure there is sufficient provision of maritime and seafaring FET and PD courses to meet demand, including boat maintenance courses and qualifying courses to achieve various levels of the CoC certification.
- 11. Consider whether and how to extend WTMT training within the FET sector.
- 12. Collaborate with HE and FE providers to raise awareness of the opportunities and training needs of the offshore wind industry.

5.3 Promoting long-term workforce growth through attracting inexperienced hires

To achieve sustainable growth of an Irish offshore wind industry, and meet long-term skills needs for all project phases, there is also a need to encourage workers to enter the industry, and to incentivise the Irish offshore wind industry to grow the size of the workforce and train the experienced staff of the future.

In light of the above, we recommend that DFHERIS:

- 13. Engage with industry and the HE sector to encourage HE institutions to introduce offshore-specific modules into relevant HE courses. This should align with ongoing work by Green Tech Skillnet in this area.
- 14. Together with DETE and relevant government agencies, encourage the offshore wind industry to take on more staff without relevant industry experience, through initiatives such as apprenticeship schemes or publicly funded training for new industry entrants. This could be delivered through the Skillnet Ireland Offshore Wind Skills Scheme.
- 15. Collaborate with industry, FE providers and HE institutions to establish outreach programmes to engage with students in primary and secondary level education, FE and HE to build awareness of the opportunities in the offshore wind industry and help them make the right choices in their educational pathway to obtain a job in the industry.

5.4 Adapting skills response to meet emerging needs

There is a need to put in place measures to monitor the growth of the industry to ensure responsiveness to emerging future skills gaps.

In light of the above, we recommend that DFHERIS:

- 16. Collaborate with DETE, DECC and industry to monitor local participation and emerging skills needs in the offshore wind supply chain, to help enable an adaptive skills response as the industry grows.
- 17. Continue to monitor and promote the need for short, targeted courses such as microcredentials in areas of emerging skills need as the industry grows.

⁹ Offshore specific modules are not required to enter the industry, but they can help increase job-readiness of inexperienced hires and raise awareness of opportunities. Where possible, experienced industry staff could teach these modules to enhance relevancy and real-world applicability.

5.5 Timeline of recommended actions

Figure 8 shows a timeline of our recommendations for DFHERIS to take through to 2030.

	Need	Need for development and proje											
					Need for manufacturing and ins								
N.	0004		0.0)OF			00	200			Need fo		
Years	2024 2025		0.4	2026 Q1 Q2 Q3 Q		Q4	2021	2028	2029	2030			
Quarters	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4				
Attracting experienced hires to meet immediate skills need													
1 Support partners to implement a strategic marketing campaign to encourage career movers into the industry													
2 Assist experienced career movers to enter the industry through short, targeted courses													
3 Engage with partners to explore initiatives to support experienced offshore wind workers to relocate to Ireland													
Addressing potential provision gaps													
4 Work with partners to assess need for additional provision of meteorology and atmospheric science degree courses													
5 Work with partners to assess need for additional provision of other degree courses identified with a medium or high risk													
6 Work with partners to assess need for additional provision of GIS and geophysical software training													
7 Work with partners to assess need for additional provision of health and safety management courses													
8 Work with partners to assess need for additional provision of electrical (NFQ level 6), HVAC and HVDC courses													
9 Work with partners to explore whether and how to extend accessibility of the PSCRB course													
10 Work with partners to ensure sufficient provision of maritime and seafaring FET and PD courses across Ireland													
11 Consider whether and how to extend WTMT training within the FET sector													
12 Collaborate with HE and FE providers to raise awareness of the needs of the offshore wind industry in Ireland													
Promoting long-term workforce growth through attracting inexperienced hires													
13 Engage with partners to identify opportunities to introduce offshore-specific modules into HE courses													
14 Together with partners, encourage the offshore wind industry to take on more staff without relevant industry experience	9												
15 Collaborate with partners to establish outreach programmes to engage in primary, secondary, FE and HE													
Adapting skills response to meet emerging needs													
16 Collaborate with partners to monitor local participation and emerging skills needs in the offshore wind supply chain													
17 Continue to monitor and promote the need for short, targeted courses in areas of emerging skills need													

Key
Initial deliverable
Ongoing delivery

Figure 8 Timeline of recommended actions for DFHERIS from 2024 to 2030.

Appendix A Job profiles with training requirements

This Appendix contains the training requirements of 33 key offshore wind jobs that have been identified by industry as subject to recruitment challenges in Ireland. It builds upon those presented in *Building Our Potential*.⁴ The profiles include:

- The essential and desirable qualifications typically required to fulfil the role
- The lead time for skills development to fill this role, based on the typical lead time to earn essential qualifications and the typical number of years of essential experience required, and
- Cross industry skills transfer opportunities.

Offshore consents manager

Description

An offshore consents manager supports the development and management of early phase activities such as site selection, project consenting and overseeing the Environmental Impact Assessment (EIA). They are responsible for securing the licenses required throughout each phase of development of the offshore wind farm. They may also have a role in procuring the contractors to carry out the EIA.

Lifecyle Phase: Development and project management.

Timing of skills need: Short term.

Demand for job role per GW and demand to 2040

The requirement for this role is approximately 9.6 Irish FTE years per GW. The total demand to 2040 is approximately 240 Irish FTE years.

Education, training and qualifications

Туре	Subject	NFQ level or equivalent	Strength of requirement	Typical provider	Typical course length
Degree	Environmental or planning	7	Essential	University	3 years
FET and PD	Project management certifications such as PMP or similar	8	Desirable	Third party	3 to 5 years (with required on-job experience)

Lead time for skills development

This job role typically requires 3 years of relevant experience. Coupled with the essential qualification requirements above, this indicates a minimum skills development lead time of 6 years.

Cross industry skills transferability

Workers in the following industries possess relevant skills to move into an offshore consents manager role: aviation, civil service, construction, defence and security, maritime, oil and gas, planning and policy, energy and utilities.

Grid package manager

Description

A grid package manager is responsible for overseeing the grid connection of the offshore wind farm. They work with the appropriate private and governmental organisations (such as EirGrid) to ensure compliance with grid regulations, co-ordinate the relevant desktop studies and surveys for the grid routing (onshore and offshore) and input to other key elements of the development including substation and landfall.

Lifecyle Phase: Development and project management, and manufacturing.

Timing of skills need: Short term.

Demand for job role per GW and demand to 2040

The requirement for this role is approximately 7.2 Irish FTE years per GW. The total demand to 2040 is approximately 180 Irish FTE years.

Education, training and qualifications

Туре	Subject	NFQ level or equivalent	Strength of requirement	Typical provider	Typical course length
Degree	Electrical	7	Essential	University	3 years
	engineering or				
	related disciplines				
FET and	Project	8	Desirable	Third	3 to 5 years
PD	management			party	(with
	certifications such				required
	as PMP or similar				on-job
					experience)

Lead time for skills development

This job role typically requires 5 years of relevant experience. Coupled with the essential qualification requirements above, this indicates a minimum skills development lead time of 8 years.

Cross industry skills transferability

Workers in the following industries possess relevant skills to move into a grid package manager role: construction, industrial, and energy and utilities.

GIS technician

Description

A GIS technician is responsible for using Geographic information systems (GIS) to store, analyse and manage data. For offshore wind development this could include using data gathered from field surveys at the offshore site to create maps and other graphics of this data to advise the developer of the project.

Lifecyle Phase: Development and project management.

Timing of skills need: Short term.

Demand for job role per GW and demand to 2040

The requirement for this role is approximately 24 Irish FTE years per GW. The total demand to 2040 is approximately 600 Irish FTE years.

Education, training and qualifications

Туре	Subject	NFQ level or equivalent	Strength of requirement	Typical provider	Typical course length
Degree	Computer science, engineering, geography, geoscience (including geophysics), statistics or related disciplines	7	Essential	University	3 years
Degree	GIS	9	Desirable	University	1 year
FET and PD	Certifications in GIS such as Certificate in Digital Mapping and Geographical Information Systems	8	Desirable	University, ETB and third- party	1 year

Lead time for skills development

This job role typically requires 3 years of relevant experience. Coupled with the essential qualification requirements above, this indicates a minimum skills development lead time of 6 years.

Cross industry skills transferability

Workers in the following industries possess relevant skills to move into a GIS technician role: defence and security, environment, IT, marine, and oil and gas, or any industry where GIS is used for large scale infrastructure projects.

Bid manager

Description

A bid manager is responsible for project managing the bidding process, ensuring that deadlines are met, overseeing quality assurance, producing high quality bid documents and accurate bid pricing to meet bid requirements. They will be analysing bid documentation to inform strategy and optimise success.

Lifecyle Phase: Development and project management.

Timing of skills need: Short term.

Demand for job role per GW and demand to 2040

The requirement for this role is approximately 2.4 Irish FTE years per GW. The total demand to 2040 is approximately 60 Irish FTE years.

Education, training and qualifications

Туре	Subject	NFQ level or equivalent	Strength of requirement	Typical provider	Typical course length
Degree	Business administration, engineering, marketing or related disciplines	7	Essential	University	3 years
FET and PD	Project management certifications such as PMP or similar	8	Desirable	Third party	3 to 5 years (with required on-job experience)

Lead time for skills development

This job role typically requires 3 years of relevant experience. Coupled with the essential qualification requirements above, this indicates a minimum skills development lead time of 6 years.

Cross industry skills transferability

Workers in the following industries possess relevant skills to move into a bid manager role: construction, energy and utilities, oil and gas or any industry where bid writing experience can be demonstrated.

Offshore EIA manager

Description

An offshore EIA manager is responsible for managing the EIA process for an offshore wind farm. This includes leading teams to complete the Environmental Impact Assessment Report (EIAR), taking responsibility for the deliverables produced and managing the survey schedule.

Lifecyle Phase: Development and project management.

Timing of skills need: Short term.

Demand for job role per GW and demand to 2040

The requirement for this role is approximately 4.2 Irish FTE years per GW. The total demand to 2040 is approximately 100 Irish FTE years.

Education, training and qualifications

Туре	Subject	NFQ level or equivalent	Strength of requirement	Typical provider	Typical course length
Degree	Environmental such as ecological sciences or environmental engineering.	7	Essential	University	3 years
FET and PD	Project management certifications such as PMP or similar	8	Desirable	Third party	3 to 5 years (with required on-job experience)

Lead time for skills development

This job role typically requires 5 years of relevant experience. Coupled with the essential qualification requirements above, this indicates a minimum skills development lead time of 8 years.

Cross industry skills transferability

Workers in the following industries possess relevant skills to move into an offshore EIA manager role: aviation, civil, construction, maritime, oil and gas, planning and policy.

Marine ecologist

Description

A marine ecologist is responsible for providing expertise to contribute to environmental impact assessments undertaken in the development phase of an offshore wind farm. They provide information about the impact an offshore wind farm will have on sea floor marine life, fish and shellfish and marine mammals. A marine ecologist will work both onshore and offshore. When working offshore they are typically collecting survey data on vessels at the development site.

Lifecyle Phase: Development and project management.

Timing of skills need: Short term.

Demand for job role per GW and demand to 2040

The requirement for this role is approximately 8.4 Irish FTE years per GW. The total demand to 2040 is approximately 210 Irish FTE years.

Education, training and qualifications

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Туре	Subject	NFQ level or equivalent	Strength of requirement	Typical provider	Typical course length
Degree	Ecology, zoology or related disciplines	7	Essential	University	3 years
Degree	Marine ecology (with some focus on offshore wind) or related disciplines	9	Desirable	University	1 year

Lead time for skills development

This job role typically requires 3 years of relevant experience. Coupled with the essential qualification requirements above, this indicates a minimum skills development lead time of 6 years.

Cross industry skills transferability

Workers in the following industries possess relevant skills to move into a marine ecologist role: aviation, construction, maritime, oil and gas, planning and policy, renewable energy.

Ornithologist

Description

An ornithologist studies the behaviour of birds, their habitat and their migration patterns, using this information to help protect their habitat both during construction and the lifetime of the offshore wind farm. They are responsible for orchestrating ornithological surveys and impact assessments and using the results of these surveys to provide expert advice to mitigate the ornithological impacts of offshore wind farms.

Lifecyle Phase: Development and project management.

Timing of skills need: Short term.

Demand for job role per GW and demand to 2040

The requirement for this role is approximately 8.4 Irish FTE years per GW. The total demand to 2040 is approximately 210 Irish FTE years.

Education, training and qualifications

Туре	Subject	NFQ level or equivalent	Strength of requirement	Typical provider	Typical course length
Degree	Ecology, zoology or related disciplines	7	Essential	University	3 years

Lead time for skills development

This job role typically requires 2 years of relevant experience. Coupled with the essential qualification requirements above, this indicates a minimum skills development lead time of 5 years.

Cross industry skills transferability

Workers in the following industries possess relevant skills to move into an ornithologist role: aviation, construction, maritime, oil and gas, planning and policy, renewable energy.

Resource analyst

Description

A resource analysist is responsible for planning, procuring and evaluating wind, metocean and other site data in order to support the development of the project by producing wind farm capacity estimates. They also assist with the layout of the turbines to optimise the resources available and calculate long-term estimations of resources and energy production.

Lifecyle Phase: Development and project management.

Timing of skills need: Short term.

Demand for job role per GW and demand to 2040

The requirement for this role is approximately 8.4 Irish FTE years per GW. The total demand to 2040 is approximately 210 Irish FTE years.

Education, training and qualifications

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Туре	Subject	NFQ level or equivalent	Strength of requirement	Typical provider	Typical course length
Degree	Atmospheric science, meteorology, or related disciplines	7	Essential	University	3 years
Degree	Atmospheric science, meteorology, renewable energy engineering or related disciplines	9	Desirable	University	1 year
FET and PD	Certification in renewable energy or wind resource assessment	<7	Desirable	University, ETB and third party	<1 year

Lead time for skills development

This job role typically requires 2 years of relevant experience. Coupled with the essential qualification requirements above, this indicates a minimum skills development lead time of 5 years.

Cross industry skills transferability

Workers in the following industries possess relevant skills to move into a resource analyst role: construction, energy and utilities, and oil and gas.

Geophysicist

Description

A geophysicist is responsible for the acquisition, quality control, interpretation and analysis of geophysical surveys mapping the different types and depths of rocks that make up the seabed. They are likely to find themselves regularly offshore on the development site. They will usually start out their careers by working as a part of a team offshore executing geophysical surveys then with more experience move to supervising and analysing the survey onshore.

Lifecyle Phase: Development and project management.

Timing of skills need: Short term.

Demand for job role per GW and demand to 2040

The requirement for this role is approximately 12.6 Irish FTE years per GW. The total demand to 2040 is approximately 320 Irish FTE years.

Education, training and qualifications

Туре	Subject	NFQ level or equivalent	Strength of requirement	Typical provider	Typical course length
Degree	Geology, geophysics or other environmental science related disciplines	7	Essential	University	3 years
Degree	Geophysics specialising in marine geophysics or related disciplines	9	Desirable	University	1 year
FET and PD	Certifications in geophysical software and the use of equipment (specific to offshore applications).	<7	Desirable	University, ETB or third party	<1 year

Lead time for skills development

This job role typically requires 2 years of relevant experience. Coupled with the essential qualification requirements above, this indicates a minimum skills development lead time of 5 years.

Cross industry skills transferability

Workers in the following industries possess relevant skills to move into a geophysicist role: civil, construction, energy and utilities, oil and gas, and renewable energy.

Electrical engineer

Description

An electrical engineer is responsible to design and maintain electrical systems on offshore platforms and vessels. They produce circuit diagrams of the site during the development and project management phases of an offshore wind farm. They also lead installation of the system ensuring it meets safety regulations.

Lifecyle Phase: Development and project management, manufacturing, installation, and operations, maintenance and service.

Timing of skills need: Short to medium term.

Demand for job role per GW and demand to 2040

The requirement for this role is approximately 19.8 Irish FTE years per GW. The total demand to 2040 is approximately 500 Irish FTE years.

Education, training and qualifications

Туре	Subject	NFQ level or equivalent	Strength of requirement	Typical provider	Typical course length
Degree	Electrical or	7	Essential	University	3 years
	electronic				
	engineering				

Lead time for skills development

This job role typically requires 2 years of relevant experience. Coupled with the essential qualification requirements above, this indicates a minimum skills development lead time of 5 years.

Cross industry skills transferability

Workers in the following industries possess relevant skills to move into an electrical engineer role: construction, IT, oil and gas, energy and utilities, and rail.

Civil engineer

Description

A civil engineer undertakes research and design, direct construction and management of the operation and maintenance of the onshore infrastructure associated with an offshore wind farm. They assist with design studies and prepare technical specifications for onshore structures such as foundations, access roads and substations.

Lifecyle Phase: Development and project management, manufacturing, installation, and operations, maintenance and service.

Timing of skills need: Short to medium term.

Demand for job role per GW and demand to 2040

The requirement for this role is approximately 132 Irish FTE years per GW. The total demand to 2040 is approximately 3,300 Irish FTE years.

Education, training and qualifications

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Туре	Subject	NFQ level or equivalent	Strength of requirement	Typical provider	Typical course length
Degree	Civil engineering, structural engineering or related disciplines	7	Essential	University	3 years
FET and PD	Certifications in wellbeing and HSE leadership or similar	6	Desirable	Third party	Varying

Lead time for skills development

This job role typically requires 3 years of relevant experience. Coupled with the essential qualification requirements above, this indicates a minimum skills development lead time of 6 years.

Cross industry skills transferability

Workers in the following industries possess relevant skills to move into a civil engineer role: construction, energy and utilities, oil and gas, and rail.

Mechanical engineer

Description

A mechanical engineer is responsible for designing and optimising the mechanical systems of an offshore wind farm. They ensure the performance of the wind turbine and foundations are optimised and comply with relevant standards.

Lifecyle Phase: Development and project management, manufacturing, installation, and operations, maintenance

and service.

Timing of skills need: Short to medium term.

Demand for job role per GW and demand to 2040

The requirement for this role is approximately 52.8 Irish FTE years per GW. The total demand to 2040 is approximately 1,300 Irish FTE years.

Education, training and qualifications

Туре	Subject	NFQ level or equivalent	Strength of requirement	Typical provider	Typical course length
Degree	Engineering (marine, mechanical, offshore or structural), naval architecture, or related disciplines.	7	Essential	University	3 years

Lead time for skills development

This job role typically requires 3 years of relevant experience. Coupled with the essential qualification requirements above, this indicates a minimum skills development lead time of 6 years.

Cross industry skills transferability

Workers in the following industries possess relevant skills to move into a mechanical engineer role: construction, maritime, oil and gas, rail, and energy and utilities.

Geotechnical engineer

Description

A geotechnical engineer undertakes foundation design work for offshore wind farms.

These designs are based on soil samples obtained from offshore geotechnical investigations into seabed conditions which provide insight to the foundation design and installation

Lifecyle Phase: Development and project management.

Timing of skills need: Short term

Demand for job role per GW and demand to 2040

The requirement for this role is approximately 9.6 Irish FTE years per GW. The total demand to 2040 is approximately 240 Irish FTE years.

Education, training and qualifications

Туре	Subject	NFQ level or equivalent	Strength of requirement	Typical provider	Typical course length
Degree	Civil engineering, geotechnical engineering or related disciplines.	8	Essential	University	4 years

Lead time for skills development

This job role typically requires 3 years of relevant experience. Coupled with the essential qualification requirements above, this indicates a minimum skills development lead time of 7 years.

Cross industry skills transferability

Workers in the following industries possess relevant skills to move into a geotechnical engineer role: agriculture, construction, infrastructure, environment, and oil and gas.

Structural engineer

Description

A structural engineer is responsible for designing and analysing the structural components of an offshore wind farm such as the support structures that sit above the seabed. They will also act in an advisory capacity during manufacturing and installation to ensure that the components and processes meet specifications and design codes.

Lifecyle Phase: Development and project management, manufacturing, installation, and operations, maintenance

and service.

Timing of skills need: Short to medium term.

Demand for job role per GW and demand to 2040

The requirement for this role is approximately 21 Irish FTE years per GW. The total demand to 2040 is approximately 530 Irish FTE years.

Education, training and qualifications

Туре	Subject	NFQ level or equivalent	Strength of requirement	Typical provider	Typical course length
Degree	Civil engineering, structural engineering or related disciplines	7	Essential	University	3 years

Lead time for skills development

This job role typically requires 3 years of relevant experience. Coupled with the essential qualification requirements above, this indicates a minimum skills development lead time of 6 years.

Cross industry skills transferability

Workers in the following industries possess relevant skills to move into a structural engineer role: construction, military, and oil and gas.

Naval architect

Description

A naval architect is responsible for analysing engineering systems and designing solutions for offshore structures including for turbine foundations, mooring systems and installation. Examples include hull and deck strength assessments and designing structural reinforcements. They also assist with the design and installation of equipment on vessels by performing structural assessments.

Lifecyle Phase: Development and project management, manufacturing, and installation. **Timing of skills need:** Short to medium term.

Demand for job role per GW and demand to 2040

The requirement for this role is approximately 18 Irish FTE years per GW. The total demand to 2040 is approximately 450 Irish FTE years.

Education, training and qualifications

Туре	Subject	NFQ level or equivalent	Strength of requirement	Typical provider	Typical course length
Degree	Mechanical engineering, naval architecture or related disciplines	7	Essential	University	3 years
FET and PD	Professional certifications in naval architecture such as a diploma in naval architecture or similar	8	Desirable	Third party	Varying

Lead time for skills development

This job role typically requires 3 years of relevant experience. Coupled with the essential qualification requirements above, this indicates a minimum skills development lead time of 6 years.

Cross industry skills transferability

Workers in the following industries possess relevant skills to move into a naval architect role: construction, maritime, military, and oil and gas.

Marine engineer

Description

A marine engineer is responsible for the maintenance, inspection and repair of vessels and equipment focusing on the mechanical systems. They typically work onshore at a construction site scheduling inspection and repairs or offshore on a vessel.

Lifecyle Phase: Development and project management, manufacturing, installation, and operations, maintenance

and service.

Timing of skills need: Short to medium term.

Demand for job role per GW and demand to 2040

The requirement for this role is approximately 9.0 Irish FTE years per GW. The total demand to 2040 is approximately 230 Irish FTE years.

Education, training and qualifications

Туре	Subject	NFQ level or equivalent	Strength of requirement	Typical provider	Typical course length
Degree	Marine engineering or related disciplines	7	Essential	University	3 years
FET and PD	Workplace health and safety certifications such as seafarers offshore medical, STCW and GWO training	6	Desirable	ETB and third party	<3 months

Lead time for skills development

This job role typically requires 5 years of relevant experience. Coupled with the essential qualification requirements above, this indicates a minimum skills development lead time of 8 years.

Cross industry skills transferability

Workers in the following industries possess relevant skills to move into a marine engineer role: maritime and oil and gas.

Project manager

Description

A project manager is responsible for day-to-day project operations, including project planning, staff management, project development, financial reporting, and client engagement.

Lifecyle Phase: Development and project management, manufacturing, installation, and operations, maintenance

and service.

Timing of skills need: Short to medium term.

Demand for job role per GW and demand to 2040

The requirement for this role is approximately 69 Irish FTE years per GW. The total demand to 2040 is approximately 1,740 Irish FTE years.

Education, training and qualifications

Туре	Subject	NFQ level or equivalent	Strength of requirement	Typical provider	Typical course length
Degree	Project management, STEM or related disciplines (may be substituted with experience)	7	Essential	University	3 years
FET and PD	Project management certifications such as PMP or similar	8	Desirable	Third party	3 to 5 years (with required on-job experience)

Lead time for skills development

This job role typically requires 3 years of relevant experience. Coupled with the essential qualification requirements above, this indicates a minimum skills development lead time of 6 years.

Workers in the following industries possess relevant skills to move into a project manager role: construction, finance, environment, renewable energy, oil and gas, and professional services or any related managerial industries.

Commercial analyst

Description

A commercial analyst is responsible for monitoring market trends, competitors and opportunities, recommending steps the business should take given the results of the analysis. They are responsible for producing reports, forecasts, and analysis to help the developer make commercial decisions with regards to spending. They also monitor business proceedings and recommend improvements to maximise savings and minimise spending.

Lifecyle Phase: Development and project management.

Timing of skills need: Short term.

Demand for job role per GW and demand to 2040

The requirement for this role is approximately 11 Irish FTE years per GW. The total demand to 2040 is approximately 270 Irish FTE years.

Education, training and qualifications

Туре	Subject	NFQ level or equivalent	Strength of requirement	Typical provider	Typical course length
Degree	Mathematical fields such as accountancy, business or finance	7	Essential	University	3 years
Degree	Economics, finance or related disciplines	9	Desirable	University	1 year
FET and PD	Project management certifications such as PMP or similar	8	Desirable	Third party	3 to 5 years (with required on- job experience)

Lead time for skills development

This job role typically requires 2 years of relevant experience. Coupled with the essential qualification requirements above, this indicates a minimum skills development lead time of 5 years.

Workers in the following industries possess relevant skills to move into a commercial analyst role: finance, oil and gas, onshore wind, technology and IT or any industry with commercial roles.

Supply chain manager

Description

A Supply chain manager is responsible for developing and implementing a supply chain strategy for the development of the offshore wind farm. They usually work with procurement managers and oversee the sourcing, logistics, and inventory management of materials and components required for offshore wind projects. Supply chain managers work with contracted suppliers and local authority bodies to secure supply chain packages.

Lifecyle Phase: Development and project management.

Timing of skills need: Short term.

Demand for job role per GW and demand to 2040

The requirement for this role is approximately 3.6 Irish FTE years per GW. The total demand to 2040 is approximately 90 Irish FTE years.

Education, training and qualifications

Туре	Subject	NFQ level or equivalent	Strength of requirement	Typical provider	Typical course length
Degree	Business administration, engineering or logistics	7	Essential	University	3 years

Lead time for skills development

This job role typically requires 5 years of relevant experience. Coupled with the essential qualification requirements above, this indicates a minimum skills development lead time of 8 years.

Cross industry skills transferability

Workers in the following industries possess relevant skills to move into a supply chain manager role: construction, fabrication, IT, oil and gas, procurement, maritime, and transport.

Construction project manager

Description

A construction project manager is responsible for all onshore or offshore construction activities. This includes budgeting, fabrication management, logistics, stakeholder engagement, supervising various activities and commissioning of offshore wind farm components.

Lifecyle Phase: Manufacturing and installation.

Timing of skills need: Medium term.

Demand for job role per GW and demand to 2040

The requirement for this role is approximately 4.0 Irish FTE years per GW. The total demand to 2040 is approximately 88 Irish FTE years.

Туре	Subject	NFQ level or equivalent	Strength of requirement	Typical provider	Typical course length
Degree	Construction management, engineering, project management, or related disciplines	7	Essential	University	3 years
Degree	Construction management, engineering, project management, or related disciplines	9	Desirable	University	1 year
FET and PD	Project management certifications such as PMP or similar	8	Desirable	Third party	3 to 5 years (with required on- job experience)
FET and PD	Workplace health and safety certifications such as seafarers offshore medical, STCW and GWO training	6	Desirable	Third party	<3 months

This job role typically requires 5 years of relevant experience. Coupled with the essential qualification requirements above, this indicates a minimum skills development lead time of 8 years.

Cross industry skills transferability

Workers in the following industries possess relevant skills to move into a construction project manager role: construction, energy and utilities, fabrication, mining, and oil and gas.

Cable jointer

Description

A cable jointer is responsible for the installation, termination, splicing, testing and maintenance of electrical cables and connections associated with offshore wind farms.

Lifecyle Phase: Manufacturing and installation.

Timing of skills need: Medium term.

Demand for job role per GW and demand to 2040

The requirement for this role is approximately 20 Irish FTE years per GW. The total demand to 2040 is approximately 440 Irish FTE years.

Education, training and qualifications

Type FET and PD	Subject Electrical engineering, power distribution or related disciplines	NFQ level or equivalent <7	Strength of requirement Essential	Typical provider ETB and third party	Typical course length 1 year
FET and PD	Workplace health and safety certifications such as seafarers offshore medical, STCW and GWO training	6	Essential	Third party	<3 months
FET and PD	Electrical certifications such as a City and Guilds certification in Electrical Testing and Verification of Electrical Installations or similar	6	Desirable	Third party	<1 year

Lead time for skills development

This job role typically requires 2 years of relevant experience. Coupled with the essential qualification requirements above, this indicates a minimum skills development lead time of 3 years.

Workers in the following industries possess relevant skills to move into a cable jointer role: construction, oil and gas, onshore wind, rail, and transport.

Electrical technician

Description

An electrical technician forms an integral part of the construction and operation phases and is typically responsible for front-end electrical engineering design (FEED) works, installation, maintenance, repair, and operation of electrical systems, equipment, and machinery on offshore wind farms.

 $\textbf{Lifecyle Phase:} \ \mathsf{Manufacturing, installation, and operations, maintenance and service.}$

Timing of skills need: Medium term.

Demand for job role per GW and demand to 2040

The requirement for this role is approximately 18 Irish FTE years per GW. The total demand to 2040 is approximately 390 Irish FTE years.

Туре	Subject	NFQ level or equivalent	Strength of requirement	Typical provider	Typical course length
FET and PD	Electrical certifications such as a City and Guilds certification in Electrical Testing and Verification of Electrical Installations or similar	6	Essential	ETB and third party	1 year
FET and PD	Workplace health and safety certifications such as seafarers offshore medical, STCW and GWO training	6	Essential	Third party	<3 months
FET and PD	Electrical certifications in HVAC systems, fire alarm systems, or programmable logic controllers.	6	Desirable	ETB and third party	<1 year

This job role typically requires 2 years of relevant experience. Coupled with the essential qualification requirements above, this indicates a minimum skills development lead time of 3 years.

Cross industry skills transferability

Workers in the following industries possess relevant skills to move into an electrical technician role: automotive, aviation, construction, energy and utilities, IT, oil and gas, and onshore wind.

Welder

Description

A welder is a vital role responsible for fabricating offshore wind structures through cutting, shaping and joining sections of metal plate and pipes. This includes reading, interpreting, and implementing engineering documents and drawings, as well as fabricating and welding material that corresponds to the engineering design requirements. Welders in Ireland may work on structures that include the turbine tower, the foundation and the onshore substation.

Lifecyle Phase: Manufacturing and installation.

Timing of skills need: Medium term.

Demand for job role per GW and demand to 2040

The requirement for this role is approximately 60 Irish FTE years per GW. The total demand to 2040 is approximately 1,300 Irish FTE years.

Туре	Subject	NFQ level or equivalent	Strength of requirement	Typical provider	Typical course length
FET	Training program or	6	Essential	ETB and	1 year
and PD	certification in			third party	
	welding				
FET	Construction Skills	6	Essential	ETB and	<6months
and PD	Certification Scheme			third party	
	(CSCS) technical				
	certificate				
FET	Workplace health	6	Essential	ETB and	<3 months
and PD	and safety			third party	
	certifications such as				
	seafarers offshore				
	medical, STCW and				
	GWO training				
FET	Mechanical or	6	Desirable	ETB and	<1 year
and PD	welding			third party	

Туре	Subject	NFQ level or equivalent	Strength of requirement	Typical provider	Typical course length
FET and PD	Advanced welding techniques certifications relevant to offshore wind	>5	Desirable	ETB and third party	<1 year

This job role typically requires 2 years of relevant experience. Coupled with the essential qualification requirements above, this indicates a minimum skills development lead time of 3.5 years.

Cross industry skills transferability

Workers in the following industries possess relevant skills to move into a welder role: automotive, aviation, construction, oil and gas, onshore wind, rail, and transport.

Offshore quality manager

Description

An offshore quality manager is responsible for overseeing quality control, assurance processes, development, implementation, and maintenance of processes. This includes the identification of risks and proposing alternative technical options or mitigation measures. They provide technical advice and support in planning, implementing, and maintaining the Project Quality Management System (PQMS) and other quality-related systems. They ensure that all project activities, including design, construction, and maintenance, comply with relevant industry standards and regulatory requirements.

Lifecyle Phase: Installation and operations, maintenance and service.

Timing of skills need: Long term.

Demand for job role per GW and demand to 2040

The requirement for this role is approximately 25 Irish FTE years per GW. The total demand to 2040 is approximately 110 Irish FTE years.

Туре	Subject	NFQ level or equivalent	Strength of requirement	Typical provider	Typical course length
Degree	Engineering, quality management or related disciplines with an affinity for construction technology, mechanical engineering and offshore	7	Essential	University	3 years
FET and PD	Health and safety certifications such as NEBOSH Process Safety Management	6	Essential	ETB and third party	1 year

Туре	Subject	NFQ level or equivalent	Strength of requirement	Typical provider	Typical course length
FET and PD	Workplace health and safety certifications such as seafarers offshore medical, STCW and GWO training	6	Essential	ETB and third party	<3 months

This job role typically requires 5 years of relevant experience. Coupled with the essential qualification requirements above, this indicates a minimum skills development lead time of 8 years.

Cross industry skills transferability

Workers in the following industries possess relevant skills to move into an offshore quality manager role: construction, energy and utilities, maritime, oil and gas, rail, and transport.

SCADA engineer

Description

A supervisory control and data acquisition (SCADA) engineer is responsible for the design, deployment, test, and management of SCADA systems used to monitor and control the various components of offshore wind farms, leveraging real-time data and control capabilities.

Lifecyle Phase: Operations, maintenance and service.

Timing of skills need: Long term.

Demand for job role per GW and demand to 2040

The requirement for this role is approximately 21 Irish FTE years per GW. The total demand to 2040 is approximately 97 Irish FTE years.

Education, training and qualifications

Туре	Subject	NFQ level or equivalent	Strength of requirement	Typical provider	Typical course length
Degree	Automation and controls engineering, computer programming engineering, power electronics engineering, or related disciplines	7	Essential (substitutable with experience)	University	3 years
FET and PD	Certifications in SCADA systems or related such as Certified SCADA Security Architect	9	Desirable	ETB and third party	<1 year

Lead time for skills development

This job role typically requires 2 years of relevant experience. Coupled with the essential qualification requirements above, this indicates a minimum skills development lead time of 5 years.

Workers in the following industries possess relevant skills to move into a SCADA engineer role: automotive, aviation, construction, maritime, oil and gas, and rail.

Health and safety coordinator

Description

A health and safety coordinator is responsible for maintaining and coordinating all health and safety aspects of offshore wind farm projects. They ensure that safety protocols are followed, conduct risk assessments, and identify, plan and execute methodologies and safe working practises to prevent accidents and incidents.

 $\textbf{Lifecyle Phase:} \ \mathsf{Manufacturing, installation, and operations, maintenance and service.}$

Timing of skills need: Long term.

Demand for job role per GW and demand to 2040

The requirement for this role is approximately 77 Irish FTE years per GW. The total demand to 2040 is approximately 360 Irish FTE years.

Education, training and qualifications

Laacatio	ii, training and quaimic	ations			
Туре	Subject	NFQ level or equivalent	Strength of requirement	Typical provider	Typical course length
FET and PD	Certifications in health and safety such as NEBOSH International General Certificate	6	Essential	ETB and third party	<1 year
FET and PD	Workplace health and safety certifications such as seafarers offshore medical, STCW and GWO training	6	Essential	ETB and third party	<3 months
FET and PD	Additional certifications in health and safety such as Managing Safely in Construction	6	Desirable	ETB and third party	<6 months

Lead time for skills development

This job role typically requires 5 years of relevant experience. Coupled with the essential qualification requirements above, this indicates a minimum skills development lead time of 6 years.

Workers in the following industries possess relevant skills to move into a Health and Safety Coordinator role: Aviation, construction, oil and gas, rail, and transport.

Wind turbine technician

Description

A wind turbine technician is responsible for on-site maintenance, repairs and replacement of the turbine. This includes the use of diagnostic and troubleshooting tools, both electrical and mechanical. They are likely to find themselves regularly offshore out in the operational wind farm, checking on performance of turbines, looking for issues and conducting repairs and preventative maintenance. Physical capabilities to work at heights, lift heavy objects and comply with health and safety standards are required.

Lifecyle Phase: Installation and operations, maintenance and service.

Timing of skills need: Long term.

Demand for job role per GW and demand to 2040

The requirement for this role is approximately 530 Irish FTE years per GW. The total demand to 2040 is approximately 2,400 Irish FTE years.

Туре	Subject	NFQ level or equivalent	Strength of requirement	Typical provider	Typical course length
FET and PD	Technical program or apprenticeship specific to wind turbine technology, or a FET and PD qualification in engineering (marine, electrical or mechanical) with relevant experience	6	Essential	ETB and third party	3 years (wind turbine course) or 1 year (Engineering course)
FET and PD	Workplace health and safety certifications such as seafarers offshore medical, STCW and GWO training	6	Essential	ETB and third party	<3 months

Туре	Subject	NFQ level or equivalent	Strength of requirement	Typical provider	Typical course length
FET and PD	Safety training programs such as IOSH Managing Safely	3	Desirable	ETB and third party	<2 weeks

This job role typically requires 2 years of relevant experience. Coupled with the essential qualification requirements above, this indicates a minimum skills development lead time of 5 years.

Cross industry skills transferability

Workers in the following industries possess relevant skills to move into a wind turbine technician role: construction, electrical, military, oil and gas, and onshore wind.

Mechanical technician

Description

A mechanical technician is responsible for the maintenance, operation, servicing, testing and repair of offshore wind turbines and associated infrastructure. This includes troubleshooting of electrical, mechanical and hydraulic systems.

Lifecyle Phase: Installation and operations, maintenance and service.

Timing of skills need: Long term.

Demand for job role per GW and demand to 2040

The requirement for this role is approximately 110 Irish FTE years per GW. The total demand to 2040 is approximately 520 Irish FTE years.

Education, training and qualifications

Type	Subject Electrical, mechanical or marine engineering or maintenance or	NFQ level or equivalent 7	Strength of requirement Essential	Typical provider University	Typical course length 3 years
FET and PD	related disciplines Technical program/certifications or apprenticeship in mechanical technology or related such as in HVAC, hydraulic systems or	6	Desirable	ETB and third party	1 year
FET and PD	workplace health and safety certifications such as seafarers offshore medical, STCW and GWO training	6	Essential	ETB and third party	<3 months

Lead time for skills development

This job role typically requires 3 years of relevant experience. Coupled with the essential qualification requirements above, this indicates a minimum skills development lead time of 6 years.

Workers in the following industries possess relevant skills to move into a mechanical technician role: aviation, construction, maritime, oil and gas, and onshore wind.

Boat maintenance technician

Description

A boat maintenance technician is responsible for the maintenance, repair, and upkeep of boats to keep them seaworthy and in compliance with safety regulations. This includes boat and electrical assessments, ensuring compliance with the manufacturers' maintenance schedules and guidelines.

Lifecyle Phase: Installation and operations, maintenance and service.

Timing of skills need: Long term.

Demand for job role per GW and demand to 2040

The requirement for this role is approximately 67 Irish FTE years per GW. The total demand to 2040 is approximately 310 Irish FTE years.

Education, training and qualifications

Туре	Subject	NFQ level or equivalent	Strength of requirement	Typical provider	Typical course length
FET and PD	Marine mechanics, boat maintenance or related disciplines	6	Essential	University, ETB and third party	1 year
FET and PD	Workplace health and safety certifications such as seafarers offshore medical, STCW and GWO training	6	Essential	ETB and third party	<3 months
Degree	Marine engineering or related disciplines	7	Desirable	University	3 years

Lead time for skills development

This job role typically requires 2 years of relevant experience. Coupled with the essential qualification requirements above, this indicates a minimum skills development lead time of 3.5 years.

Cross industry skills transferability

Workers in the following industries possess relevant skills to move into a boat maintenance technician role: defence and security, oil and gas, maritime, and transport.

Able seafarer

Description

An able seafarer is responsible for the operations and maintenance of vessels, including navigation, mooring, anchoring and cargo handling. They provide support to crew members and will be involved in various tasks relating to the offshore wind industry such as painting, asset inspections, and monitoring weather conditions.

Lifecyle Phase: Installation and operations, maintenance and service.

Timing of skills need: Long term.

Demand for job role per GW and demand to 2040

The requirement for this role is approximately 230 Irish FTE years per GW. The total demand to 2040 is approximately 1,000 Irish FTE years.

Education, training and qualifications

Туре	Subject	NFQ level or equivalent	Strength of requirement	Typical provider	Typical course length
FET and PD	Able Seafarer Certificate of Competency (CoC)	6	Essential	ETB and third party	1 year
FET and PD	Workplace health and safety certifications such as seafarers offshore medical, STCW and GWO training	6	Essential	ETB and third party	<3 months
FET and PD	STCW Basic plus AEC approved engine course 1+2	6	Desirable	ETB and third party	1 month
FET and PD	Enhanced health and safety courses such as advanced firefighting, medical care and HUET	6	Desirable	ETB and third party	1 month

Lead time for skills development

This job role typically requires 2 years of relevant experience. Coupled with the essential qualification requirements above, this indicates a minimum skills development lead time of 3.5 years.

Workers in the following industries possess relevant skills to move into an able seafarer role: defence and security, oil and gas, maritime, and transport.

Offshore logistics manager

Description

An offshore logistics manager is responsible for overseeing and managing the logistics and supply chain operations for offshore wind farms. This includes coordination and collaboration with the supply chain, transport and logistics of personnel, equipment and materials, and inventory management.

Lifecyle Phase: Installation and operations, maintenance and service.

Timing of skills need: Long term.

Demand for job role per GW and demand to 2040

The requirement for this role is approximately 19 Irish FTE years per GW. The total demand to 2040 is approximately 89 Irish FTE years.

Education, training and qualifications

Laucatio	i, training and quaime	ations			
Туре	Subject	NFQ level or equivalent	Strength of requirement	Typical provider	Typical course length
Degree	Logistics, supply chain management, marine logistics or related disciplines	7	Essential	University	3 years
Degree	Business		Desirable	University	1 year
FET and PD	Project management or logistics certifications such as PMP and CILT	6	Desirable	ETB and third party	3 to 5 years (with required on- job experience)

Lead time for skills development

This job role typically requires 5 years of relevant experience. Coupled with the essential qualification requirements above, this indicates a minimum skills development lead time of 8 years.

Cross industry skills transferability

Workers in the following industries possess relevant skills to move into an offshore logistics manager role: maritime, oil and gas, and transport.

Master mariner

Description

A master mariner (captain) is the highest-ranking officer on a vessel, responsible for the overall operation of the vessel. This includes navigation, safety procedures, watchkeeping, communications, crew management and cargo operations.

Lifecyle Phase: Installation and operations, maintenance and service.

Timing of skills need: Long term.

Demand for job role per GW and demand to 2040

The requirement for this role is approximately 19 Irish FTE years per GW. The total demand to 2040 is approximately 89 Irish FTE years.

Туре	Subject	NFQ level or equivalent	Strength of requirement	Typical provider	Typical course length
Degree	Marine transportation, nautical science, maritime studies or related disciplines	7	Essential	University	3 years
FET and PD	Master Unlimited CoC or similar	9	Essential	Department of Transport	3 years (includes experience)
FET and PD	Relevant officer licence training during preceding ranks, such as officer of the watch and chief officer.	NA	Essential	ETB and third party	>7 years (includes experience)
FET and PD	Workplace health and safety certifications such as seafarers offshore medical, STCW and GWO training	6	Essential	ETB and third party	<3 months

This job role typically requires 5 years of relevant experience such as in ship management as a captain or similar. Coupled with the essential qualification requirements above, this indicates a minimum skills development lead time of approximately 15 years.

Cross industry skills transferability

Workers in the following industries possess relevant skills to move into a master mariner role: defence and security, oil and gas, maritime, and transport or any related maritime industries.

Harbour pilot

Description

A harbour pilot is responsible for the safe and efficient navigation of vessels within the port and offshore wind farm. This includes piloting vessels in and out of ports, assessing navigational risks, monitoring vessel traffic and weather conditions.

Lifecyle Phase: Installation and operations, maintenance and service.

Timing of skills need: Long term.

Demand for job role per GW and demand to 2040

The requirement for this role is approximately 35 Irish FTE years per GW. The total demand to 2040 is approximately 160 Irish FTE years.

Туре	Subject	NFQ level or equivalent	Strength of requirement	Typical provider	Typical course length
FET and PD	Class 2/II Chief Mate CoC or similar	7	Essential	Department of Transport	<3 years (including experience)
FET and PD	Relevant officer licence training during preceding ranks, such as officer of the watch	NA	Essential	Department of Transport	>3 years (including experience)
FET and PD	Pilot Exemption Certificate (PEC)	NA	Essential	Third party	Varying, typically 1 to 2 years per port
FET and PD	Workplace health and safety certifications such as seafarers offshore medical, STCW and GWO training	6	Essential	ETB and third party	<3 months

This job role typically requires 3 years of relevant experience. Coupled with the essential qualification requirements above, this indicates a minimum skills development lead time of approximately 9 years.

Cross industry skills transferability

Workers in the following industries possess relevant skills to move into a harbour pilot role: defence and security, maritime, and transport.

Appendix B Subject classifications

Table 8 The 18 subject classifications and keywords used to identify relevant courses from HEA, SOLAS, EI and the NMCI.

Qualification type	Subject classification	Keyword 1	Keyword 2	Keyword 3	Keyword 4	Keyword 5	Keyword 6	Keyword 7
Degree (NFQ level 7/8)	Computer science and automation	Automation	Coding	Computer	Computing	Certified SCADA Security Architect	Power electronics engineer	
Degree (NFQ level 7/8)	Electrical	Electrical	Electronic	High voltage	HVAC	HVDC		
Degree (NFQ level 7/8)	Engineering	Engineering	Naval Architecture					
Degree (NFQ level 7/8)	Environmental and planning	Ecology	Environmental engineering	Environmental science	Marine science	Oceanography	Planning	Zoology
Degree (NFQ level 7/8)	Geology and geophysics	Geology	Geophysics					
Degree (NFQ level 7/8)	Maritime and seafaring	Marine	Maritime					

Qualification type	Subject classification	Keyword 1	Keyword 2	Keyword 3	Keyword 4	Keyword 5	Keyword 6	Keyword 7
Degree (NFQ level 7/8)	Mathematics, business, management and finance	Accountancy	Business	Economics	Finance	Mathematics	Statistics	
Degree (NFQ level 7/8)	Meteorology	Atmospheric	Meteorology					
Degree (NFQ level 7/8)	Project management	Construction management	Energy management	Project management	Quality management			
Degree (NFQ level 7/8)	Supply chain and logistics	Logistics	Shipping	Supply chain	Transportation			
FET and PD (NFQ level 6)	Electrical	Electrical	High voltage	HVAC	HVDC			
FET and PD (NFQ level 6)	Engineering and renewable energy	Engineering	Offshore	Renewable	Wind			
FET and PD	Health and safety management	Certified Safety Professional	Health and safety	NEBOSH				

Qualification type	Subject classification	Keyword 1	Keyword 2	Keyword 3	Keyword 4	Keyword 5	Keyword 6	Keyword 7
FET and PD	Maritime and seafaring	Marine	Maritime	Nautical	Powerboat	Seafarer		
FET and PD	Project management	PRINCE2	Program	Project management				
FET and PD	Software	AutoCAD	GIS	SCADA				
FET and PD	Welding	MAG	MIG	TIG	Non- destructive testing	Welding		
FET and PD	Workplace health and safety	First aid	GWO	Helicopter	PSCRB	Rescue	STCW	

Appendix C Job roles by subject classification with essential qualifications

Table 9 Job roles with essential requirements by subject classification.

Qualification type	Subject classification	Job roles with essential requirements
Degree (NFQ level	Computer science and	SCADA engineer
7/8)	automation	
Degree (NFQ level 7/8)	Electrical	Electrical engineer, grid package manager
Degree (NFQ level 7/8)	Engineering	Civil engineer, geotechnical engineer, marine engineer, mechanical engineer, naval architect, structural engineer
Degree (NFQ level 7/8)	Environmental and planning	Marine ecologist, offshore consents manager, offshore EIA manager, ornithologist
Degree (NFQ level 7/8)	Geology and geophysics	Geophysicist
Degree (NFQ level 7/8)	Maritime and seafaring	Master mariner
Degree (NFQ level 7/8)	Mathematics, business, management and finance	Commercial analyst
Degree (NFQ level 7/8)	Meteorology	Resource analyst
Degree (NFQ level 7/8)	Non-specific	Bid manager, project manager, supply chain manager

Qualification type	Subject classification	Job roles with essential requirements
Degree (NFQ level 7/8)	Project management	Construction project manager, offshore quality manager
Degree (NFQ level 7/8)	STEM	GIS technician, mechanical technician
Degree (NFQ level 7/8)	Supply chain and logistics	Offshore logistics manager
FET and PD (NFQ level 6)	Electrical	Cable jointer, electrical technician
FET and PD (NFQ	Engineering and renewable	Wind turbine technician
level 6)	energy	
FET and PD	Health and safety management	Health and safety coordinator, offshore quality manager
FET and PD	Maritime and seafaring	Able seafarer, boat maintenance technician, harbour pilot, master mariner
FET and PD	Project management	Offshore logistics manager
FET and PD	Welding	Welder
FET and PD	Workplace health and safety	Able seafarer, boat maintenance technician, cable jointer, electrical technician, harbour pilot, health and safety coordinator, master mariner, mechanical technician, offshore quality manager, welder, wind turbine technician

Appendix D Job roles by subject classification with desirable qualifications

Table 10 Job roles with desirable requirements by subject classification.

Qualification type	Subject classification	Job roles with desirable requirements
Degree (NFQ level	Engineering	Boat maintenance technician
7/8)		
FET and PD (NFQ	Engineering and renewable	Mechanical technician, naval architect, resource analyst
level 6)	energy	
FET and PD	Health and safety	Civil engineer
	management	
FET and PD	Project management	Bid manager, construction project manager, grid package manager, offshore
		consents manager, offshore EIA manager, project manager
FET and PD	Software	Geophysicist, GIS technician, SCADA engineer
FET and PD	Workplace health and safety	Construction project manager, marine engineer

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