In association with:

Skills and training needs of Ecological Clerks of Works (ECoW) in the UK construction industry

Final report
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Overview of the research

In the construction industry, the main role of Ecological Clerks of Works (ECoW) is to ensure compliance with environmental legislation and planning conditions as they relate to nature conservation matters on site. This involves protecting the ecology of sites whilst also protecting clients by ensuring legal and planning obligations are met.

Historically the availability of ECoW has not been measured nor levels of competence assessed. Anecdotal evidence gathered by the Civil Engineering Contractors Association (CECA) has identified instances of skills shortages and skills gaps relating to the role, which is an important issue given that insufficiently skilled or qualified ECoW could result in poorer outcomes for the environment and financial and/or reputational risks for contractors.

The purpose of this research was to undertake a survey of construction clients, contractors and individual ECoW to assess the skills shortages and skills gaps faced by the ECoW. The findings are expected to be taken forward by CECA, in conjunction with the Chartered Institute of Ecology and Environmental Management (CIEEM) to develop a new national training programme for ECOW.

Key research objectives were to:

- Establish whether client/contractor demand for ECoW is increasing or decreasing;
- Understand client/contractor experiences of working with ECoW and whether they are perceived to be adequately skilled or whether more training is required
- Estimate the supply of ECoW currently working in the UK, including numbers and working patterns;
- Understand the qualifications, skills and competences of the existing cohort of ECoW and the level of training they have undertaken for the role.

The survey of construction clients and contractors achieved 201 responses and the parallel survey of ECoW achieved 157 responses. Further details about sampling and the respondent profile are set out in Appendix 1.

Demand for ECoW

Over the past 12 months, each surveyed client and contractor recruited an average of 6.9 ECoW. The largest numbers were taken on by building contractors (10), followed by clients (6.6) and civil engineering contractors (4.1). More than three quarters (78%) expect their demand for ECoW to

either remain the same or increase over the next 12 months, with the pattern being similar across different types and size of firm. There is a net expected increase in demand for ECoW by 4.9% over the next 12 months.

The main reason given by clients and contractors for an anticipated increase in demand is more work in the pipeline (especially larger projects), followed by more land becoming available and ecological issues becoming more prominent in society. The minority of respondents who foresee a reduction in demand for ECoW mentioned a fall-back in renewable technology schemes, no obvious projects to take over from large-scale work currently being undertaken, and uncertainty over Brexit.

Recruitment of ECoW

Construction clients and contractors use a variety of methods to hire ECoW, with just under half of companies (45%) saying their preferred option is to recruit EcoW through independent and specialist companies, e.g. environmental consultancy firms. The main reason is the lack of regular requirement that would justify an in-house role.

Almost three quarters of clients/contractors (71%) have found it very or quite easy to source the ECoW they needed over the past 12 months, with 8% reporting difficulties. Of the small minority experiencing obstacles, the most common problem is not enough ECoW available and ECoW lacking relevant knowledge, skills or experience.

Looking ahead to the next 12 months, a good majority of respondents (83%) are generally confident in being able to find enough ECoW to meet their business needs.

Supply of ECoW

In the absence of published figures for the total number of ECoW working in the UK, data from NOMIS indicates 3,280 environmental consulting firms employing a total of 9,000 staff[1]. It can be assumed that total ECoW working for specialist environmental businesses would fall somewhere below this figure (i.e. as not all staff will necessarily have an ecological specialism) but higher than total professional body membership figures.

There are variations in the extent to which different ecological specialisms are offered by ECoW, with 'other protected species'[2] and 'nesting birds' being the most common (each offered by more than 80% of surveyed ECoW) and protection of water courses the least common (offered by 46% of respondents).

[1] These numbers are based only on total unique enterprises classified under Standard Industrial Classification (SIC) code 7490/1: *Environmental consulting activities.* This does not include wider/multi-disciplinary (e.g. engineering) consultants.
[2] A list of protected species is provided in Appendix 2.

Almost three quarters of ECoW (73%) undertake their role on a part time basis, with the remainder of their time being spent in a different ecological/environment role. On average, surveyed ECoW spend 7.3 days per month in the role and would be prepared to work an additional five days per month. The minimum average distance that ECoW travelled to a site in the past 12 months was 26 miles, with the maximum being 148 miles. ECoW would be prepared to travel further if needs be, with the maximum distance on average being 180 miles.

More than half of ECoW responding to the survey (58%) mentioned barriers that might prevent them from offering additional services in the future, with the main concern being lack of demand for their work. On balance, most ECoW (82%) consider it either very or quite likely that they will stay working as an ECoW in construction over the next five years.

Skills gaps

On a scale from 1 'unskilled' to 10 'perfectly skilled', clients and contractors rate the job-specific skills of ECoW generally highly, with the resulting average ratings for each listed skill falling between 7 and 8 out of 10. Skills that are rated below average by clients and contractors generally relate to ECoWs' understanding and appreciation of construction matters on site. Examples include:

- Experience of construction methods;
- Understanding how construction and civil engineering projects are undertaken; and
- Anticipating challenges in construction where biodiversity protection is an issue; and
- Preparing and/or inputting into designs in collaboration with other professionals.

Average ratings given by EcoW in relation to their own job-specific skills are slightly higher than those given by clients and contractors but there are notable overlaps in the skills which are rated below average, as per the list above.

Views are equally divided as to whether the various listed skills are likely to remain the same or become more important over the next five years. Exactly half of clients/contractors (50%) believe they will become more important, compared to 49% who think their level of importance will remain the same. This finding is almost mirrored by ECoW.

Personal attributes and behaviours rated below average by clients and contractors include:

- Negotiating effectively to resolve conflicts;
- Taking a pragmatic, creative and innovative approach to solving problems; and
- Being a collaborative team players.

Ratings given by EcoW themselves in relation to their own personal attributes and behaviours are once again higher on average than those given by clients and contractors. The lowest rated skill by

ECoW is being resilient and assertive with an ability to work in high-pressured situations, followed by negotiating effectively to resolve conflicts.

Clients and contractors would like ECoW to develop more construction knowledge so they can better interpret plans/designs and consider in advance what construction methods contractors are likely to employ. That would, in turn, enable ECoW to challenge plans up front if needs be, rather than spotting and raising issues once the work is underway when it can cause delays. Another frequently mentioned issue by clients and contractors is that individual ECoW can often interpret environmental legislation in different ways, with some being risk adverse and "following the letter of the law", while others take "a completely different approach".

While ECoW themselves acknowledge that a lack of awareness of construction methods on their part can cause delays, especially where their recommendations are not feasible on site, they feel strongly that the construction industry needs to take some responsibility to better support and involve ECoW, i.e. *"quite often ECoW are treated as separate from everyone else working on site and are not always consulted as often as they should be".*

ECoW background, qualifications and training

Directly prior to entering the role, most surveyed ECoW (85%) worked in an ecology or wider environmental role and only 4% held a position in the construction industry. The main reason for choosing to enter the role was to contribute further to protecting the natural environment. ECoW take pride in the value their role brings to protecting ecology and biodiversity as part of construction projects (including specific species and habitats) and creating positive outcomes for the natural environment.

Just over half of surveyed clients and contractors require that ECoW are qualified to at least level 6 (equivalent to a Bachelor's degree). It appears that there is good supply to match, with almost all surveyed ECoW (92%) qualified to at least this level.

ECoW undertake a wide variety of Continuing Professional Development (CPD), with the most popular being informal activities such as reading industry press and keeping up to date with Government and industry policy and regulations. Views are divided on the quality of CPD and training to support ECoW in their role, with only a minority (32%) of the opinion that CPD resources are generally good. The most common barriers by ECoW faced when undertaking CPD are that they are unsure what types of CPD to undertake and a concern that existing available resources are not relevant to their role.

Even fewer surveyed ECoW (24%) are favourable about the suitability of existing off-the-job training and qualifications. The biggest barriers here are reported to be lack of available training courses, followed by the content or level of training not considered relevant to the role.

Clients and contractors were asked through the survey what types of CPD support they make available for ECoW. Responses vary, with more than two thirds (69%) making time available during contracted hours and less than half (40%) contributing to the cost (£) of CPD.

Future skills and training needs

According to clients and contractors, ECoW need to become more involved in the construction process (i.e. work less in isolation) and develop greater awareness and knowledge of practical aspects of construction. While there is a general acceptance that ECoW need greater status and prominence on site, some mentioned that ECoW should be more proactive in building relationships and working more closely with contractors. This, it was argued, would lead to a two-fold benefit:

1. A deeper understanding among ECoW of the feasibility of their recommendations in relation to site plans; and

2. Earlier identification of any construction plans that might compromise the local ecology.

Brexit means a current period of uncertainty concerning how environmental legislation will change, with mixed views as to whether this will become stronger or more "diluted" as a result. Most feel that current EU legislation will be reduced when transferred to UK law, leading to fewer ecological surveys taking place ahead of works commencing in an effort to speed up development activity and save costs.

A key issue raised by some ECoW is that their role is not always well respected on site and that tight budgets and commercial pressures mean industry is often focused on tackling only the most essential ecological issues. Conversely, other ECoW feel that the tide is starting to turn and that their role is now becoming better integrated into projects.

There is a strong level of interest among surveyed ECoW for taking part in future initiatives aimed at improving/upskilling the role, with 81% interested in taking part (36% 'very interested'). Main themes and topics to consider for development of a future ECoW training programme, as identified through the survey, are as follows:

- Knowledge of practical construction methods and processes;

- Commercial awareness and balancing the needs of clients/contractors with environmental considerations; negotiating skills;

- Up-to-date knowledge of environmental and construction legislation, as well as the planning process;
- Communication and relationship-building skills with construction teams, including effective collaboration and conflict resolution skills;

- Developing effective reports; and
- Upskilling on specific ecology topics, such as endangered and protected species, waste management and hydrology.

Conclusions

More detailed information relating to each of the following conclusions is provided in section 6.1.

1. The next two years are expected to see steady growth in demand for ECoW, however, there is uncertainty over the impact of Brexit on environmental legislation affecting the UK and what this will mean for the scale of ecological protection in construction.

2. Clients and contractors are generally able to find sufficient ECoW to meet demand, and there do not appear to be any serious concerns either about capacity of ECoW or the risk of falling numbers of ECoW available to construction.

3. ECoW are hired in a variety of different ways and there are differences in the minimum requirements of clients/contractors when it comes to the qualifications, accreditations and experience of ECoW working on construction projects.

4. There is a general consensus among clients, contractors and individual ECoW as to the skills gaps that ECoW face, particularly an understanding of construction methods and processes, and the need to be more assertive, resilient, collaborative and able to negotiate effectively.

5. Where there is a lack of mutual understanding and appreciation of the importance of other parties' role and priorities, there arises negative implications for client/contractor and individual ECoW relationships.

6. There are clear opportunities for developing a more structured training programme for ECoW and 81% of surveyed ECoW are interested in taking part.

Recommendations

More detailed information relating to each of the following recommendations is provided in section 6.2.

1. Further explore the feasibility and options for developing a national programme of training and accreditation for ECoW in the UK.

2. Using the findings from this research and other industry intelligence, develop the content of training for ECoW consisting of potential broad topics/units, learning outcomes, knowledge and understanding elements.

3. Consider additional research to more fully understand existing training and CPD activities being undertaken by ECoW and the difficulties currently faced.

4. Look into developing a national standard and framework for ECoW professional practice, including tools and templates to support ECoW to provide a more consistent service.

5. Work with partners such as CITB and other trade/professional bodies to encourage a more mutually supportive culture between construction firms and ECoW based on working to 'shared outcomes'.

6. Consider undertaking a survey of specialist environmental consultancy firms to obtain a more accurate estimate of total ECoW available to the construction industry, and to gather more information from these firms about their training and working practices.

7. Continue to monitor the potential impact of changes to environmental legislation as a result of Brexit, along with the implications for ECoW demand, supply and individual training needs.

1. Introduction

1.1 The role of ECoW in the construction industry

The main role of Ecological Clerks of Works (ECoW) in the construction industry is to ensure compliance with environmental legislation and planning conditions as they relate to nature conservation on site. Duties can include carrying out surveys to identify ecological constraints to site operations, and to help guard against ecological risks from design and construction activity, for example to flora, fauna and water courses. There is a twofold requirement to protect the ecology of sites, whilst also protecting clients by ensuring legal and planning obligations are met.

ECoW may be contracted, instructed and paid by a construction client (i.e. any organisation that has commissioned or procured construction work) or by the contractor. They may be employed directly by one of these organisations or sourced from independent specialist environmental consultancy firms, where the role is commonly referred to as that of 'ecological consultant' or similar.

ECoW are generally expected to work independently but to act in the interests of the client to identify any potential environmental risks so that planning conditions can be met. On larger projects there could be ECoW working both for the client and the contractor.

The availability of ECoW has not historically been measured nor their competence assessed. Anecdotal evidence gathered by the Civil Engineering Contractors Association (CECA) has identified the prevalence of skills shortages and skills gaps relating to the role, although the scale of these has not historically been ascertained. This is an important issue given that using insufficiently skilled or qualified ECoW could result in poorer outcomes for the environment and financial and/or reputational risks for contractors.

As part of its *National Infrastructure Delivery Plan 2016-2021*, the Government pledged to invest over £100bn in infrastructure by 2021. Large scale projects such as HS2 and new build nuclear projects at Wylfa and Hinkley, inevitably require higher numbers of ecologists on-site, making it especially timely to understand the ease of current access to ECoW on a national level, and perceptions of skills shortages and gaps.

1.2 Research objectives

This research was commissioned in 2017 by CECA, in conjunction with the Chartered Institute of Ecology and Environmental Management (CIEEM) and with additional support from the Construction Industry Training Board (CITB).

The purpose was to undertake a quantitative and qualitative assessment of skills shortages and skills gaps relating to ECoW, comprising a survey of clients, contractors and individual ECoW. The findings aim to inform the development of a new national training programme for those working in the role.

Key objectives:

- Establish whether client/contractor demand for ECoW is increasing or decreasing;
- Understand client/contractor experiences of working with ECoW and whether they are perceived to be adequately skilled or whether more training is required;
- Estimate the supply of ECoW currently working in the UK, including numbers and working patterns
- Understand the qualifications, skills and competences of the existing cohort of ECoW and the level of training they have undertaken for the role.

1.3 Methodology and notes about this report

The research was carried during April and May 2017, via a UK-wide random survey of construction clients/contractors (achieving 201 responses) and a separate survey of individual ECoW (achieving 157 responses).

Throughout this report, the base number of respondents is given for each question. The client/contractor survey results have been cross-tabulated by:

- Type of responding organisation (contractors working mainly on buildings, contractors working mainly on civil engineering projects, as well as construction clients); and
- Size of responding organisation based on total direct employment (micro, small, medium and large).

Results have not been broken down by nation since preliminary descriptive analysis has not revealed any meaningful differences. Furthermore base numbers for the devolved nations are relatively low compared to England.

More information about the survey sample strategy, methodology and profile of survey respondents (including definitions of employment size bands) is presented in Appendix 1.

2. Demand and Supply

This chapter examines current and anticipated future demand for ECoW by construction clients and contractors, including instances of recruitment difficulties. It also paints a picture of the current supply of ECoW. This includes their specialisms, working patterns (full time/part time) and capacity in terms of days per month in the role and distance willing to travel to take on more work.

2.1 Demand for ECoW

Over the past 12 months, each surveyed client and contractor recruited an average of 6.9 ECoW. The largest numbers were taken on by building contractors (10), followed by clients (6.6) and civil engineering contractors (4.1). Breakdowns by type of organisation and method of ECoW recruitment are shown in Table 1.

Table 1 Average ECoW recruited in the past 12 months (by recruitment method)

Respondent group	Method of recruiting ECoW	Avg. number of ECoW recruited per organisation (past 12 months)
All respondents	**Directly employed**	**0.7**
	Freelance individuals/through specialist companies	**5.0**
	Subcontracted through another party in the supply chain	**1.2**
	Overall average	**6.9**
Contractors – mainly buildings	Directly employed	0.4
	Freelance individuals/through specialist companies	8.7
	Subcontracted through another party in the supply chain	1.1
	Overall average	10.0
Contractors – mainly civils	Directly employed	0.7
	Freelance individuals/through specialist companies	1.9
	Subcontracted through another party in the supply chain	1.6
	Overall average	4.1
Construction clients	Directly employed	1.1
	Freelance individuals/through specialist companies	4.8
	Subcontracted through another party in the supply chain	0.8
	Overall average	6.6

Base: 177 respondents

Tables 2 and 3 rank the average number of ECoW recruited by type of project and by specialist area of ECoW expertise, respectively. Construction work on residential buildings has involved

comparatively more ECoW than other types of projects, while slightly higher average numbers of ECoW appear to have been sourced with specialist expertise relating to nesting birds, as well as bats in trees and buildings.

Table 2 Average ECoW recruited in the past 12 months (by type of project)

Construction of residential buildings	2.5
Construction of road projects	1.3
Construction of non-residential buildings	1.1
Construction of railway projects	0.6
Construction of water projects	0.6
Other	0.5
Construction of utility projects	0.4
Construction of digital communications infrastructure	0.3

Base: 146 respondents

Table 3 Average ECoW recruited in the past 12 months (by area of ECoW specialism)

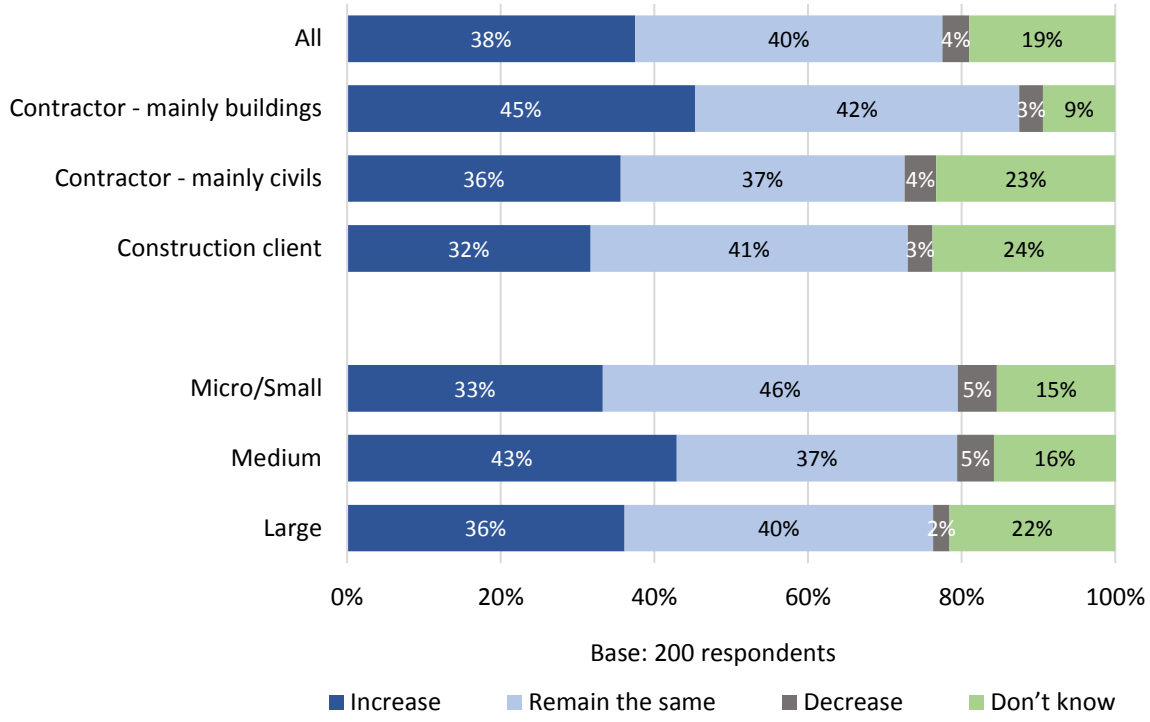
Nesting birds	2.3
Bats in trees or buildings	2.2
Other protected species	2.1
Protection of trees or other habitat	1.9
Badger setts	1.7
Protection of water courses	1.7
Water voles or otters	1.4
Other	0.5

Base: 130 respondents

More than three quarters of surveyed clients and contractors (78%) expect their demand for ECoW to either remain the same or increase over the next 12 months. Only 4% anticipate needing fewer ECoW and just under a fifth (19%) are unsure how their demand for ECoW will change.

This pattern is similar across different types and size of firm, although building contractors and medium sized organisations appear slightly more likely than other cohorts to anticipate needing greater numbers of ECoW over the next 12 months (Figure 1).

Figure 1 Expected change in demand for ECoW over the next 12 months



In addition to being asked how many ECoW were used over the past 12 months, clients and contractors were asked how many would be needed in total over the next 12 months.

Based on 113 respondents who were able to provide both past AND future numbers, there is a net expected increase in demand for ECoW by 0.3 per organisation, which equates to an increase of 4.9%.

Breakdowns of these figures by method of ECoW recruitment, type of project and area of specialism are shown in Table 4.

Table 4 Expected change in ECoW demand over the next 12 months (numbers)[3]

Respondent group	Method of ECoW recruitment	Avg. number of ECoW per organisation - past 12 months	Avg. number of ECoW per organisation – next 12 months	Estimated change	Percentage increase/ decrease
Overall		**6.1**	**6.4**	**+0.3**	**+4.9%**
Method of recruitment	Directly employed	0.8	0.9	+0.1	+12.5%
	Freelance or subcontracted	5.3	5.5	+0.2	+3.8%
Type of project	Construction of residential buildings	2.1	2.0	+0.1	+4.8%
	Construction of road projects	1.5	1.5	0	0.0%
	Construction of non-residential buildings	1.1	1.3	+0.2	+18.2%
	Construction of railway projects	0.7	0.8	+0.1	+14.3%
	Construction of water projects	0.6	0.7	+0.1	+16.7%
	Other	0.5	0.6	+0.1	+20.0%
	Construction of utility projects	0.3	0.5	+0.2	+66.7%
	Construction of digital comms infrastructure	0.3	0.3	0	0.0%
Specialism	Nesting birds	2.8	2.7	-0.1	-3.6%
	Bats in trees or buildings	2.4	2.6	+0.2	+8.3%
	Other protected species	2.3	2.6	+0.3	+13.0%
	Protection of trees or other habitat	2.1	2.1	0	0.0%
	Badger setts	2.0	2.3	+0.3	+15.0%
	Protection of water courses	2.0	2.2	+0.2	+10.0%
	Water voles or otters	1.7	1.7	0	0.0%

Base: 113 respondents

[3] It should be noted that the numbers contained in the column titled 'Avg. number of ECoW per organisation – past 12 months' differ to the numbers shown in Tables 1 to 3. This is because Table 4 only uses data from respondents who gave estimates both for the past 12 months AND the next 12 months. Tables 1 to 3 are based on all respondents who gave estimates for the past 12 months, irrespective of the next 12 months.

The main reason given by clients and contractors for an expected increase in demand is more work in the pipeline (especially larger projects), followed by more land becoming available and ecological issues being taken more seriously by clients.

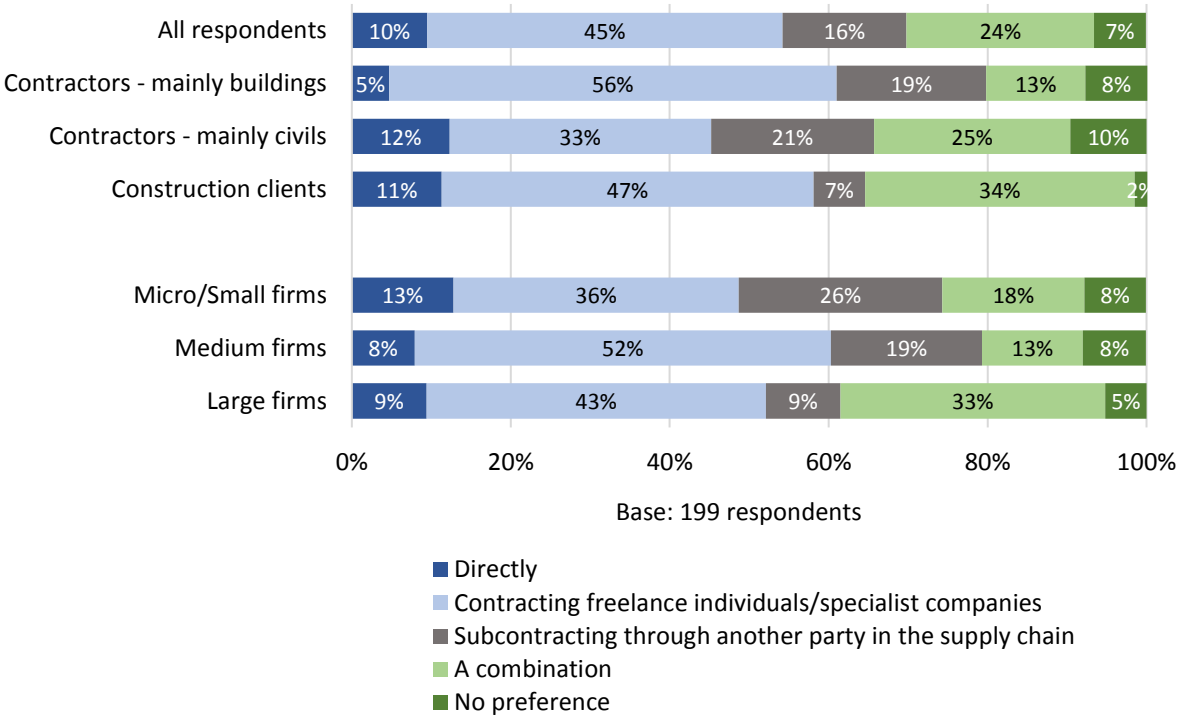
The minority of respondents who anticipate a reduction in demand mentioned a fall-back in renewable technology schemes, no obvious projects to take over from large-scale work currently being undertaken, and uncertainty over Brexit.

2.3 Recruitment of ECoW

Construction clients and contractors use a variety of methods to source and hire ECoW. The most common approach is by contracting freelance individuals or specialist companies, such as environmental consultancy firms. This is evident from Table 1 (see page 13) in terms of the average mix of ECoW recruited per organisation using each method.

Figure 2 shows the percentage of companies that prefer certain methods of recruiting ECoW over others. A total of 45% prefer to recruit EcoW through specialist companies, 16% prefer to recruit through other organisations in the supply chain, 10% prefer to employ ECoW directly, and 31% favour a combination of methods or have no preference. Patterns are similar by type and size of organisation.

Figure 2 Preferred way of sourcing ECoW on projects



The main reason given for preferring to recruit ECoW through independent firms is the lack of a regular requirement that would justify an in-house role. Where ECoW are recruited in this way, clients and contractors typically instigate a tendering process to select ECoW when needed, or have a panel/shortlist of firms with which they'll typically work.

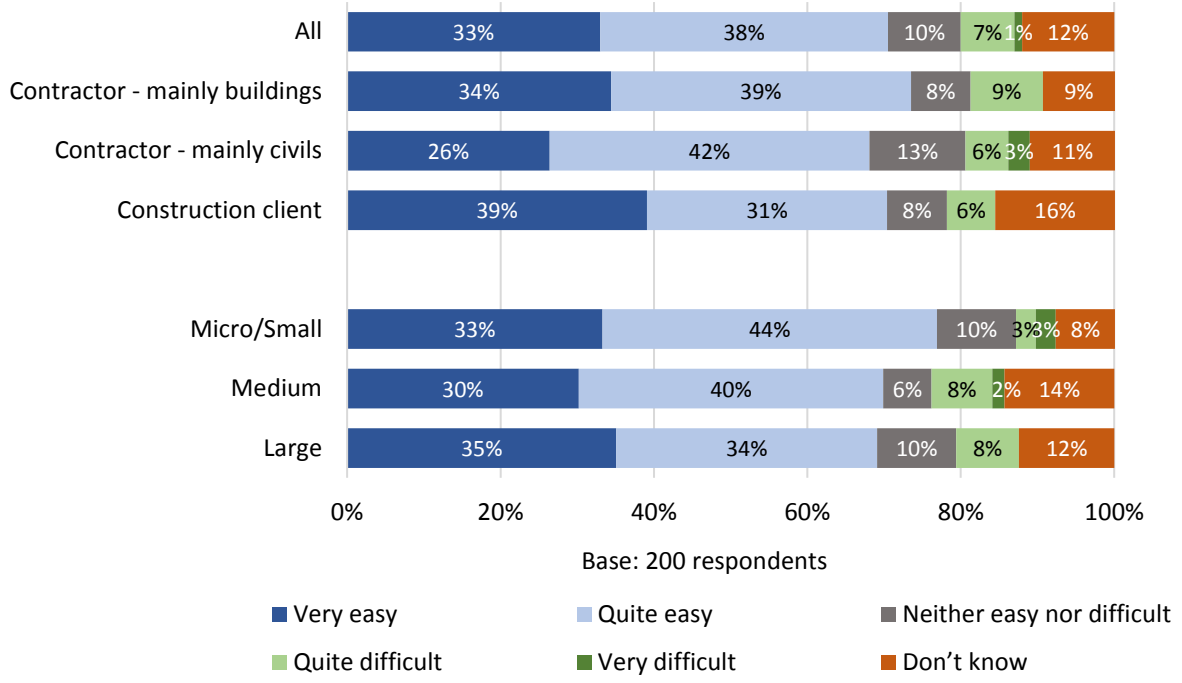
Selection of environmental consultancy firms is often based on a variety of factors relating to quality credentials, track record and price. Local authorities in particular tend to have in-house roles that deal with matters relating to ecology, e.g. biodiversity officers, conservation officers or ecology officers, however, they often have a list of consultancy firms with which they'll engage depending on the specialist ecological skills and knowledge required on a project.

Those clients and contractors preferring to recruit ECoW through the supply chain tend do so for one of three reasons: 1) because it's specified by the client; 2) it makes the process of managing ECoW easier; or 3) that is the way it has always been done.

Those preferring to directly employ their own ECoW feel this offers greater control and value for money.

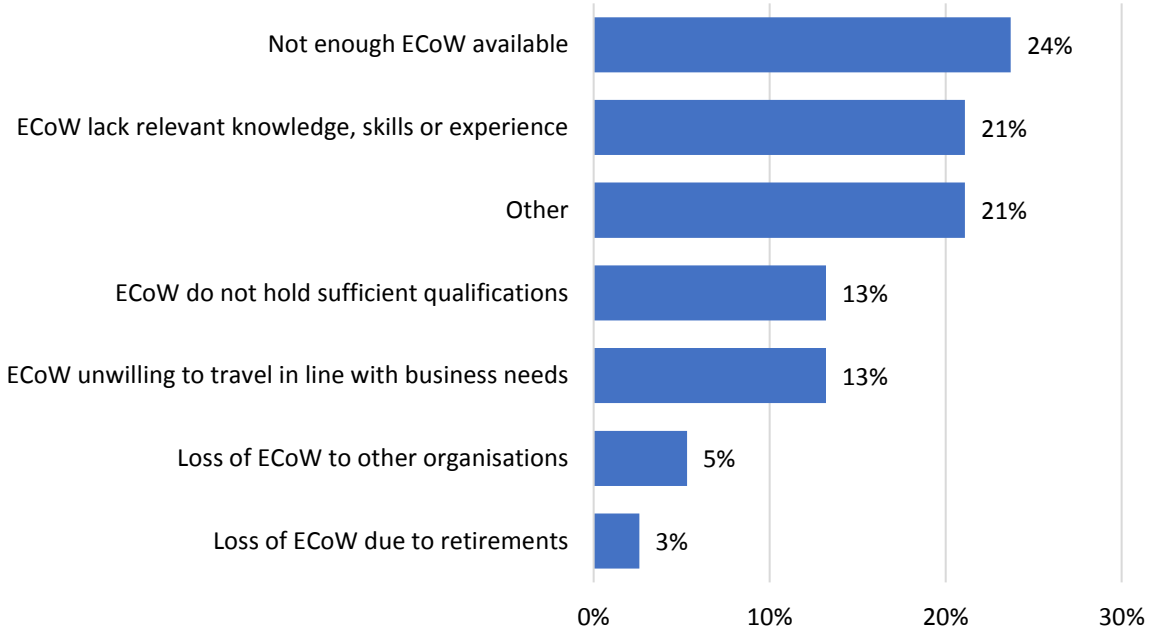
Almost three quarters of clients and contractors (71%) have found it very or quite easy to source the ECoW they needed over the past 12 months, with 8% reporting difficulties. The pattern is similar by type and size of organisation (Figure 3)

Figure 3 Ease/difficulty sourcing ECoW in the past 12 months



Of the 20 respondents who reported difficulties, the most common problems are not enough ECoW being available and ECoW lacking relevant knowledge, skills or experience (Figure 4).

Figure 4 Reasons for finding it difficult to recruit ECoW in the past 12 months



Base: 38 responses/20 respondents

Where recruitment difficulties have been experienced, these have reportedly led to minor project delays, and in one case a decision to no longer use a tendering process for certain types of ecological work.

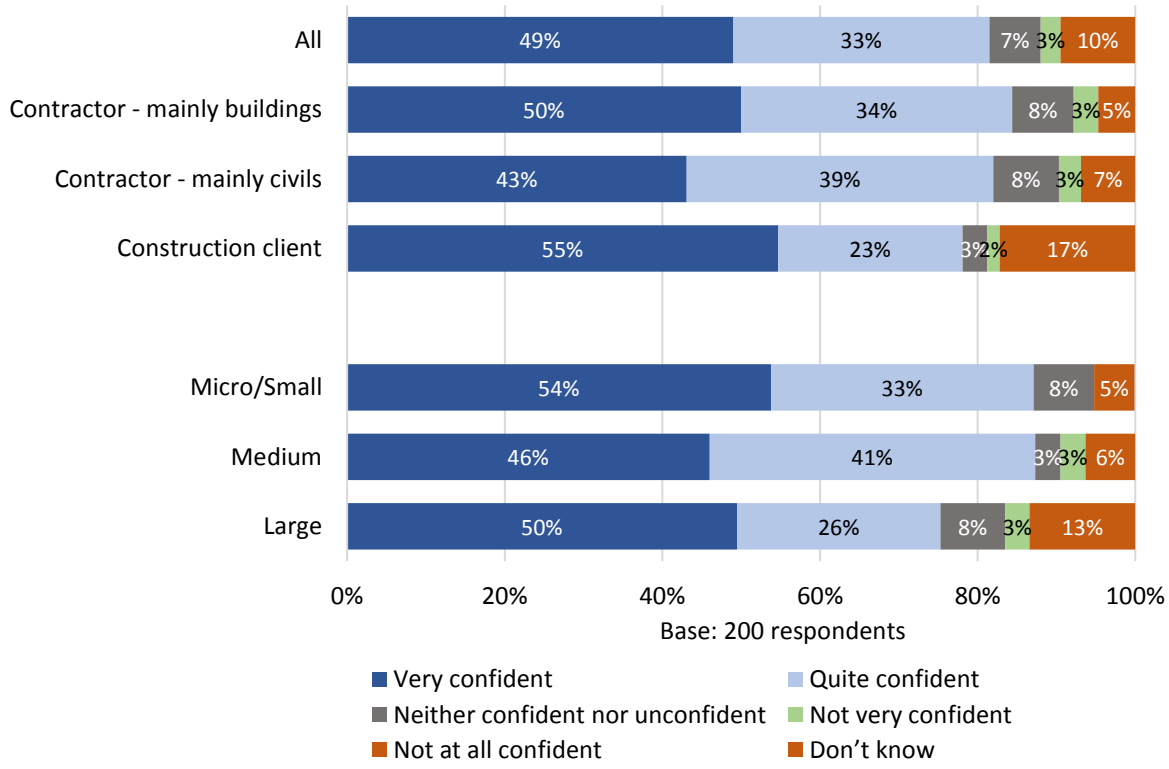
"We have built up relationships with ecologists over many years which allows us to understand their strengths and weaknesses and the areas in which they are best suited to work. We can therefore source ECoW very well and are selective over which ecologists we use on certain projects."

Construction client

Clients and contractors were asked how many ECoW job postings/vacancies they had advertised but found hard to fill (for whatever reason) over the past 12 months. A total of eight respondents (six clients and two contractors) reported a combined total of 10 hard to fill vacancies, indicating that recruitment difficulties are not a widespread issue.

Looking ahead to the next 12 months, a good majority of respondents (83%) are generally confident in being able to find enough ECoW to meet their business needs, although 17% of clients are unsure, compared to 5% of buildings contractors and 7% of civil engineering contractors (Figure 5).

Figure 5 Level of confidence in sourcing ECoW over the next 12 months



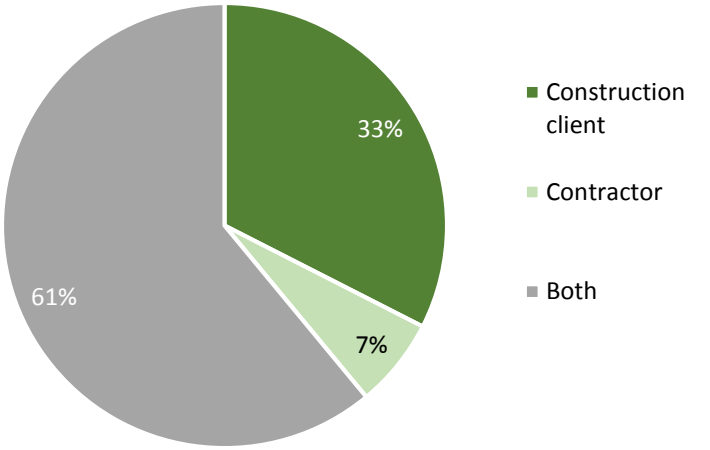
2.4 Supply of ECoW

While there are no published numbers for the number of ECoW working in the UK, data from NOMIS suggest that there are 3,280 environmental consulting firms, employing a total of 9,000 staff[4]. It can be assumed that total ECoW working for specialist environmental businesses would fall somewhere below this figure (i.e. as not all staff will necessarily have an ecological specialism) but higher than total professional body membership figures. Membership of CIEEM arguably provides a good indicator as to the total number of ECoW in the UK given that half of all client/contractors responding to the survey (50%) require ECoW to be CIEEM members. As at June 2017, CIEEM's total non-student membership (comprising individuals with at least one ecological competence) stands at 4,471 individuals[5].

Almost two thirds of surveyed ECoW (61%) undertake work for a mix of construction clients as well as contractors, indicating flexibility of supply and experience of working for different types of organisations. A third (33%) only work for clients and 7% only work for contractors (Figure 6).

[4] These numbers are based only on total unique enterprises classified under Standard Industrial Classification (SIC) code 7490/1: *Environmental consulting activities.* This does not include wider/multi-disciplinary (e.g. engineering) consultants.
[5] A separate survey of specialist environment consultancy businesses would therefore help to estimate the proportion of environmental specialists that have ecological responsibilities and are 'available' to work on construction projects

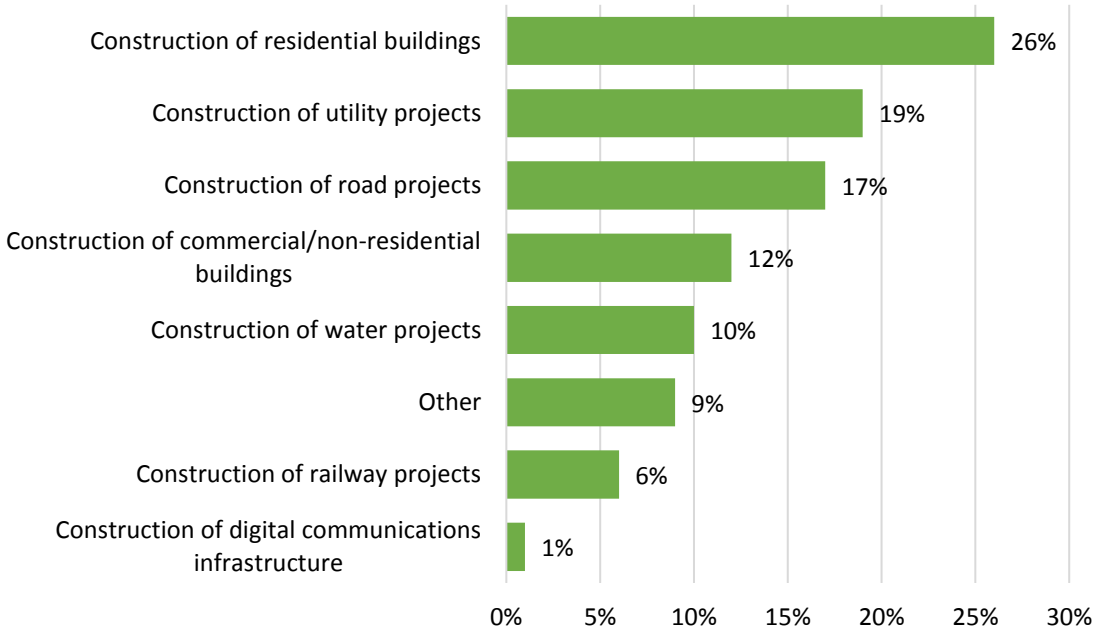
Figure 6 Types of organisations for which ECoW carry out work



Base: 154 respondents

Based on a typical year, the percentage share of time spent by ECoW working in different areas of construction is set out in Figure 7. Work relating to residential buildings accounts for just over a quarter (26% of total time), followed by work relating to utility projects and road projects. Work specified as 'other' includes renewable energy installations such as wind farms, marine projects, geotechnical engineering, hard landscaping, and construction of tanks/reinforced concrete works.

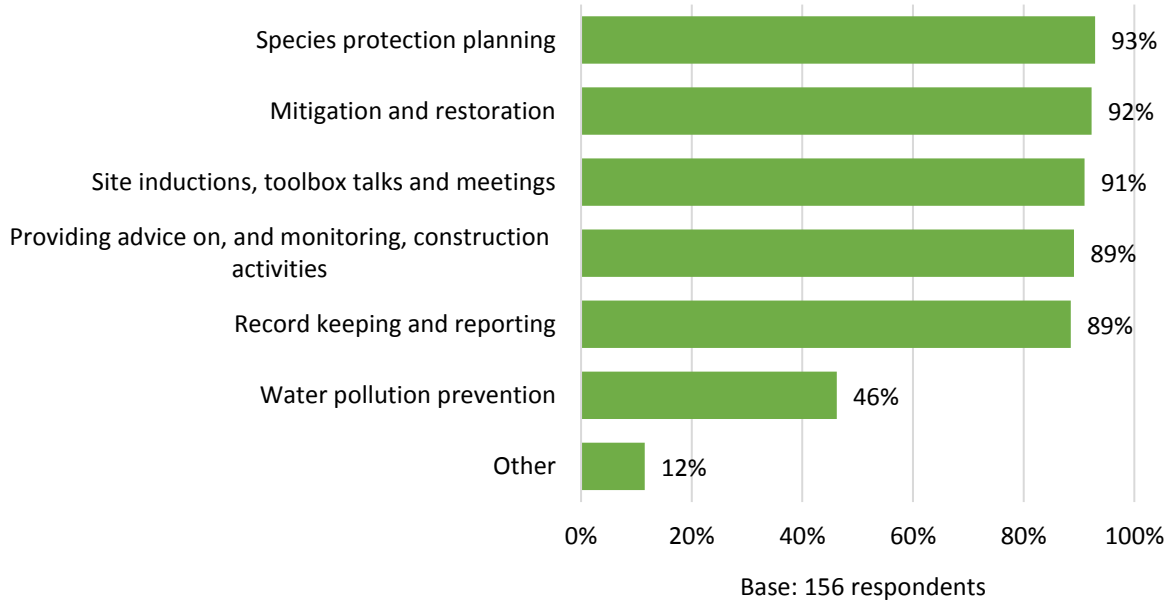
Figure 7 Percentage mix of time spent by ECoW working in different areas of construction



Base: 139 respondents

The vast majority of surveyed ECoW (at least 89%) provide the full range of services, with the exception of water pollution prevention which was mentioned by just under half of respondents (Figure 8).

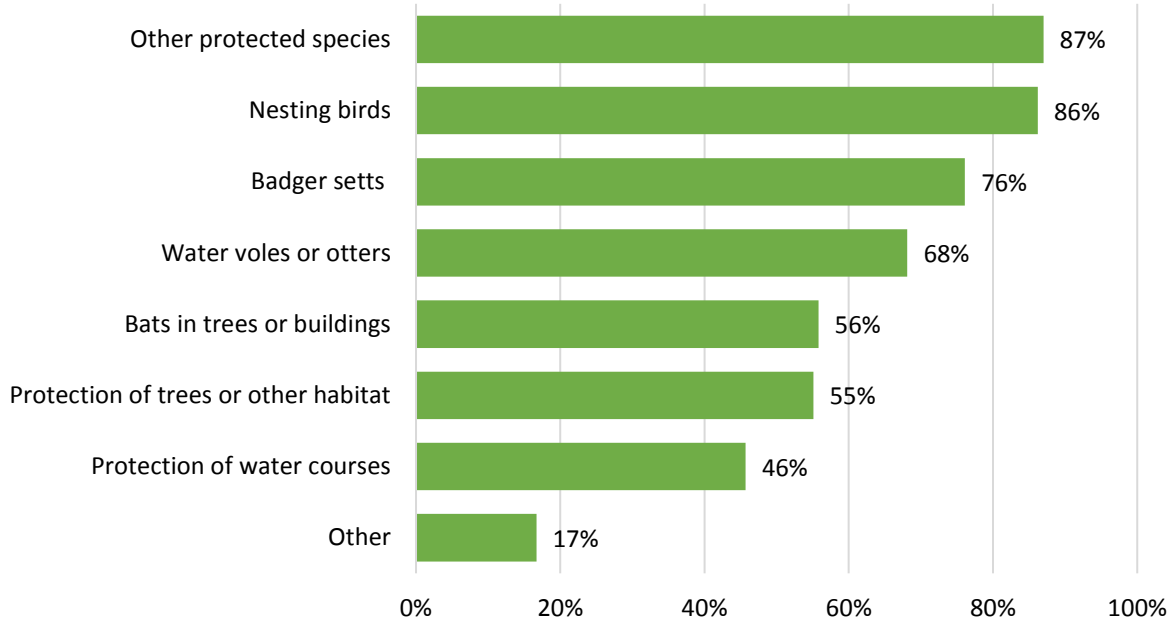
Figure 8 Services offered by ECoW



There are variations in the extent to which different ecological specialisms are offered by ECoW, with 'other protected species'[6] and 'nesting birds' being the most common (each offered by more than 80% of ECoW) and protection of water courses the least common (offered by less than half of respondents) - Figure 9.

[6] A list of protected species is provided in Appendix 2.

Figure 9 ECoW specialisms



Base: 138 respondents

Almost three quarters of ECoW (73%) undertake their role on a part time basis. Of the part time workers, almost all (97%) spend the remainder of their time in a different ecological/environment role and only 1% also work in a construction-related role. The remaining 2% say they either don't undertake other work or that they have other voluntary responsibilities.

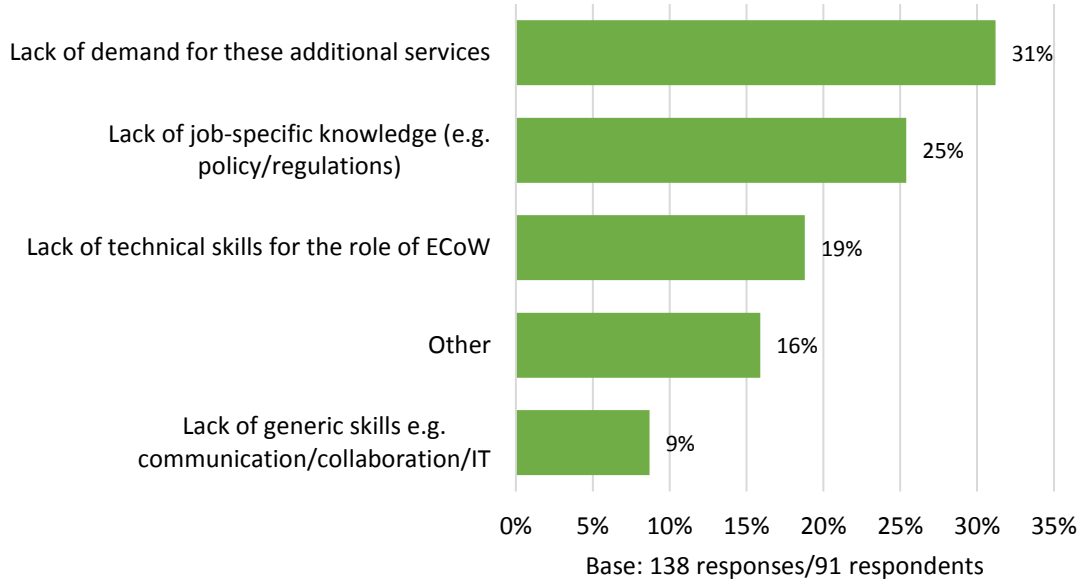
On average, surveyed ECoW spend 7.3 days per month in the role, with the most common being one day (mentioned by 15% of respondents) and the maximum being 30 days (mentioned by two respondents).

ECoW would be prepared to work an additional five days in the role per month on average, with the most common answer being no additional days (mentioned by 36% of respondents) and the maximum being 25 additional days (reported by two respondents).

On average, the minimum distance that each ECoW travelled to a site in the past 12 months was 26 miles, with the maximum being 148 miles. ECoW would be prepared to travel further if needs be, with the maximum distance on average being 180 miles.

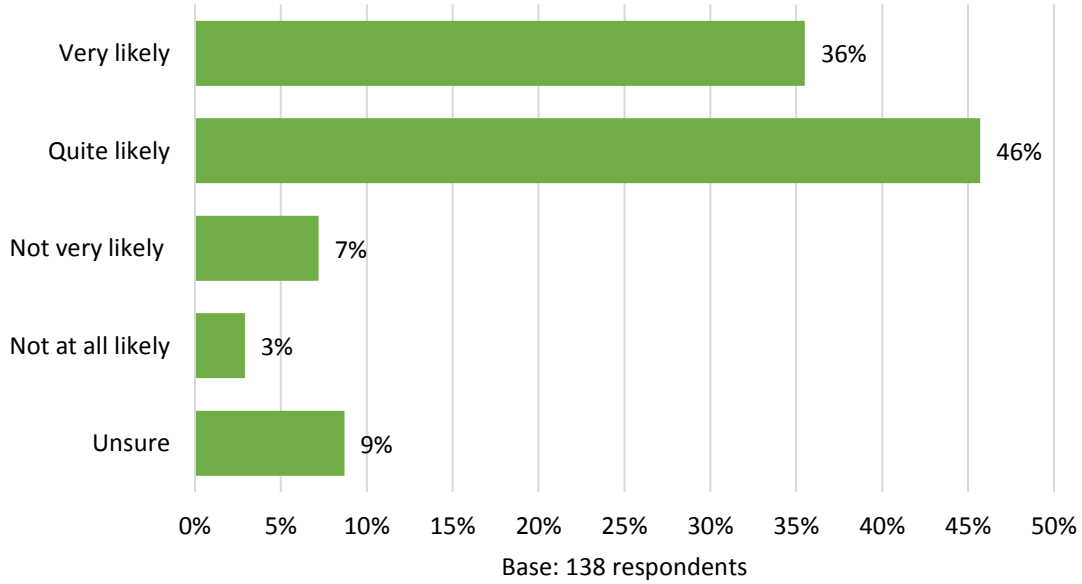
More than half of ECoW responding to the survey (58%) mentioned barriers that might prevent them from offering additional services in the future. The main concern (accounting for just under a third of responses), is lack of demand for their work. This finding, coupled with the general ease and confidence reported by clients and contractors when it comes to recruiting ECoW, suggests that supply of ECoW to meet demand is generally satisfactory. Other barriers mentioned by ECoW to providing additional services in the future include lack of job-specific knowledge (25% of responses) and lack of technical skills (19% of responses) – Figure 10.

Figure 10 Barriers to providing additional ECoW services in the future



On balance, the majority of ECoW (82%) consider it either very or quite likely that they will stay working as an ECoW in construction over the next five years, further reinforcing the general stability of supply (Figure 11).

Figure 11 Likelihood of continuing to work as an ECoW in five years' time



Among the small minority of ECoW who feel they may leave the role, the main reasons include a natural role change or promotion; poor rewards (specifically insufficient pay, long hours and feeling under-valued), and approaching retirement.

Finally, of the 157 ECoW who responded to the survey, only 13 (8%) said that they had not undertaken any work relating to construction or civil engineering in the past three years. Of these, nine put this down to construction-related work not being available, with the remaining four of the view that this type of work is either too difficult, pays too little in relation to other ecology work, or that there is inadequate recognition of the importance/seniority of the ECoW role across the construction sector[7].

[7] It is possible that the percentage share of ECoW in the UK who do not undertake work relating to construction could well be higher than the 8% in the survey, especially if some respondents chose not to complete the survey for that reason.

3. Skills

A detailed examination of ECoW competences (both job-specific skills and personal attributes/behaviours) is important to help identify any instances of skills gaps, i.e. those which are believed to be missing or lacking within the existing workforce. This chapter measures ECoW skills from the perspective of clients/contractors as well as individual ECoW, looks at which of these skills will be most important in the future, and considers what the impact of skills gaps might be.

3.1 Skills scoring overview

The technique of skills scoring helps to identify the nature and extent of skills gaps within firms, as well as the future criticality of those skills gaps. Firstly, the survey asked respondents to rate various specific ECoW competences on a scale from 1 'unskilled' to 10 'perfectly skilled'. This activity was undertaken by clients and contractors in relation to their overall experience of ECoW, and of individual ECoW in relation to their own perceived levels of competence. In addition, respondents were asked to state whether they thought the importance of each skill would increase, remain the same or reduce over the next five years.

When plotted on a scatter graph, the resulting average ratings for each skill can be divided into four quadrants as illustrated below. The top left quadrant of the scatter graph contains the highest priority skills for the future, i.e. those which have scored comparatively low in terms of the current skill rating, but comparatively high in terms of future importance.

Top left quadrant: Lower current skill level/higher future importance	Top right quadrant: Higher current skill level/higher future importance
Bottom left quadrant: Lower current skill level/lower future importance	Bottom right quadrant: Higher current skill level/lower future importance

Tables 5 and 6 provide a key to the plot points on the ECoW skills scoring scatter graphs, applicable to job-specific skills and personal attributes/behaviours respectively. Lines of regression are shown on all charts and the R^2 value denotes the degree of correlation between current skill level and future importance. Being close to zero, the R^2 values indicate very little direct correlation between current skill level and future importance[8].

[8] An R^2 value can range from 0 (no correlation between variables) to 1 (perfect correlation between variables). By way of context, one might expect to see a strong correlation (and a high R^2 value) on a scatter graph which plots variables such as age and height of a group of individuals.

Table 5 Skills scoring: Key to job-specific skills on the scatter graphs

1	Making confident and pragmatic decisions in relation to species, habitats and specific issues
2	Reading and interpreting ecological reports and plans
3	Promoting environmental awareness and best practice for ecological/environmental mitigation
4	Understanding how construction and civil engineering projects are undertaken
5	Anticipating challenges in construction where biodiversity protection is an issue
6	Complying with all health and safety requirements on site
7	Understanding CDM Regulations and their implications for ecological and environmental roles
8	Understanding relevant environmental legislation and policy
9	Taking appropriate action to challenge/stop activities that could breach environmental legislation
10	Carrying out ongoing checks during construction to identify and avoid ecological risks
11	Carrying out pre-construction checks for sensitive aspects, e.g. species, habitats
12	Working closely with contractors and trades to provide support for operations affecting biodiversity
13	Delivering site inductions, tool-box talks and 'on the job' training to relevant site staff
14	Project management and maintaining a timetable of ecological and environmental requirements
15	Working with and/or directing heavy plant and machinery to achieve biodiversity outcomes
16	Preparing and/or inputting into designs in collaboration with other professionals
17	Overseeing practical ecological mitigation and enhancement works on site
18	Advising and working with site staff to achieve ecological mitigation and enhancement works
19	Reporting non-compliance to site managers and providing support to investigate such incidents
20	Keeping a log/diary (with photographs) of work or actions undertaken or advice given each day
21	Liaising at necessary levels with other stakeholders
22	Experience of construction methods

Table 6 Skills scoring: Key to personal attributes/behaviours on the scatter graphs

1	Communicating and reporting effectively
2	Advising others about ecological issues with confidence
3	Taking a pragmatic, creative and innovative approach to solving problems
4	Organisation and time management
5	Taking an outcome driven approach to project delivery
6	Attention to detail and high level of accuracy
7	Being a collaborative team player
8	Negotiating effectively to resolve conflicts
9	Exercising integrity and sound professional judgement in confrontational and challenging situations
10	Resilient and assertive with an ability to work in high-pressured situations
11	Customer focused and dedicated to meeting the requirements of internal and external stakeholders

3.2 ECoW job-specific competences

Clients and contractors rated the job-specific skills of ECoW generally highly, with the resulting average rating for all skills (except one) being 7 or 8 out of 10. There are, however, mixed experiences of ECoW given that the full range of ratings (i.e. from 1 to 10) were received in relation to most listed skills.

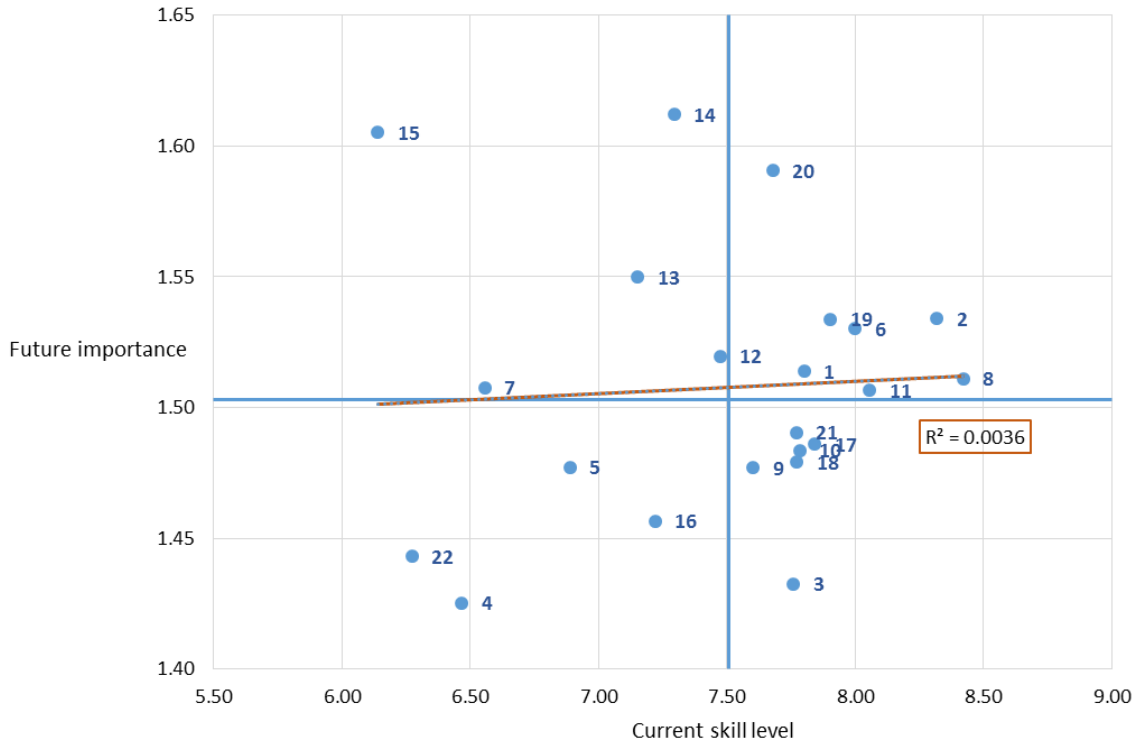
Priority job-specific ECoW skills (i.e. those rated by clients and contractors as comparatively low in terms of current skill level but high in terms of future importance) are:

- Working with and/or directing heavy plant and machinery to achieve biodiversity outcomes;
- Project management and maintaining a timetable of ecological and environmental requirements;
- Delivering site inductions, tool-box talks and 'on the job' training to relevant site staff; and
- Understanding CDM Regulations and their implications for ecological and environmental roles

Other job-specific skills rated below average by clients and contractors generally relate to ECoWs' understanding and appreciation of construction matters on site. These include:

- Experience of construction methods;
- Understanding how construction and civil engineering projects are undertaken;
- Anticipating challenges in construction where biodiversity protection is an issue; and
- Preparing and/or inputting into designs in collaboration with other professionals (Figure 12).

Figure 12 Skills scoring 1: Client/contractor ratings of ECoW job-specific competences



"Ecologists say what mitigation works need to be done and then it's up to the client's architects to interpret this advice and work out how it can be practically achieved. It would be helpful if ecologists could give practical advice on how the design could be altered to meet ecological needs."

Construction client

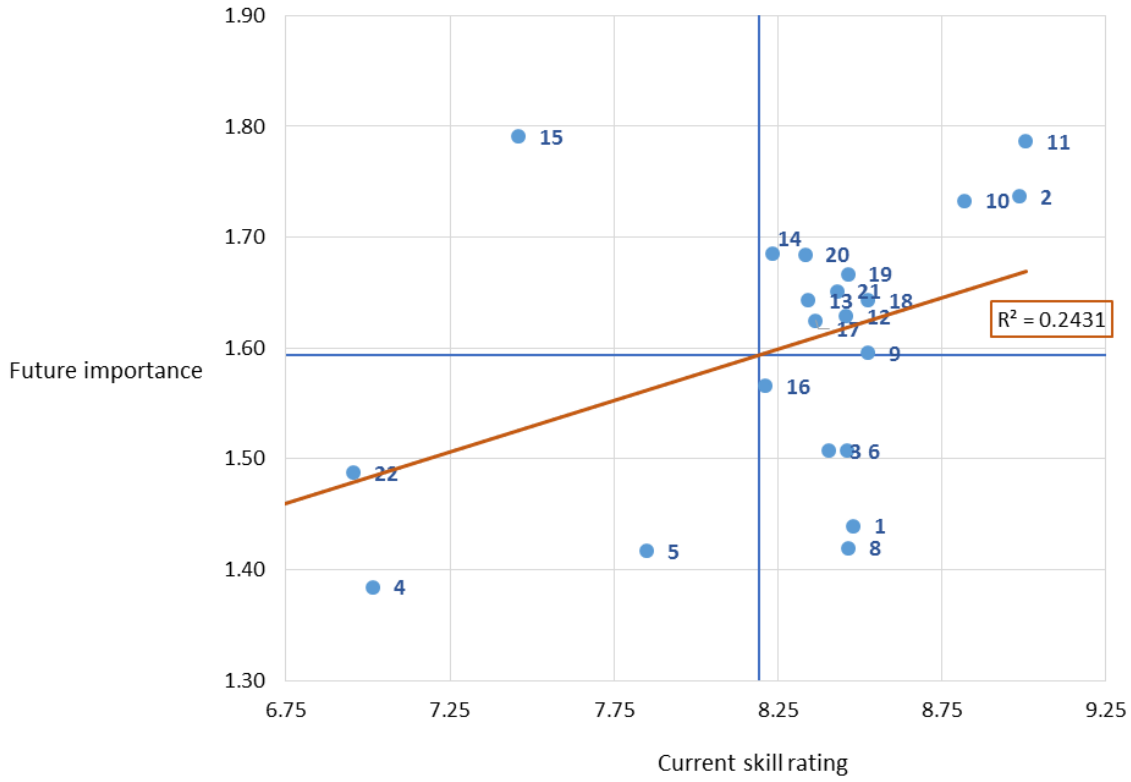
"We employ ecology specialists for their scientific knowledge rather than for their knowledge of construction methods or CMD regulations. It is helpful if they have this knowledge but if they don't we can manage this and provide the required information to the ecologists."

Construction contractor – mainly civil engineering

Average ratings given by ECoW in relation to their own job-specific skills are slightly higher than those given by clients and contractors. However, there are notable overlaps between both respondent groups concerning skills which are rated below average, with ECoW citing:

- Working with and/or directing heavy plant and machinery to achieve biodiversity outcomes;
- Experience of construction methods;
- Understanding how construction and civil engineering projects are undertaken; and
- Anticipating challenges in construction where biodiversity protection is an issue (Figure 13).

Figure 13 Skills scoring 2: ECoW ratings of their own job-specific competences



"I find that not knowing how construction tasks are usually achieved hinders my ability to give advice. There is room for training to teach ecologists the basics of construction and CDM regulations."

ECoW

"I do not feel confident in my delivery of tool box talks. I either feel that I give too much information and the audience switch off or not enough and then the audience doesn't take it seriously."

ECoW

Views are almost equally divided among all audiences as to whether the various listed skills are likely to remain the same or become more important over the next five years. Exactly half of clients/contractors (50%) believe these skills will become more important, compared to 49% who think their level of importance will remain the same. This finding is almost mirrored by individual ECoW, with 47% of the view that the listed skills will increase in importance, compared to 52% who think they will remain the same.

Several clients and contractors acknowledged the difficult role that EcoW have in balancing their role as environmental ambassadors alongside understanding competing commercial priorities of their clients. Many commented that it would be useful if ECoW had more all-around knowledge of building construction methods and what clients are trying to achieve in the development, to help save time and work towards mutually beneficial outcomes.

There is also a call for ECoW to develop greater empathy with what construction companies are trying to do, and to improve how they communicate with site staff, i.e. clearly explaining what environmental mitigation work needs to be carried out and their reasons for doing so, for example why certain areas of grass might need to be left undisturbed.

With respect to report writing skills, a small minority of clients/contractors mentioned that ECoW need to make reports clearer, using less jargon and ensure they are not over-long. Up-front report summaries were suggested to help readers get to the nub of the issues raised.

3.3 ECoW personal attributes and behaviours

Clients and contractors rate the personal attributes and behaviours of ECoW highly, with average ratings for all skills (except one) falling between 7 and 8 out of 10. As with the job-specific competences, experiences are not equal as ratings extended across the full range from 1 to 10 out of 10.

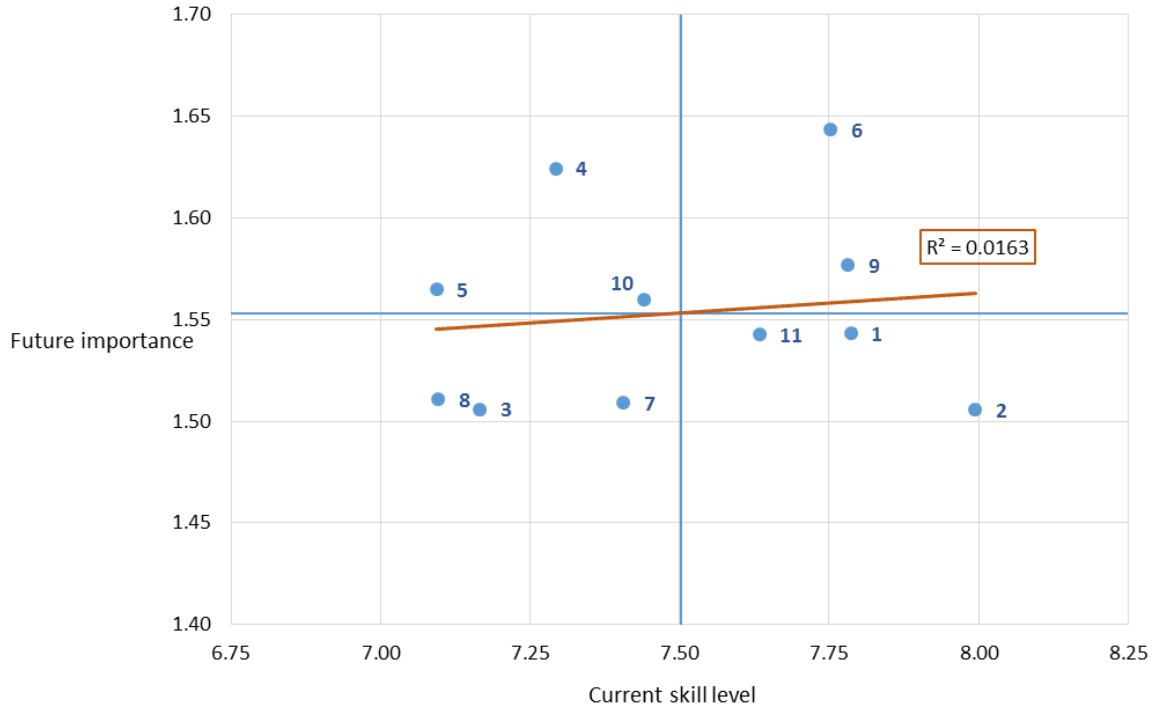
Priority personal attributes and behaviours (i.e. those rated by clients and contractors as comparatively low in terms of current skill level but high in terms of future importance) are:

- Organisation and time management;
- Taking an outcome driven approach to project delivery; and
- Resilient and assertive with an ability to work in high-pressured situations.

Other personal attributes and behaviours rated below average by clients and contractors include:

- Negotiating effectively to resolve conflicts;
- Taking a pragmatic, creative and innovative approach to solving problems; and
- Being a collaborative team player (Figure 14).

Figure 14 Skills scoring 3: Client/contractor ratings of ECoW personal attributes and behaviours



"Ecologists need to be confident in challenging the Council's ecologist rather than complying with their demands unquestioningly."

Construction contractor – mainly buildings

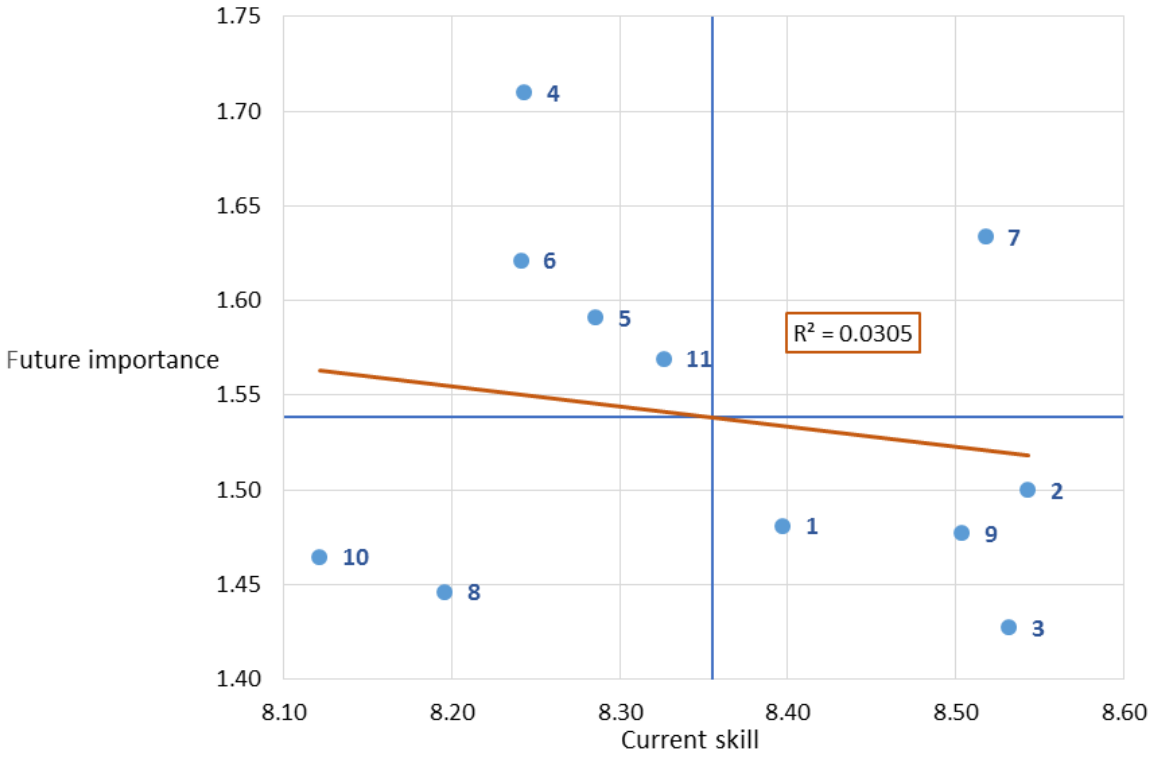
"Ecologists would benefit from being more flexible, willing to compromise and have more involvement in the collaborative planning process at the pre-construction phase and work with contractors and other consultants to anticipate problems."

Construction contractor – mainly buildings

Ratings given by EcoW themselves in relation to their own personal attributes and behaviours are once again higher on average than those given by clients and contractors. The lowest rated skill by ECoW is being resilient and assertive with an ability to work in high-pressured situations, followed by negotiating effectively to resolve conflicts. Skills that fall into the future priority category as mentioned by ECoW include:

- Organisation and time management;
- Attention to detail and high level of accuracy;
- Taking an outcome driven approach to project delivery; and
- Being customer focused and dedicated to meeting stakeholder requirements (Figure 15).

Figure 15 Skills scoring 4: ECoW ratings of their own personal attributes and behaviours



"ECoW works are highly varied and communication is the key. The ability to communicate and knowing when and where to get support is vital in ensuring red lines aren't crossed."

ECoW

"Having less confidence in making decisions and challenging behaviour could make you appear inexperienced and lose the respect of contractors. With indecision there could also be increased costs and timescales where work is delayed or has to be rectified. If unable to take appropriate action when required, this could leader to wider environmental harm."

ECoW

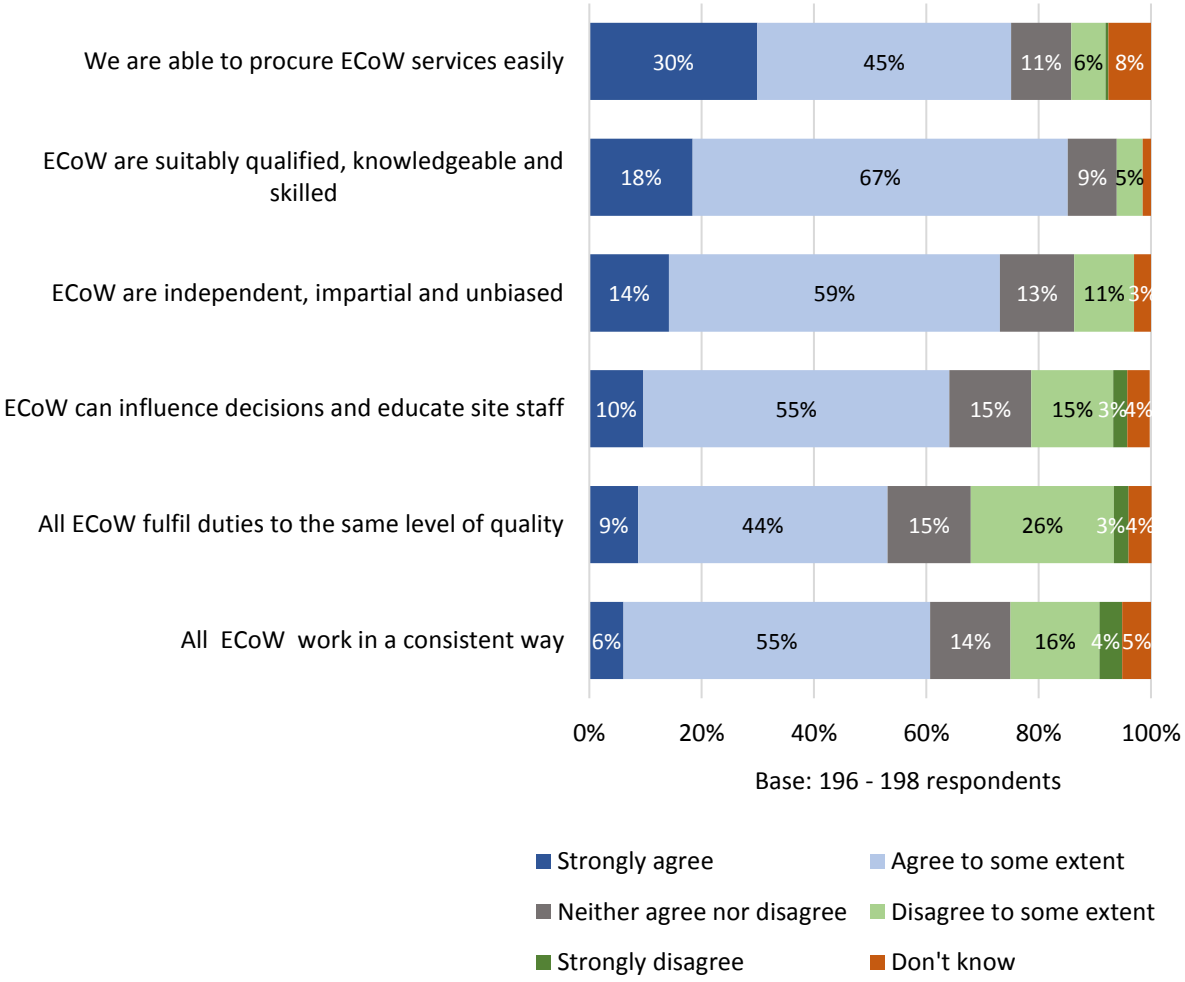
3.4 Additional observations relating to ECoW skills and working practices

Survey respondents were asked to rate the extent to which they agree or disagree with a number of statements relating to their ability to source ECoW and how ECoW work in practice.

Three quarters of clients and contractors (75%) generally agree that they are able to procure ECoW services easily. This finding supports the general ease by which firms report being able to find ECoW and their confidence in being able to source sufficient ECoW to meet their needs going forward. Some 85% agree that ECoW are suitably qualified, knowledgeable and skilled, although more than a

quarter (29%) disagree that all ECoW fulfil their duties to the same level of quality and a fifth (20%) disagree that all ECoW work in a consistent way (Figure 16).

Figure 16 Agreement scale statements (clients/contractors)



Respondents disagreeing in relation to one or more of these statements were asked to provide their reasons. A frequently mentioned issue is that individual ECoW can often interpret environmental legislation in different ways, with some being risk adverse and "following the letter of the law", while others take "a completely different approach". This issue is put down to an apparent absence of common standards and approaches.

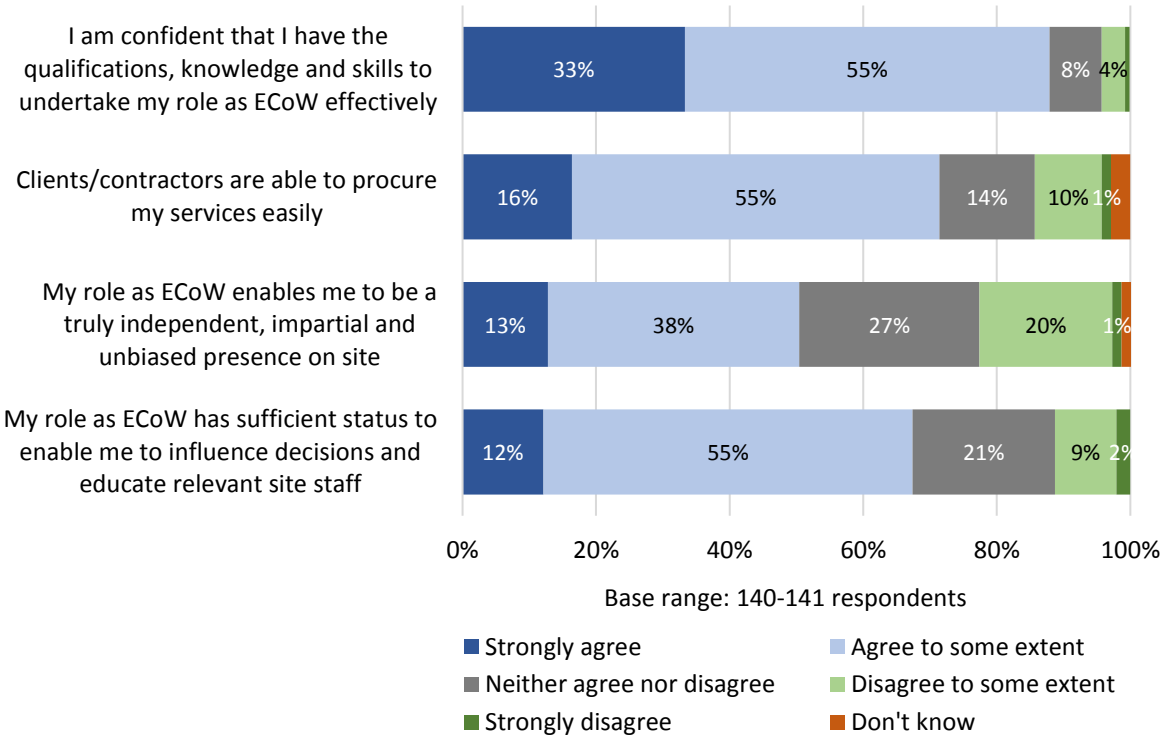
When recruiting ECoW through independent consultancy firms, some clients/contractors report that it can be difficult to fully appreciate the extent of individual ECOWs' expertise, including their specialist areas of expertise. As such it can often be difficult to assess the standard of a consultancy firm's work in advance unless they have been recommended by a third party.

"ECoW can sometimes be seen by construction teams as a necessary evil and not part of the solution to the construction problem. They have to be strong and confident to avoid problems."

Construction contractor – mainly civil engineering

The vast majority of surveyed ECoW (88%) agree that they have the qualifications, knowledge and skills to undertake their role affectively. Almost three quarters (71%) believe their services can be procured easily, and two thirds (67%) feel they have sufficient status to influence decisions and education relevant site staff. ECoW feel but with some element of uncertainty they are a truly independent, impartial and unbiased presence on site, and in fact 48% are either ambivalent or disagree with this point – Figure 17.

Figure 17 Agreement scale statements (ECoW)



Of the minority of ECoW disagreeing with one or more of these statements, several believe that their role is undervalued by clients and seen as a "box ticking exercise" forced upon them as part of planning conditions or by other external bodies. Of those respondents disagreeing that ECoW are an independent and unbiased presence on site, it was noted that where the developer is also the client, it can be very difficult to be truly independent. ECoW therefore have to tread a fine line by upholding protected species legislation whilst not being obstructive to client needs.

"The influence of ECoW will only be accepted if the client is interested in implementing the outcome of the ECoW recommendations. In the rail industry where the planning system doesn't provide a legal framework for anything other than protected species, it is very difficult to promote any biodiversity enhancements."

ECoW

3.6 Impact of skills gaps

Clients and contractors were asked to describe the potential impact of ECoW skills they rated as comparatively weak. The most common answer was 'no impact' (generally due to having sufficient overall confidence in the ECoW they use), but other consequences can include:

- Delays to project timescales;
- Increased costs;
- Quality of work being affected;
- Conflicts arising between ECoW and clients/contractors;
- The risk that contractors fail to work in accordance with relevant environmental regulations; and
- Possible reputational damage to construction firms.

Clients and contractors would like ECoW to develop more construction knowledge so they can better interpret plans/designs and consider in advance what construction methods contractors are likely to employ. That would, in turn, enable ECoW to challenge plans up front if needs be, rather than spotting and raising issues once the work is underway when it can cause delays. Contractors therefore believe ECoW should be asking more questions and thinking about the full sequence of events in construction.

"Ecologists are very well meaning, however sometimes they lack appreciation of the commercial side of projects. If their recommendations cause work to come to a standstill then it's the contractors who pay the price. We realise the need for ecological matters to be taken seriously but there needs to be greater consideration of the financial impact on projects and more in the way of compromise."

Construction contractor – mainly buildings

While ECoW themselves acknowledge that a lack of awareness of construction methods on their part can cause delays, especially where their recommendations are not feasible on site, they feel strongly that the construction industry needs to take some responsibility to better support and involve ECoW, i.e. *"quite often ECoW are treated as separate from everyone else working on site and are not always consulted as often as they should be" (ECoW).*

It was mentioned by one ECoW that a common scenario can involve works reaching a certain stage and then the client urgently asks for ecology advice on work that (with some species) might need

extensive survey effort. On that basis, EcoW feel that knowing approximate timelines of common projects would help them to consider when to 'prompt' clients and hopefully reduce onward delays.

"You have to argue strongly that actually you are relevant and that you do need to attend meetings even if most of it is not applicable to you, because otherwise no-one knows what you do need to know."

ECoW

"The impact [of skills gaps] is minimised by having an ECoW team, therefore I would call upon my colleagues relating to other specialisms, such as birds or pollution prevention. This input is usually costed in to the job."

ECoW

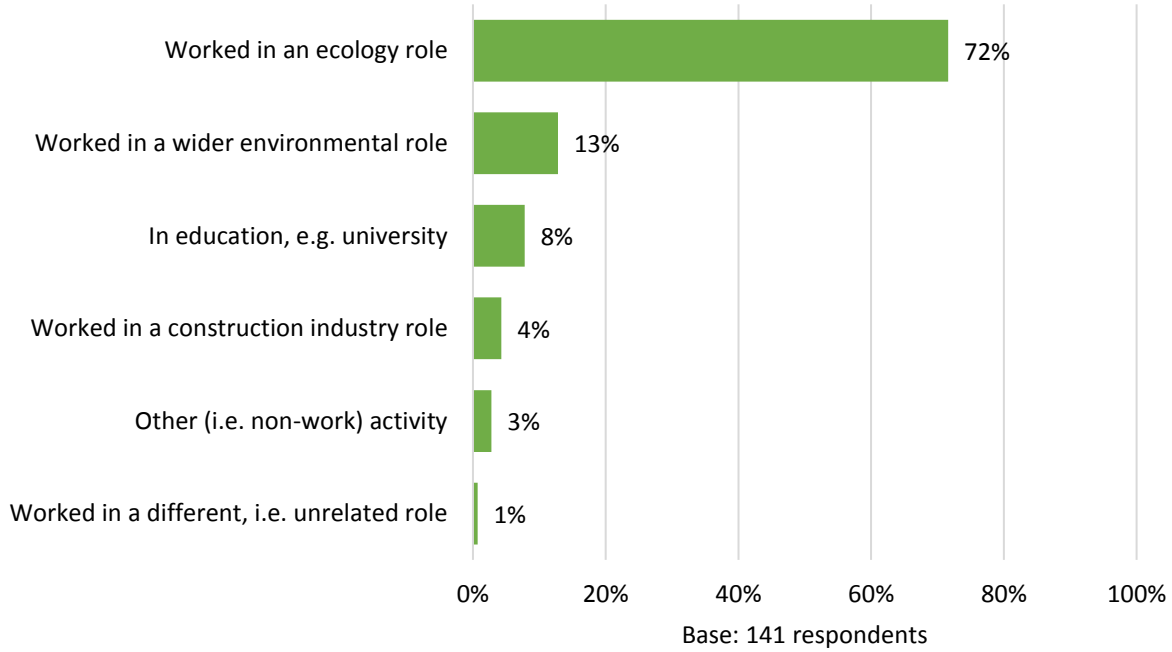
4. Background, Qualifications and Training

This chapter explores the working background of ECoW, their motivations for entering the role, their qualifications and accreditations, as well as current approaches to CPD and views on existing training.

4.1 Background and motivations of ECoW

Directly prior to entering the role, the majority of surveyed ECoW (85%) worked in an ecology or wider environmental role and only 4% held a position in the construction industry (Figure 18). Frequently mentioned former roles include Ecological Consultant or Ecologist (including Junior, Assistant or Senior) and Environmental Coordinator. Others include RSPB Warden, Recreation Manager, Renewable Energy Consultant, Asset Inspector, Woodlands Surveyor, Landscape Architect and Railway Engineer.

Figure 18 Position held by ECoW directly prior to undertaking the role



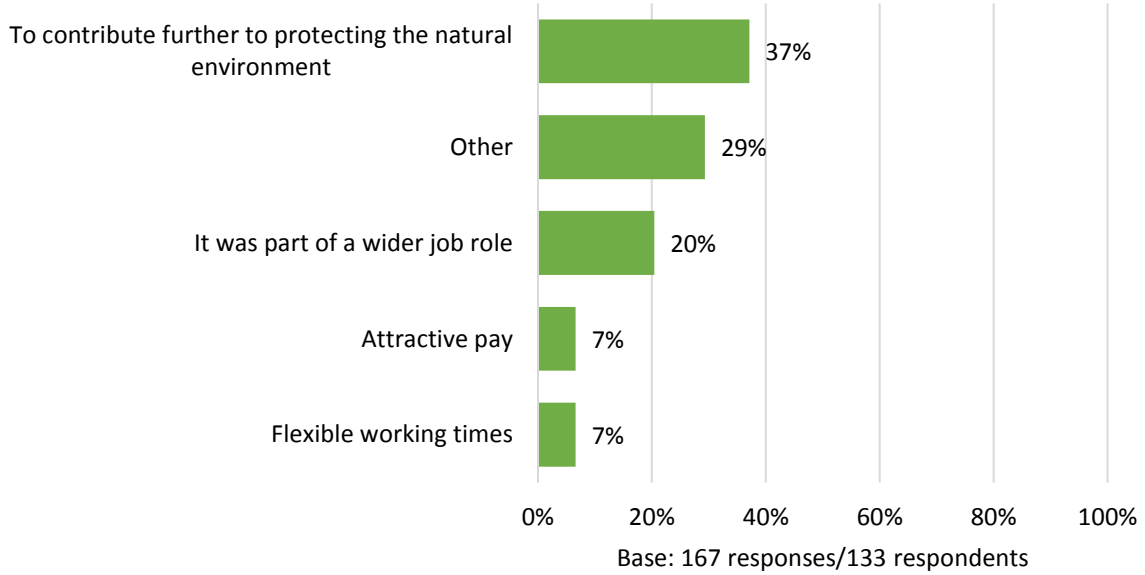
Base: 141 respondents

The main reason why surveyed ECoW chose to enter the role was to contribute further to protecting the natural environment (Figure 19). Other reasons for entering the role mainly relate to this having been a natural progression, career opportunity or expansion to their wider ecology/environmental responsibilities.

ECoW who work for independent consultancies commonly entered the role by embracing ecological work opportunities in construction as they arose, e.g. via tender. Some said that this has not been so

much a 'choice' but a request made of them by senior managers or by contacts in the construction industry.

Figure 19 Reasons for becoming an ECoW



Base: 167 responses/133 respondents

ECoW take pride in the value their role brings to protecting ecology and biodiversity as part of construction projects (including specific species and habitats) and creating positive outcomes for the natural environment. This includes ensuring that measures for ecological impact avoidance, mitigation, compensation and enhancement are effectively adopted and implemented. Another motivating factor includes working collaboratively with project staff and contractors, convincing construction managers and staff of the merit and inherent value in their work, and to help them to view ecology as an interesting part of their project rather than a set of "onerous constraints".

"It is rewarding that once mitigation measures have been designed, that they are correctly implemented, allowing the project to be completed by the deadline and ensuring as little disturbance to protected species as possible."

ECoW

"I really like the opportunity for being involved in challenging and varied site based projects."

ECoW

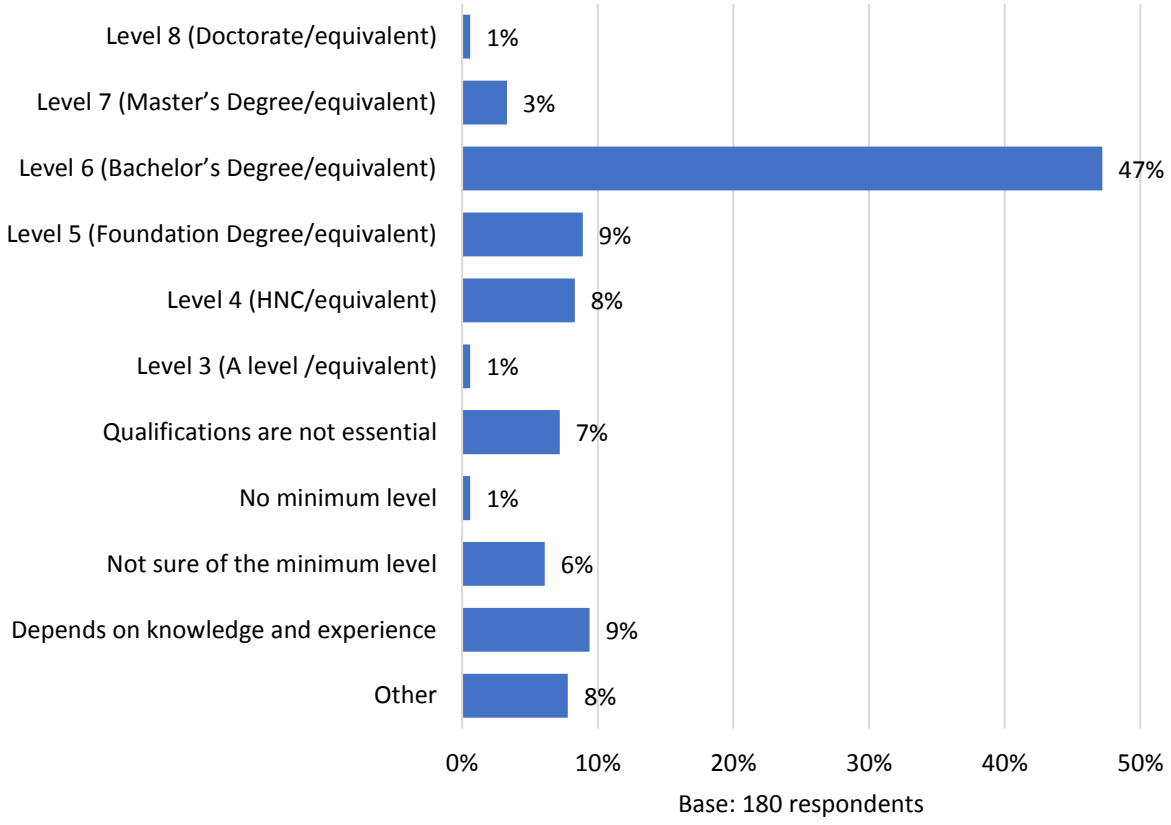
"It was a demand-led business decision to expand my current role."

ECoW

4.2 Qualifications and accreditations of ECoW

Just over half of surveyed clients/contractors require that ECoW are qualified to at least level 6 (equivalent to a Bachelor's degree). Just under a fifth (18%) will accept a qualification below this level while 7% are of the view that qualifications are not essential. A similar minority (9%) feel that qualifications need to be balanced alongside knowledge and experience therefore they do not specify a minimum level (Figure 20).

Figure 20 Minimum qualification level required of ECoW (clients/contractors)



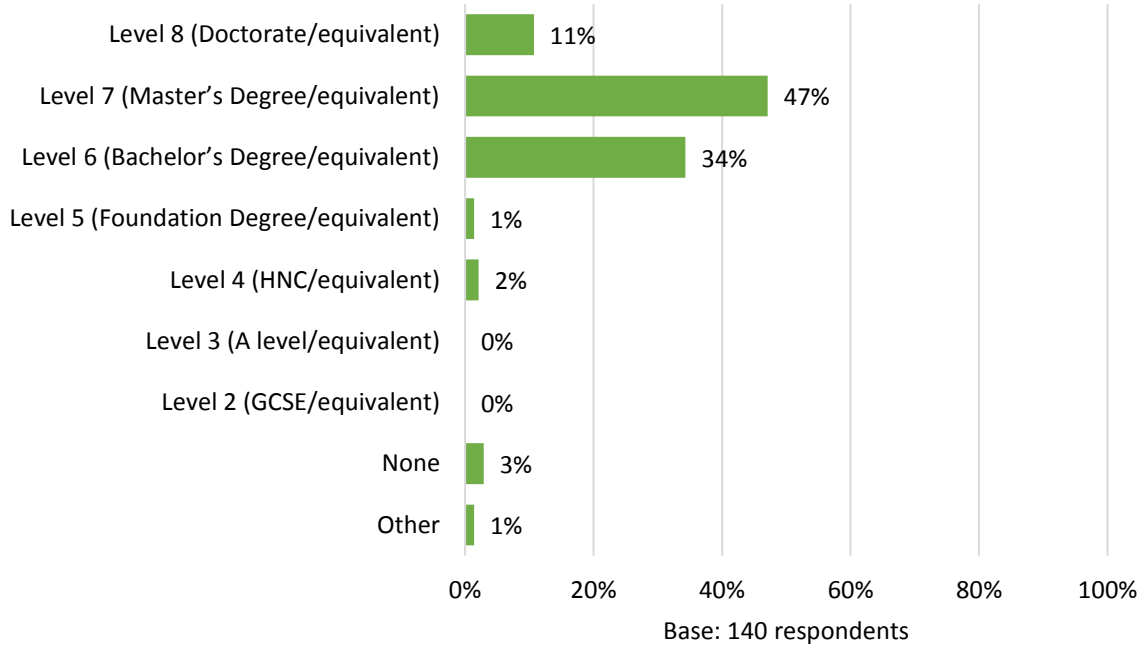
A breakdown of these results by type and size of respondent suggests that construction clients may be slightly more likely than contractors to take the view that minimum qualification levels should depend on knowledge and experience, while micro and small firms may be more likely to view qualifications as not being essential to the role at all (Table 7).

Table 7 Minimum qualification level required of ECoW (by type and size of respondent)

Qual min. level	Contractor - mainly buildings	Contractor - mainly civils	Construction client	Micro/ Small	Medium	Large
Level 8	2.0%	-	-	-	1.8%	-
Level 7	3.9%	4.5%	1.6%	9.1%	3.6%	1.1%
Level 6	41.2%	47.0%	52.4%	33.3%	43.6%	53.8%
Level 5	5.9%	6.1%	14.3%	9.1%	1.8%	13.2%
Level 4	7.8%	12.1%	4.8%	6.1%	16.4%	4.4%
Level 3	2.0%	-	-	-	1.8%	-
Not essential	2.0%	9.1%	9.5%	18.2%	1.8%	6.6%
No min. level	-	1.5%	-	-	-	1.1%
Not sure	9.8%	7.6%	1.6%	9.1%	12.7%	1.1%
Depends on knowledge and experience	9.8%	6.1%	12.7%	6.1%	9.1%	11.0%
Other	15.7%	6.1%	3.2%	9.1%	7.3%	7.7%

Figure 21 shows the percentage of surveyed ECoW that hold their highest qualification at each level. This reveals that 92% are qualified to at least level 6 (Bachelor's degree or equivalent).

Figure 21 Highest qualification levels held by ECoW



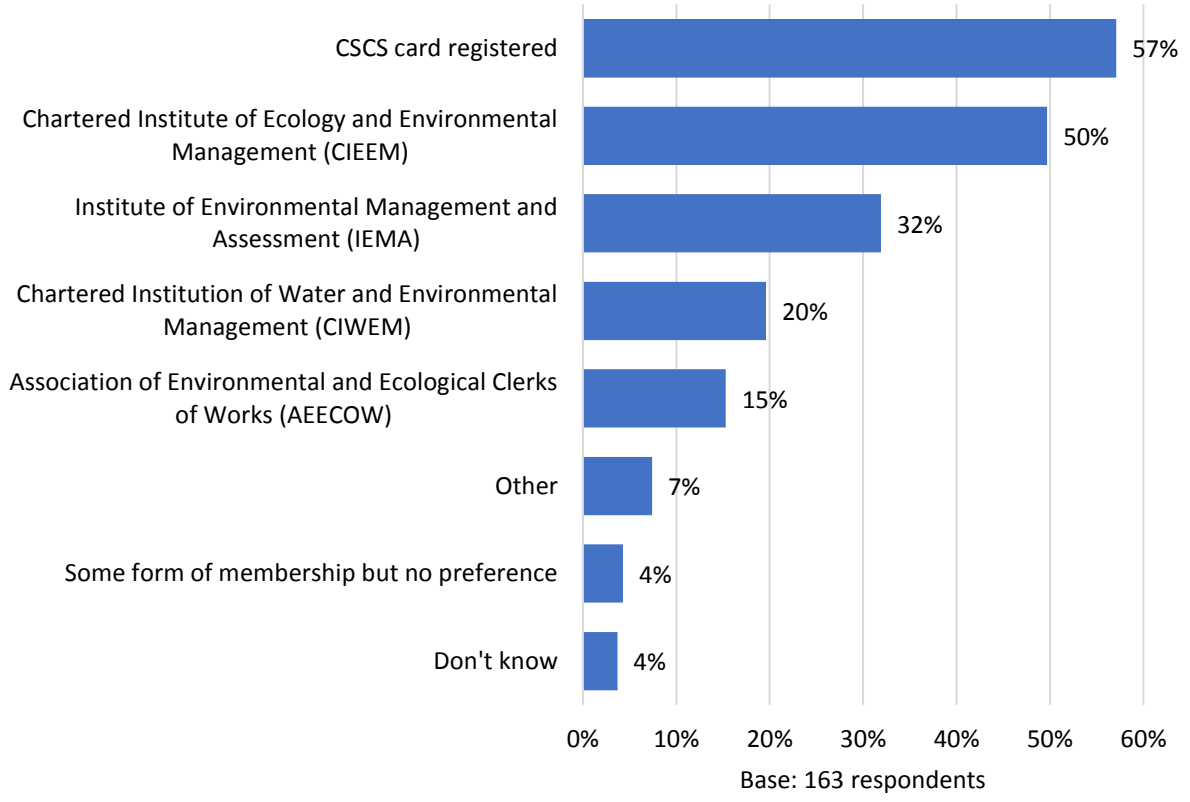
Typical qualifications held at Doctorate level include PhDs in Ecology and other related specialisms, such as Environmental Science, Biological Sciences, Applied Biology, Ornithology, Plant Community Ecology and Restoration Ecology.

Master's degrees at level 7 commonly include MSc qualifications in Ecology, Environmental Conservation, Environmental Management and Environmental Science. Other specialisms include Habitat Creation and Management, Nature Conservation and Rural Resource Management.

Most of those holding their highest qualification at Bachelor's level mentioned degrees in an environmental discipline, such as Environmental Management, Environmental Biology and Environmental Protection. A minority mentioned Ecology qualifications, while others include Geography, Wildlife and Countryside Conservation and Animal Science.

More than half of surveyed clients/contractors (57%) require that ECoW are registered with the Construction Skills Certification Scheme (CSCS). Half (50%) require ECoW to be members of the CIEEM, while lower proportions require membership of other professional bodies working in relation to the environment (Figure 22).

Figure 22 Minimum accreditations required of ECoW (clients/contractors)



Breakdowns by type and size of respondent are provided in Table 8. The results suggest that construction contractors – especially those in civil engineering – could be more likely to require that

ECoW are CSCS card registered than construction clients. Similarly, medium sized firms look more likely to make this a requirement than larger firms. With respect to professional memberships, construction clients, as well as larger organisations, appear more likely to require ECoW to be members of CIEEM than contractors and smaller organisations

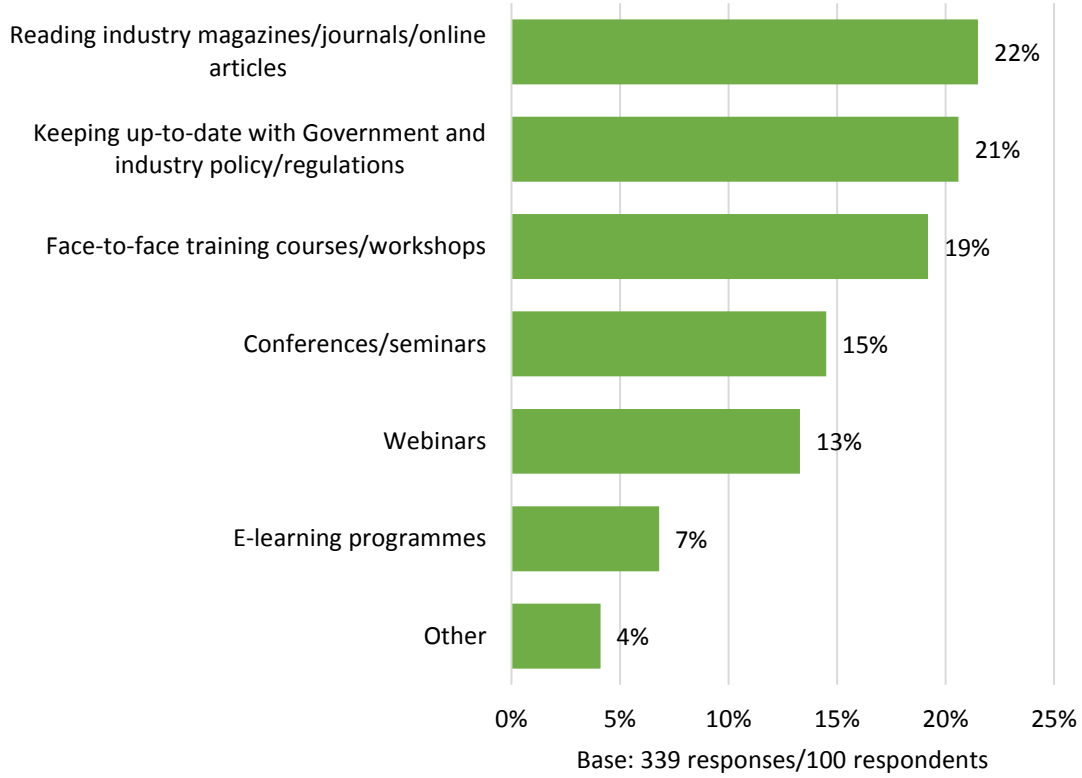
Table 8 Minimum accreditations required of ECoW (by type of client/contractor)

Accreditation and type of client/contractor	Contractor - mainly buildings	Contractor - mainly civils	Construction client
CSCS card registered	53.1%	77.8%	35.3%
Chartered Institute of Ecology and Environmental Management (CIEEM)	34.7%	36.5%	80.4%
Institute of Environmental Management and Assessment (IEMA)	28.6%	44.4%	19.6%
Chartered Institution of Water and Environmental Management (CIWEM)	16.3%	20.6%	21.6%
Association of Environmental and Ecological Clerks of Works (AEECOW)	10.2%	17.5%	17.6%
Other	10.2%	4.8%	7.8%
Some form of membership but no preference	8.2%	1.3%	3.9%
Don't know	8.2%	3.2%	-
Accreditation and size of client/contractor	**Micro/Small**	**Medium**	**Large**
CSCS card registered	60.6%	66.0%	48.7%
Chartered Institute of Ecology and Environmental Management (CIEEM)	30.3%	32.1%	69.7%
Institute of Environmental Management and Assessment (IEMA)	18.2%	35.8%	34.2%
Chartered Institution of Water and Environmental Management (CIWEM)	21.2%	20.8%	17.1%
Association of Environmental and Ecological Clerks of Works (AEECOW)	21.2%	11.3%	14.5%
Other	15.2%	5.7%	5.3%
Some form of membership but no preference	3.0%	11.3%	-
Don't know	6.1%	5.7%	1.3%

4.3 CPD and training

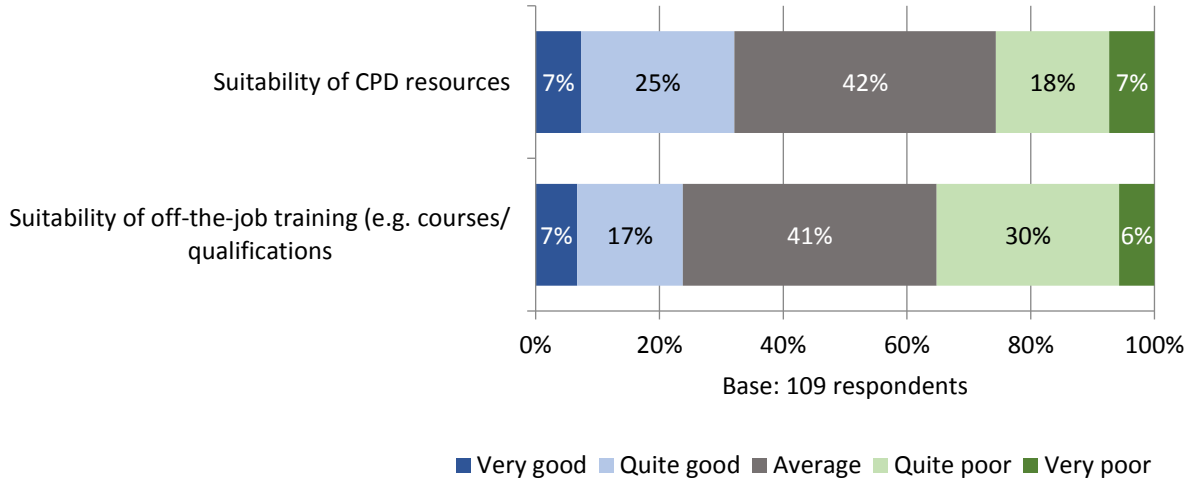
Surveyed ECoW undertake a wide variety of Continuing Professional Development (CPD), with the most popular being informal activities such as reading industry press and keeping up to date with Government and industry policy/regulations. Together these account for 43% of activities. Face to face CPD (via training courses, workshops, conferences and seminars) make up just under a third of activities (32%) while remote learning via webinars and e-learning programmes accounts for a fifth (20%). Responses classified as 'other' include learning from colleagues, on-the-job training and voluntary work (Figure 23).

Figure 23 Mix of CPD activities undertaken by ECoW



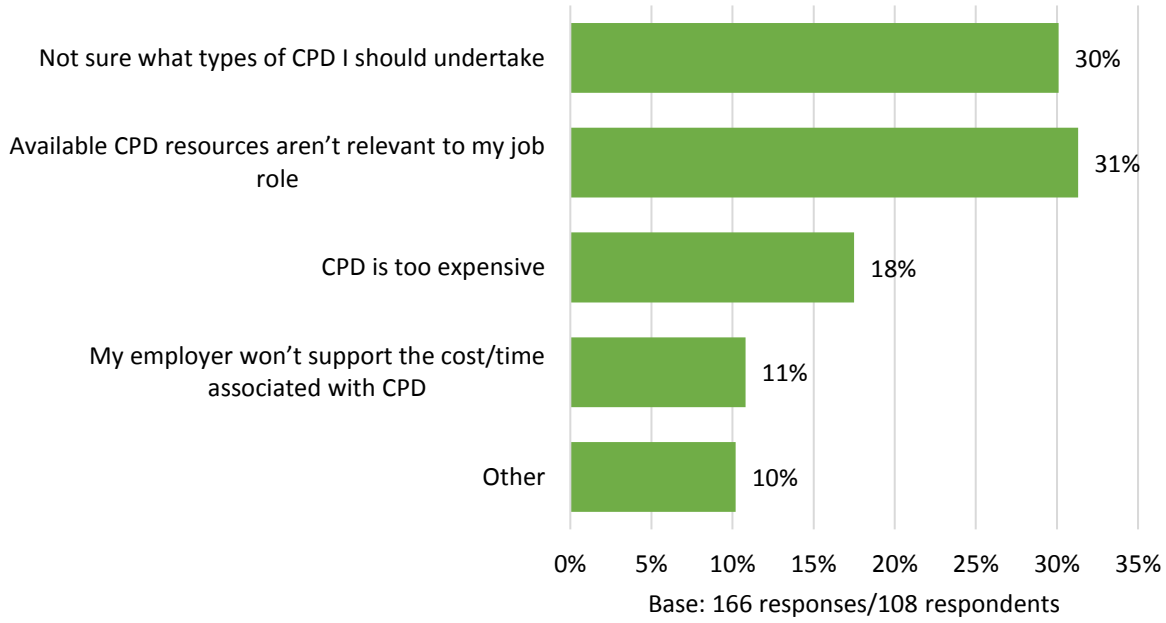
Views are divided on the quality of CPD and training to support ECoW in their role. Only a minority (32%) believe CPD resources are generally good, with even fewer (24%) favourable about the suitability of off-the-job training and qualifications (Figure 24).

Figure 24 Suitability of CPD and off-the-job training



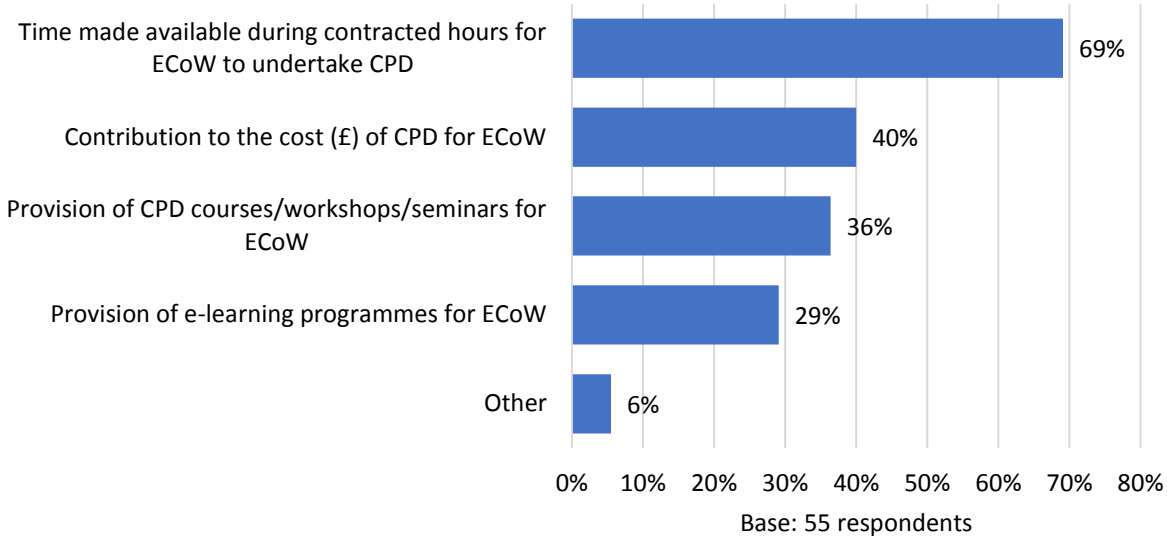
The most common barriers faced by ECoW to undertaking CPD are that they are unsure which types of CPD they should undertake, followed by existing available CPD resources not being seen as relevant to their role (Figure 25). Barriers classified as 'other' include finding the time, a perceived lack of need, and lack of locally available courses (specifically "outside of the south of England").

Figure 25 Barriers to undertaking CPD



Clients and contractors were asked through the survey what types of CPD support they make available for ECoW. The landscape is mixed, with more than two thirds (69%) make time available during contracted hours and less than half (40%) contribute to the cost (£) of CPD for ECoW (Figure 26).

Figure 26 CPD made available by clients/contractors



Breakdowns by type and size of respondent are set out in Table 9. The results point to construction clients and large organisations being comparatively more likely to contribute to the time and cost of CPD than contractors, while contractors (especially those in civil engineering) seem to be more active in providing CPD courses in-house, including e-leaning programmes.

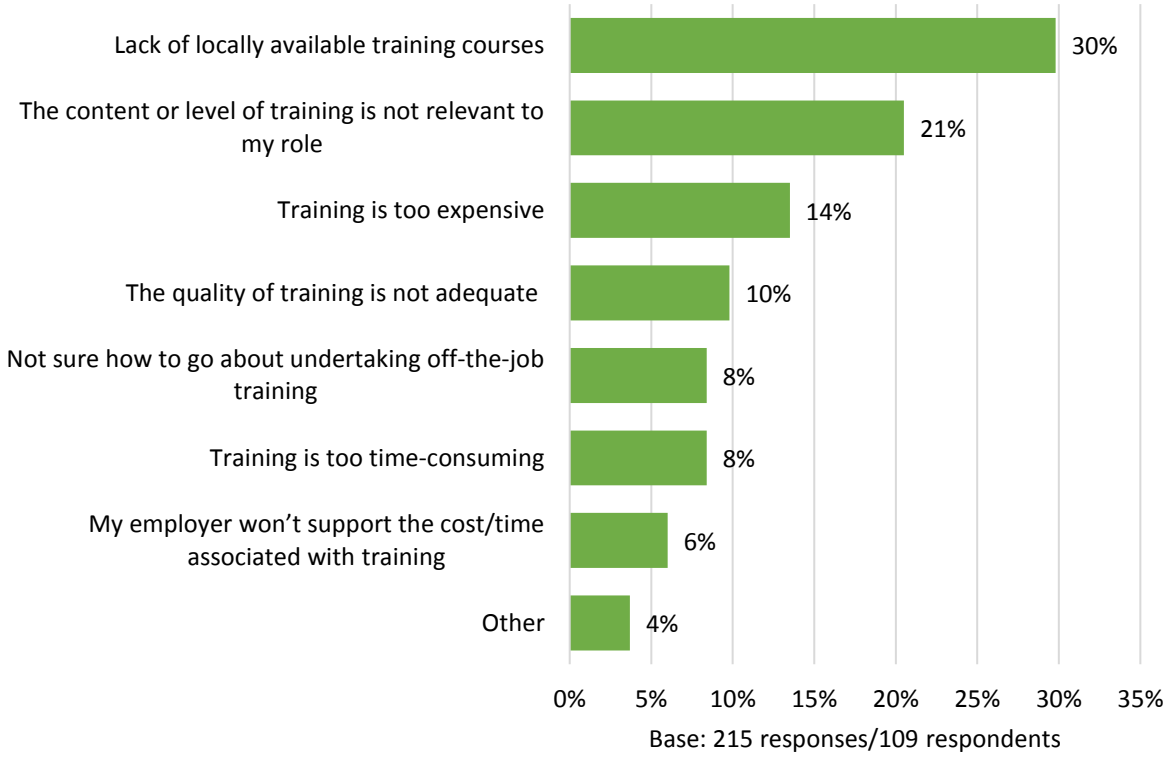
Table 9 CPD made available by clients/contractors (by type and size of organisation)

CPD contribution and type of client/contractor	**Contractor - mainly buildings**	**Contractor - mainly civils**	**Construction client**
Time made available during contracted hours	64.7%	54.5%	93.8%
Contribution to the cost (£) of CPD for ECoW	11.8%	45.5%	62.5%
Provision of CPD courses/workshops/ seminars for ECoW	23.5%	45.5%	37.5%
Provision of e-learning programmes for ECoW	17.6%	40.9%	25.0%
Other	-	4.5%	12.5%
CPD contribution and size of client/contractor	**Micro/Small**	**Medium**	**Large**
Time made available during contracted hours	61.5%	27.3%	87.1%
Contribution to the cost (£) of CPD for ECoW	38.5%	18.2%	48.4%
Provision of CPD courses/workshops/ seminars for ECoW	-	81.8%	35.5%
Provision of e-learning programmes for ECoW	30.8%	27.3%	29.0%
Other	-	-	9.7%

Drilling down into the numbers, those organisations which make time available for ECoW to undertake CPD during contracted hours offer an average of 59 hours per year per ECoW (with the most common answer being 80 hours and the maximum being 150 hours). Of those organisations which contribute to the cost of CPD for ECoW, the average contribution is reported to be £1,275 per year per ECoW (with the most common answer being £350 and the maximum being £6,000.

The biggest barriers faced by ECoW in undertaking off-the-job training are reported to be lack of available training courses (30% share of responses) followed by the content or level of training not considered relevant to the role (21% share) – Figure 27. Barriers classified as 'other' include finding the time, a perceived lack of need, finding suitable cover to enable attendance at training events, and lack of interest in training on the part of the employer.

Figure 27 Barriers to undertaking off-the-job training



5. Future Skills and Training Needs

Looking towards the future, this chapter explores how the role of ECoW needs to change, the level of appetite for participating in a programme of upskilling, and suggested content for a possible national training programme for ECoW.

5.1 The role of ECoW in the future

From a client/contractor perspective

The survey asked how, if at all, respondents see the role of ECoW needing to change over the next five years. A common argument is that ECoW need to become more involved in the construction process (i.e. work less in isolation) and develop greater awareness and knowledge of practical aspects of construction. This means having greater input to the design process, understanding project management, the building regulations, CDM, and the pressures and constraints that can be faced by contractors.

While there is a general acceptance that ECoW need greater status and prominence on site, some mentioned that ECoW should be more proactive in building relationships and working more closely with contractors. This, it was argued, would lead to a two-fold benefit:

1. A deeper understanding among ECoW of the feasibility of their recommendations in relation to site plans; and

2. Earlier identification of any construction plans that might compromise the local ecology.

Several contractors would also like to see ECoW develop the confidence and negotiation skills to effectively challenge what they view as inflexible and non-pragmatic restrictions and rulings that can sometimes be imposed by certain national bodies.

"We are currently delayed from starting work on one site by four months because [the national body] insists we create an additional pond specifically for newts, even though the council ecology officer and our own ecology consultants agree that it would be better to incorporate this function into a separate pond that has already been designed for sub-drainage purposes."

Construction Contractor

"I think we will see ECoW becoming more integrated into the whole lifecycle of a development project. More environmental input is needed before the construction stage starts so that design work is appropriate for the constraints on site."

ECoW

Clients and contractors generally agree that stricter EU legislation in recent years has led to ECoW playing a greater role in construction projects, and many recognise the importance of ECoW keeping up to speed with changes to environmental legislation.

Brexit is currently creating uncertainty over how legislation will change, with mixed views as to whether this will become stronger or more "diluted" as a result. Most feel that current EU legislation will be reduced when transferred to UK law, leading to fewer ecological surveys taking place ahead of works commencing in an effort to speed up development activity and save costs. This scenario is expected to make the ECoW role more difficult where ecological constraints have not been identified in advance. There are concerns among some ECoW that protection of European protected species will be weakened and that that some house builders may be less inclined to implement good practice if this stands in the way of meeting commercial targets.

One major contractor noted that increased development works across the UK means there are fewer areas for relocating protected species. As such, more ecological mitigation work and expertise is likely to be needed to protect certain species.

<u>From the perspective of the ECoW</u>

A key challenge from the perspective of some ECoW is that their role is not always well respected on site and that tight budgets and commercial pressures mean industry is often focused on tackling only the most essential ecological issues. Conversely, others feel that the tide is starting to turn and that their role is now becoming better integrated into projects. In particular there is mention of noticeable behavioural change among site managers who are gradually seeing ECoW as a help and solution rather than a hindrance to the construction process.

A minority of ECoW raised concerns that the rise of major infrastructure projects, such as smart motorways and the HS2 rail link, could mean that increasing demand for ECoW risks the quality of ecological work slipping. With the pressure to push projects through with tight deadlines, there is a concern that contractors will favour employing consultants who impose less stringent interventions. One ECoW indicated that there could be a greater push in the future towards lessening the requirement for independent ecological expertise in favour of deploying site 'ecology champions' from within the existing construction workforce who would simply "bolt on" biodiversity training to their current job role.

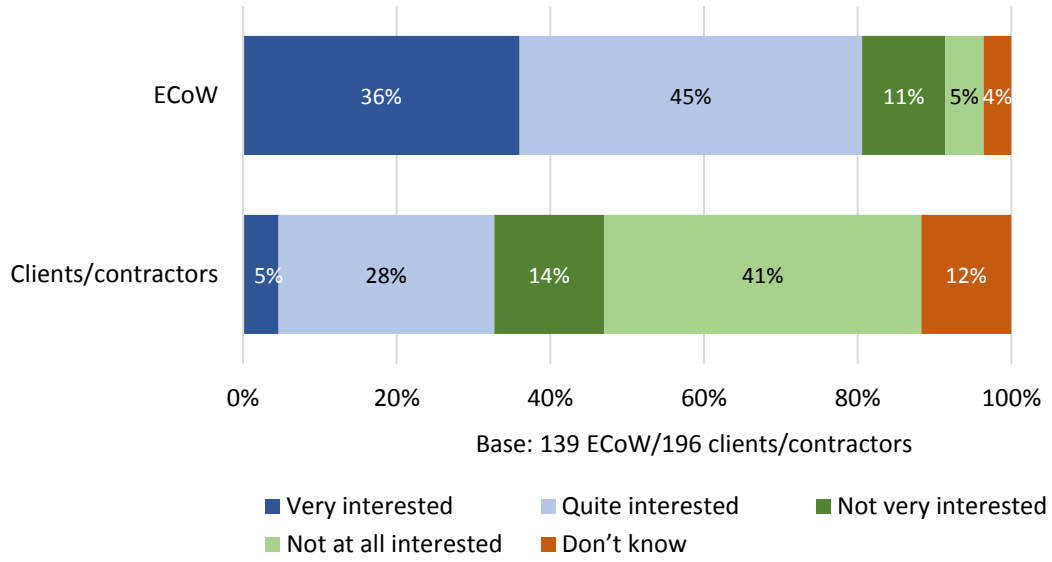
Surveyed ECOW were asked what additional services they would like to offer in the future but are currently unable to do so due to a lack of knowledge or skills. A limited number of suggestions were received, with the most common (each mentioned by more than one respondent) being

watercourse protection (including quality control, pollution and drainage), followed by waste management/monitoring, use of drone technology, tree protection and bat protection.

5.2 Shaping future training content

There is a strong level of interest among surveyed ECoW for taking part in future initiatives aimed at improving/upskilling the role, with 81% interested in taking part (36% 'very interested'). This is not evident to the same degree among clients and contractors, with just over a third (34%) willing to be involved (Figure 28)

Figure 28 Interest in taking part in initiatives to upskill the role of ECoW



"I would like to see the role of ECoW more formally described and defined, including the training needed. Perhaps different levels or classes of ECoW are needed."

ECoW

The survey asked clients and contractors what they feel the top three priorities should be for improving, qualifying or upskilling the role of ECoW in the future. All audiences (including ECoW) were then asked what a possible programme of future training for ECoW should look like, including content.

The responses to both of these questions were very similar and the most common suggestions are set out in Table 10, ranked from most to least cited.

Table 10 List of suggested ECoW training content

No.	Core theme	Detail (from clients/contractors survey)	Detail (from ECoW survey)
1.	Knowledge of construction	Knowledge of practical construction processes, methods and techniques (including sequencing of works)	Understanding of scheme/project objectives and construction methods, including how, when and why certain processes occur and the critical risk points within a development
2.	Commercial awareness and 'the bigger picture'	Working effectively in a political environment and balancing the needs of clients/contractors with environmental considerations Appreciating the constraints and pressures faced by clients and contractors in terms of time, cost and quality Being able to propose pragmatic and workable solutions, and understanding the costs and implications of those decisions	Being able to distinguish between legal obligations and pragmatism
3.	Policy, legislation and licensing	Wide ranging knowledge of policy and legislation (environmental and construction), including CDM and health and safety (especially working near plant and machinery) Up to date knowledge of licensing requirements	Wide ranging knowledge of policy and legislation (environmental and construction), including CDM and health and safety (especially working near plant and machinery) Up to date knowledge of licensing requirements
4.	Communication, collaboration and relationship building	Collaborative/team working, relationship building Being able to effectively advise and articulate information to clients/contractors in a language that non-specialists can understand	Developing effective relationships with all stakeholders Being collaborative and assertive but non-confrontational; being calm and patient

No.	Core theme	Detail (from clients/contractors survey)	Detail (from ECoW survey)
5.	The planning process	Knowledge of the planning process from start to finish Being aware of timescales for when ecological/survey work needs to commence and the implications of missing deadlines	Ensuring that ECoW are involved from the earliest possible point within the development process, e.g. by being part of the design team
6.	Confidence, assertiveness and problem solving	Being effective in resolving conflicts by putting forward convincing and appropriate solutions Being able to challenge rulings or restrictions made by other bodies that look to be disproportionate, and being effective in conflict resolution	Being confident, meticulous, organised and pragmatic
7.	Report writing	Writing more consistent nationally standardised reports Making use of up-front reporting summaries that set out the main issues Using clear/simple language without jargon	Writing more consistent reports
8.	Specific ecology topics	Having broad knowledge across a range of species Understanding endangered and protected species and how they can be controlled Knowledge of water courses and water quality management Carrying out invertebrate surveys Knowledge of dangerous plants	Understanding of endangered and protected species and how they can be controlled Waste management, including spills, incident management, fly tipping and dumping; Silt mitigation Hydrology, including water sampling and interpretation

Additional suggestions from individual ECoW include:

- Case studies, covering themes such as: 1) ecological issues that have been resolved and how; 2) scenarios that ECoW can face on site, from discovering dead bats to spillages; and 3) when to work beyond or in opposition to protected species guidance;
- Toolbox talks, including what they should cover and how often they should be undertaken;
- Undertaking higher level environmental audits on site; and
- Guidance on career pathways for the role.

"The role requires the widest possible knowledge of ecology and legislation, therefore training should be undertaken over two to three years with a mentor, and competences should be signed off on site."

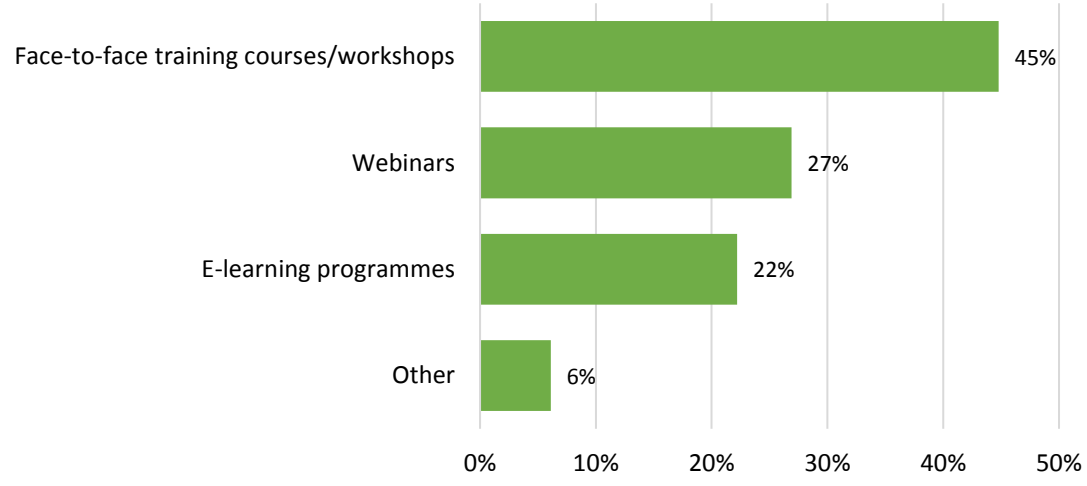
ECoW

"Ecologists get a hard time because of a lack of knowledge of how construction works. The construction industry therefore needs to be involved in their training."

ECoW

ECoW were asked how they think a future training programme should be delivered, with the most common answer (accounting for a 45% share of responses) being face-to-face training courses and workshops. This is followed by webinars (27% share) and e-learning programmes (22% share). Responses classified as 'other' include site-based training and articles in industry publications (Table 29).

Figure 29 Preferences for how a future training programme should be delivered



Base: 279 responses/139 respondents

6. Conclusions and Recommendations

6.1 Conclusions

1. **The next two years are expected to see steady growth in demand for ECoW, however, there is uncertainty over the impact of Brexit on environmental legislation affecting the UK and what this will mean for the scale of ecological protection in construction.**

   Demand for ECoW in the construction industry looks set to grow steadily. The survey of clients/contractors found that that 38% expect to need increasing numbers of ECoW over the next two years compared to 40% who expect demand to remain the same and 4% who envisage a reduction. The average number of ECoW needed per client/contractor organisation is expected to grow from 6.1 (past 12 months) to 6.4 over the next 12 months (a rise of over 4.9%)[9].

   The expected rise in demand is predicated on increasing numbers of construction new work orders as experienced by contractors (especially for large scale infrastructure projects), coupled with more emphasis being placed on environmental protection and biodiversity issues as part of development projects.

   Whilst purely speculation at this stage, most respondents who commented on the issue of Brexit are expecting a weakening of environmental legislation affecting the UK post 2019, particularly in the interests of speeding up development activity. This could have a knock-on impact on the amount and scale of commissioned ECoW work.

2. **Clients and contractors are generally able to find sufficient ECoW to meet demand, and there do not appear to be any serious concerns either about capacity of ECoW or the risk of falling numbers of ECoW available to construction.**

   The survey findings indicate there is generally sufficient supply of ECoW to meet client/contractor demand. Just under three quarters of surveyed firms (71%) say they have found it easy to source ECoW over the past 12 months (8% said difficult) with the majority (82%) being generally confident in being able to source sufficient ECoW to meet their needs over the next year.

   Instances of recruitment difficulties appear relatively limited. Of 131 surveyed firms posting job vacancies for ECoW in the past 12 months, only eight respondents reported a total of 10 posts that were 'hard to fill' for whatever reason.

[9] These averages are based only on data provided by respondents who gave ECoW numbers for the past 12 months as well as an estimate for the next 12 months.

The survey of individual ECoW suggests there is sufficient capacity and willingness to take on additional work, with each ECoW, on average, prepared to work an additional five days per month in the role if needed. This, coupled with the fact that the majority of ECoW (81%) say they are likely to stay working as an ECoW in the construction sector over the next five years, suggests there is minimal risk of a loss of supply, at least for the next few years.

3. **ECoW are hired in a variety of different ways and there are differences in the minimum requirements of clients/contractors when it comes to the qualifications, accreditations and experience of ECoW working on construction projects.**

   Most recruitment of ECoW appears to take place through specialist environmental consultancies, while some clients and contractors also employ ECoW directly and others do so indirectly through the supply chain. These mixed approaches seem to work successfully although the survey has revealed that not all clients and contractors view qualifications as essential in relation to experience and, when contracting EcoW through other agencies, clients/contractors tend to rely on these firms to supply staff who are suitably competent.

   There is a risk that growing demand for ECoW services in the future could be met by firms and individuals who are not suitably qualified and competent, and that these individuals could be undertaking work without sufficient checks and balances in place as to their competence.

4. **There is a general consensus among clients, contractors and individual ECoW as to the skills gaps that ECoW face, particularly an understanding of construction methods and processes, and the need to be more assertive, resilient, collaborative and able to negotiate effectively.**

   On a scale from 1 'unskilled' to 10 'perfectly skilled', clients and contactors rate job-specific skills of ECoW favourably, with an overall average score of 7.5 out of 10. Weaker areas relate to ECoWs' understanding of the wider construction environment, including construction methods and the sequence of activities involved in c projects, as well as the types of challenges and competing pressures that contractors need to balance alongside ecological considerations.

   These views are largely echoed by individual ECoW, whose own skill ratings follow a similar pattern. This is further reinforced by ECoWs' views on their own priority future training needs, for which they call for more training on construction methods and processes; being able to communicate effectively and assertively with contractors on site (including negotiation and conflict resolution); and a better understanding of construction legislation/regulations and health and safety matters on site.

   Another key issue is the apparent lack of consistency between ECoW when interpreting environmental legislation, with some viewed by clients/contractors as being more risk averse (and hence a 'hindrance' to project fulfilment) than others. This suggests that ECoW would benefit from a clearer set of standards and decision-making framework, although it must be recognised that any project is likely to present unique challenges where individual professional

judgment is needed, and that more focus may be needed on improving those decision-making skills.

5. **Where there is a lack of mutual understanding and appreciation of the importance of other parties' role and priorities, there arises negative implications for client/contractor and individual ECoW relationships.**

   The impact of ECoW skills gaps – particularly a lack of understanding of construction methods and what can feasibly be realised as part of the design and build process – can lead to projects becoming delayed and this is acknowledged by clients, contractors and ECoW alike. This appears to be a two-fold issue, relying not only on more and better training of ECoW in aspects of construction and developing more collaborative relationships with construction teams, but more support from those construction teams to involve ECoW and encourage a shared outcome-focused approach.

6. **There are clear opportunities for developing a more structured training programme for ECoW and 81% of surveyed ECoW are interested in taking part.**

   In addition to the skills gaps identified through the survey, there are variations in the amount and nature of CPD undertaken, with more than three quarters of ECoW of the view that off-the-job training for the role is either average or poor.

   While surveyed ECoW undertake an average of 19 hours CPD per year, this number ranges from zero to 120 hours, with the most common amount being nil. The most popular activities are informal by nature such as undertaking industry-relevant reading and keeping up to date with policy and regulations. Views are divided among ECoW concerning the quality of existing CPD and training, with just over two thirds (68%) of the view that CPD resources are average or poor, and more than three quarters (77%) of the same view about the suitability of existing off-the-job training.

   These findings suggest that a more structured training programme, focusing on competences identified as being comparatively weaker by clients, contractors and ECoW alike (see point 5), would be valuable. There appears to be general support for such a programme, with 81% of surveyed ECoW saying they would be interested in taking part in future initiatives aimed at improving/upskilling the role, with the most favoured delivery method being face-to-face workshops.

6.2 Recommendations

The following recommendations are intended for CECA/CIEEM as appropriate.

1. **Further explore the feasibility and options for developing a national programme of training and accreditation for ECoW in the UK.**

    - Continue to work with CITB and other organisations, as appropriate, to identify and exploit funding options;

    - Determine how (and by whom) training content will be designed and accredited, and the possibility of different levels/tiers of training and accreditation depending on the experience and seniority of ECoW;

    - In developing a training model the following are important considerations: i) a new and 'centrally located' training facility for delivering face-to-face workshops; ii) a collaborative network model involving the facilities and resources of other industry bodies, training providers and/or employers; iii) a field-based model where trainers visit ECoW on site or at their normal place of work; iv) remote and virtual training; or v) a hybrid approach.

    - Explore governance options, including operational arrangements for sourcing tutors, coordinating places, taking fees and managing all aspects of delivery;

    - Identify resources and facilities that would provide the optimum setting for training, with access to necessary resources, be it face-to-face venues, webinar technology or other online training solutions and/or written guidance, e.g. case study materials;

    - Examine likely costs involved (set-up and on-going running costs) and determine appropriate fees to charge trainees, including any discounts depending on existing membership/accreditations held;

    - Consider a more detailed market demand study, testing out possible training content, proposed delivery arrangements, fees, as well as canvassing support to put in place delivery arrangements.

2. **Using the findings from this research and other industry intelligence, develop the content of training for ECoW consisting of the following potential broad topics/units, learning outcomes, knowledge and understanding elements:**

    Key themes/topics to consider:

    - Knowledge of practical construction methods and processes;

- Commercial awareness and balancing the needs of clients/contractors with environmental considerations; negotiating skills;
- Up-to-date knowledge of environmental and construction legislation, as well as the planning process;
- Communication and relationship-building skills with construction teams, including effective collaboration and conflict resolution skills;
- Developing effective reports; and
- Upskilling on specific ecology topics, such as endangered and protected species, waste management and hydrology.

3. **Consider additional research to more fully understand existing training and CPD activities being undertaken by ECoW and the difficulties currently faced.**

   The amount and nature of CPD activity being undertaken by ECOW is highly variable and there are disparities in the level of support (in terms of cost and time) offered by employers. This in turn could be a key reason why clients and contractors report variations and inconsistencies in the quality of work and approaches undertaken by ECoW.

   On that basis, consider a deeper examination of which current CPD resources are being used, resources that are most/least preferred (including why), specific gaps in content and available resources what additional CPD is needed and in what form. This information could be taken forward to inform an expanded offer of CPD resources (e.g. electronic or tied in to a wider training programme) or possibly the development of a central repository of information and links to third party resources.

4. **Look into developing a national standard and framework for ECoW professional practice, including tools and templates to support ECoW to provide a more consistent service.**

   This could take the form of a quality handbook/code of conduct that sets out expectations of ECoW in terms of minimum qualifications, experience, job-specific skills, personal attributes and behaviours. Guidance could be incorporated that sets out: how to discharge responsibilities in line with relevant legislation; how to manage conflicting agendas; assessing risks and their potential implications; communicating messages effectively; and deliberation techniques to help reach informed and sensible judgments. The handbook could also incorporate tools and good practice for developing effective written reports, such as a style guide, template report structure and guidance on use of language in reports.

5. **Work with partners such as CITB and other trade/professional bodies to encourage a more mutually supportive culture between construction firms and ECoW based on working to 'shared outcomes'.**

   A more collaborative approach would help to reduce the risk of delays to projects by ensuring ECoW are fully appreciative of what ecological interventions would be feasible as part of designs and plans, whilst also helping construction teams to know whether their proposed construction activities will comply with relevant environmental legislation.

   Whilst ECoW have a clear responsibility to develop productive and collaborative relationships with construction teams, including their knowledge and understanding of design and construction processes on individual projects, more could be done by some clients and contractors to proactively involve ECoW at key stages in the development process. An example could be to include ECoW in supply chain roadshows organised by developers where the purpose is to discuss issues and challenges for specific major developments and to find solutions.

6. **Consider undertaking a survey of specialist environmental consultancy firms to obtain a more accurate estimate of total ECoW available to the construction industry, and to gather more information from these firms about their training and working practices.**

   As specialist environment consultancy firms are the most common source of ECoW recruitment on construction projects, this survey has not been able to estimate the numbers and proportion of staff employed by these firms that currently work, and/or are available to work, on construction projects. An anonymous survey of these businesses could look at total available staff, their own approaches to recruitment and development of ECoW, perceptions of the competences of their ECoW workforce, the types of opportunities and challenges associated with obtaining and undertaking contract-based work in construction, and to test the appetite for supporting ECoW to attend national training.

7. **Continue to monitor the potential impact of changes to environmental legislation as a result of Brexit, along with the implications for ECoW demand, supply and individual training needs.**

   In the longer term, continue to support the industry through periods of change and uncertainty by providing advice and guidance that encourages best practice in mitigating ecological and wider environmental risks. This should seek to ensure corners are not cut and that mutually supportive relationships are maintained between ECoW and construction teams.

   Consider repeating this research in the future to track current demand against available supply and the capacity of the workforce, and to ensure that training provision evolves to ensure ECoW are kept up to date.

Appendix 1. Sampling and Respondent Profile

The ECoW skills and training needs survey targeted three main audiences:

1. Construction clients (public and private sector organisations commissioning and funding construction work, such as infrastructure operators, local authorities, housing associations, major retailers, hotels and restaurant chains etc.);

2. Construction contractors (defined in terms of mainly buildings or mainly civil engineering projects); and

3. Individual ECoW.

To be in scope of the survey, clients and contractors needed to have sourced or recruited (directly or indirectly) at least one individual to provide advice about ecology or nature conservation on site within the past three years.

The survey of clients and contractors actively sought representation from businesses with their main office in each of the four UK nations, and focused more strongly on achieving responses from large and medium sized firms (in terms of total employment) than small and micro firms. This was due to the greater perceived likelihood of ECoW being sourced and recruited by these firms, therefore bringing them in scope of the survey. On that basis, while the survey took factors such as geography and size band into account in the overall sample strategy, it did not actively seek an achieved sample representative of the industry as a whole.

The surveys were delivered using a combined telephone and online approach. Contact details of clients and contractors were sourced by Pye Tait Consulting from a reputable national commercial database, with some additional contacts supplied by CECA. The survey of ECoW was distributed to all individual (non-student) members of CIEEM, totalling 4,471 recipients, as well as to ECoW whose contact details were sourced through the survey of clients/contractors.

The profile of client and contractor survey respondents is set out in Table 11.

Table 11 Survey respondent profile – clients/contractors

Type of respondent	
Construction client, i.e. any organisation that has commissioned or procured construction work	64
Construction contractor/subcontractor - mainly buildings	64
Construction contractor/subcontractor - mainly civil engineering projects	73
Total	**201**
Nation	
England	144
Scotland	28
Wales	21
Northern Ireland	8
Total	**201**
Size band	
Micro/Small (fewer than 50 staff)	39
Medium (50-249 staff)	64
Large (250+ staff)	98
Total	**201**

Appendix 2. Protected Species[10]

Many species of plant and animal, including their habitats, are protected by law.

European protected species have the highest level of protection and include:

- All species of bats;
- Great crested newts;
- Hazel or common dormice;
- Otters;
- Natterjack toads;
- Reptiles (some species);
- Protected plants;
- Large blue butterfly;
- Sturgeon

Organisations are breaking the law if they:

- Capture, kill, disturb or injure a European protected species (on purpose or by not taking enough care);
- Damage or destroy a breeding or resting place (even accidentally);
- Obstruct access to their resting or sheltering places (on purpose or by not taking due care);
- Possess, sell, control or transport live or dead individuals, or parts of them;
- Disturb a protected species includes any deliberate activity that affects:
    - a group's ability to survive, breed or raise their young
    - the species' numbers or range in the local area

Other protected species and groups include:

- Badgers;
- Water voles;
- Wild birds;
- Ancient woodland and veteran trees;
- White-clawed crayfish;
- Freshwater pearl mussels.

A development licence is needed if plans affect badgers. However, for other non-European Protected Species, a development licence cannot be acquired. In some circumstances, Natural England will consider issuing a licence where conservation benefit will result for the affected species e.g. water vole.

In exceptional cases, where avoiding harm isn't possible, the law allows certain exemptions to permit legal activities (such as a development with planning permission).

[10] Source: Gov.UK [article published 6th October 2014]. Information is correct at the time of writing. Available at: https://www.gov.uk/guidance/construction-near-protected-areas-and-wildlife