

2019 Horticulture Sector Skills Survey

A report for the Ornamental Horticulture Roundtable Group

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Glossary and Acronyms

AA	Arboricultural Association
AHDB	Agricultural and Horticultural Development Board
AI	Artificial intelligence
APPGHG	All-Party Parliamentary Gardening and Horticulture Group
Arb	Arboricultural
Arboriculture	The cultivation, preservation and conservation of trees and shrubs.
BALI	The British Association of Landscape Industries
BEIS	Department for Business, Energy and Industrial Strategy
BIM	Building Information Modelling
Biosecurity	Procedures or measures designed to protect the population against harmful biological or biochemical substances
BIS	Department of Business, Innovation and Skills
Brexit	The withdrawal of the United Kingdom from the European Union
CAD	Computer Aided Design
CAT Scanning	Computerized Axial Tomography scanning
CIH	Chartered Institute of Horticulture
CPD	Continuing Professional Development
CSCS	Construction Skills Certification Scheme
DEFRA	Department for Environment, Food and Rural Affairs
E-commerce	Commercial transactions conducted electronically on the Internet
E-learning	Learning conducted via electronic media, typically on the Internet.
EPOS	Electronic Point of Sale
EU	European Union
GCA	The Garden Centre Association
GCA GROW	eLearning facility created by the Garden Centre Association
GDP	Gross Domestic Product
GIS	Geographic Information Systems
GLAA	Gangmasters and Labour Abuse Authority
GPS	Global Positioning System
HIP	Horticulture Innovation Partnership
HNC	Higher National Certificate
HND	Higher National Diploma
HMRC	Her Majesty's Revenue and Customs
HSE	Health and Safety Executive
HTA	Horticultural Trades Association
IPPC	International Plant Protection Convention
IT	Information Technology
Landex	Land Based Colleges Aspiring to Excellence
MAC	Migration Advisory Committee
NGS	National Garden Scheme
NHS	National Health Service
NICs	National Insurance Contributions
NOMIS	Official labour market statistics provided by the Office for National Statistics
NPPO	National Plant Protection Organisation
OH	Ornamental Horticulture
OHRG	Ornamental Horticulture Roundtable Group
PAYE	Pay As You Earn (HMRC payroll tax system)

PPP	Plant Protection Products
R&D	Research and Development
RHS	Royal Horticultural Society
ROLO	Register of Land-based Operatives
SIC Code	Standard Industrial Classification code
Silviculture	Growing and cultivation of trees
SME	Small to Medium Enterprise
T-levels	Technical Levels
UK	United Kingdom

Executive Summary

About this research

This ornamental horticulture skills research sets out to determine skills shortages and skills gaps prevalent in the UK ornamental horticulture sector, quantify skills levels and future skills needs, as well as investigate approaches to staff training, including associated barriers. It also examines drivers of future change affecting the sector over the next three to five years.

The work involved a combined telephone/online survey of businesses in the UK-wide ornamental horticulture sector which achieved 1,101 responses whose workforce totals 43,000 people -including seasonal workers and volunteers. Separate reports provide additional detail on the five sub-sectors surveyed, comprising Arboriculture, Landscaping, Ornamental Plant Production, Public Gardens and Garden Retail. Sub-sector workshops with business leaders supplemented the findings of the survey.

The UK Ornamental Horticulture sector

The ornamental horticulture sector is highly skilled and makes a significant contribution to the UK economy. According to NOMIS, the sector comprises approximately 32,000¹ businesses, as defined by the remit of the Ornamental Horticulture Roundtable Group (OHRG). A separate study by Oxford Economics (2018) estimates that the wider sector² supports the employment of 370,200 people. As this figure includes sub-sectors not relevant to this survey (Wholesale, Garden Goods and Silviculture), for the purpose of this research the total number of direct employment was revised to 335,200 workers. NOMIS³ figures estimate that 92% of the sector is made up micro and small businesses and Oxford Economics calculates that the sector contributes close to £12bn GDP.

The skills challenge

While these numbers are impressive, the sector is facing a critical skills challenge (skills gaps and shortages), manifesting in an ageing workforce, difficulties in filling skilled vacancies and challenges in recruiting apprentices and a general shortage of labour.

Indeed, the survey results show that the average age of skilled workers (excluding seasonal workers and volunteers) is 40.1 years old. While this may be slightly below the UK national average of 41.5 years, the physical and outdoor nature of many tasks pertaining to the sector (for instance the operation of chainsaws and other machinery) confirms that the sector's workforce has an aging profile. This is further exacerbated by the fact there appears to be a relatively low average number

¹ Some of the sub-sectors do not fully match the Standard Industrial Classification (SIC) codes used within NOMIS, this figure is therefore approximate.

² The Oxford Economics study encompassed activities wider than the scope of this report, including wholesale and the manufacturing of garden goods and equipment. In addition, the Oxford Economics study only analysed the public garden sub-sector in the context of tourism.

³ NOMIS is an online database run by the Office of National Statistics (ONS) that contains up to date UK labour market statistics.

of apprentices per business. From the data provided by those who responded to the question in the survey there is an average of 1.4 apprentice per business. There is an indication or perception by those same businesses that this will increase marginally (to 1.5 per business) over the next three years. The 1.4 apprentice per business varies by size band.

Furthermore, businesses report significant barriers in apprentice recruitment, including lack of interest in the sector and deficiencies in apprentice behaviours. As the majority of businesses in the sector are micro and small-sized, a large part of the sector is not in scope of the Apprenticeship Levy, due to their annual payroll size being below over £3m and, therefore, are not encouraged as such to look at the benefits such investment could bring.

In addition, as a strong indicator for business and staff growth, the low proportion (3%) of supervisors within the workforce potentially represents a situation that the various sub-sectors see as a significant issue and an impediment to growth. Indeed, the number of supervisory staff is expected to increase by 8.5% in the next two years, while 10% of supervisor vacancies were reported to have remained open over a three-year period. This may indicate a bottleneck in the recruitment of supervisors, which in combination with expected staff growth in that category could lead to skills shortages limiting business growth opportunities.

Furthermore, approximately 6% of vacancies reported over the last three years remain open as of the time of the survey (June/July 2019). These are, for a large part concentrated in highly skilled occupations including skilled trades (14% of vacancies unfilled as of the survey date), professional/technical roles (11%) and supervisors (10%). The combined proportion of these professional groups constitutes 35% of all vacancies reported and surveyed businesses predict that the overall number of staff in skilled trades, professionals and supervisors combined is set to increase by 23% in the next two years. This indicates that the sector is experiencing a recruitment bottleneck limiting growth opportunities. Furthermore, all skills required in the sector are predicted to increase in importance in the next three to five years, notably, the use of specialist and basic machinery/equipment, soil science, landscape design and biosecurity as well as soft skills and environmental awareness. The businesses surveyed confirm that the workforce is already highly skilled in these areas, indicating that the need for such skills and thus skilled workers in these fields will increase further in the near future.

It is, therefore, not a surprise that the most widely reported cause of a skills gaps in the sector's workforce is the inability to find staff with the right skills and qualifications. This is further compounded by reported difficulties in accessing sector-relevant external training. In this context, the sector's resourcefulness is demonstrated by a high rate of on-the job training, though skills shortages and gaps persist. In addition, skills shortages and the availability of labour rank prominently amongst the main drivers of future change.

Drivers of future change

Businesses in the sector do not expect automation, robotics and other technologies to have a disruptive impact that could reduce workforce needs over the immediate coming years (3 to 5

years). Overall, the businesses in the sector confirm that the majority of tasks in the sector require a specialist skills-set and a decidedly human touch. Nevertheless, innovative technology (such as drones or upgrades in existing equipment like electric chainsaws) are being integrated into work processes, but not yet to the point of replacing workers.

In addition, businesses predict that Brexit will affect labour force supply, particularly in seasonal work, while public opinion in and understanding of the sector may also affect the availability of labour.

In light of these results, despite its highly significant contribution to the UK economy, the ornamental horticulture sector is facing a watershed moment in its workforce succession planning, skills needs and related growth opportunities. To address these issues, the sector will need to tackle issues linked to these skills shortages and gaps, promote recruitment, and acquire improved and more local access to relevant training along with a sustainable talent pipeline. These challenges may not be met by the sector alone, but would benefit external support from government and stakeholders in education, careers advice and careers promotion.

1. Introduction

1.1 Purpose of the research

The Ornamental Horticulture Roundtable Group (OHRG) is a consortium of stakeholders made up of UK leaders in the horticulture sector, including education and skills organisations and research funders. It is made up of UK leaders in the horticulture sector, drawn from retail, businesses, educational and skills organisations, as well as research funders. Its role includes helping to support strong economic growth in the horticulture sector, ensuring a suitably skilled workforce with access to great training opportunities, increasing the profile of the sector and providing a voice to government. In early 2019 the OHRG commissioned Pye Tait Consulting to conduct skills research in the ornamental horticulture sector. The core objective was to survey 1,000 companies in the to investigate skills and labour market issues.

Pye Tait Consulting successfully surveyed 1,101 businesses in the ornamental horticulture sector between May and June 2019. The survey has captured skills insights and labour market information from large, medium, small, micro businesses and sole traders that undertake one or more of the following:

- grow ornamental plants,
- offer landscape design, landscape construction and maintenance services,
- provide amenity tree services,
- work in garden retail or in historic landscapes and sites, private estates/gardens and botanical gardens.

The results from the survey and workshops will help equip the OHRG and the ornamental horticulture sector with an understanding of drivers of change (including both opportunities for, and constraints to, growth) and how these are influencing employers' skills needs. In addition, they will inform a skills strategy tailored to the industry, provide insight about the demand for, and gaps within, training in the horticulture sector, gather evidence for discussions with government and provide data to support funding and resource decisions.

The bespoke 'skills survey consortium' supporting this work comprises the following organisations that are members of the OHRG:

- Agricultural and Horticultural Development Board (AHDB),
- Royal Horticultural Society (RHS),
- British Association of Landscape Industries (BALI),
- Horticultural Trades Association (HTA),
- Chartered Institute of Horticulture (CIH),
- Arboricultural Association (AA),
- Land Based Colleges Aspiring to Excellence (Landex), and
- National Farmers' Union (NFU)

1.2 Objectives

This skills research set out to:

1. Use the definition of ornamental horticulture provided by the OHRG to estimate current and anticipated future workforce numbers in selected sub-sectors, including additional and replacement demand;
2. Understand the drivers of change affecting ornamental horticulture (including opportunities and constraints to growth) and how these are influencing employers' skills needs;
3. Establish the profile of the horticulture workforce in the selected sectors, including demographic information, ethnicity, qualifications attainment and working patterns;
4. Quantify the prevalence of skills shortage and recruitment difficulties at all levels (including hard-to-fill vacancies) and reasons why these are being experienced;
5. Quantify current skill levels and the future importance of those skills (using a skills-scoring approach), to determine future critical skills gaps and priority training needs;
6. Identify the organisations that employers are using to provide training and highlight any gaps in training provision that can be identified by employers; and
7. Explore attitude, approaches and barriers to training.

In addition to the skills survey and individual sector information provided by the skills survey consortium, comprehensive desk research was undertaken to add further context and background information on the sector.

This included the sector's contribution to the UK economy, initiatives of the OHRG stakeholders as well as assessments of the role of "natural capital" (i.e. the importance of greenspaces, trees, etc.) for the public well-being, environmental protection and tackling climate change.

1.3 Methodology

The research comprised a mixed methodology of desk research and workshops, as well as a combined telephone/online survey. While most questions were semi-structured (e.g. multiple choice and rating scale) there were several open questions through which respondents were given the opportunity to either elaborate on their response or to provide insight into issues that were not listed in the closed questions. A pilot phase ensured, as far as possible, that the questionnaire was comprehensible and that necessary routing rules operated correctly. The survey was given further context by four dedicated sub-sector workshops (see 1.3.2). The desk research focused on background statistics, the economic and societal impact of the sector, and selected trade association initiatives.

1.3.1 Skills survey, including questionnaire and quotas

Ornamental horticulture sub-sector definitions were agreed with the OHRG as a result of information derived from NOMIS (Office for National Statistics – ONS). These gave a starting-point for defining survey quotas and targets per sub-sector. More information on the scope of the sector is provided in section 2.1 (defining the ornamental horticulture sector).

Table 1 (below) summarises the quotas and achieved survey results, which are relative to the size of each sub-sector. This stratified approach has enabled us to achieve a reliable sample and ensure a robust set of findings giving a unique insight into the sector. Additional information that show the quotas is set out in Appendix 6, but, essentially, we worked to an overall survey target of 1,000 responses to permit sub-sector analysis. This target strengthened the likely robustness of analysis for each question per sub-sector (noting not all respondents answered every question). Based on an estimated population of 32,430 (extracted from NOMIS) businesses, the margin of error on 1,000 responses would be +/-3% at the 95% confidence interval if all questions were answered by all respondents in a fully representative sample that could be weighted. Unfortunately, it is impossible to weight the sample as the parameters of the population as a whole are unknown.

Table 1: Quotas and completed survey responses

Sub-sector	Quota	Result
Arboriculture contractor activities including amenity and utility tree works, tree consultancy services	100	125
Landscaping/Garden/Park design & contractor activities including for example designing, planting plans, hard landscape elements (paths, walls, paving, decking) and special features (such as water features, lighting and garden furniture), private garden or parks design/maintenance	350	359
Ornamental Plant Production including Hardy Nursery Stock, Protected Ornamentals, bedding plants, pot plants, bulbs, or cut flowers	150	170
Public, botanical, heritage, education and destination gardens including building and maintaining gardens & parks for botanical collections, heritage, education, public and visitor attractions	250	268
Retail including garden centres selling flowers and plants, seeds and fertilisers	150	179
Total	1,000	1,101

The skills survey questionnaire was designed in close consultation and with the agreement of the OHRG. Emphasis was given in the survey to training and skills needs, employment outlook, and main drivers of future change in the sector. To this end, respondents were asked to identify training needs, practices, give information on accessibility and quality of external training as well as provide their perceptions of government initiatives such as T-levels and the Apprenticeship Levy. Respondents were invited to quantify (via scores) their current and future skills perceptions and priorities on a scale from 1 to 10.

Similarly, respondents were asked to rank main drivers of future change in the sector from a pre-defined list, including automation, Brexit, consumer demand and environmental issues. Other questions used a multiple-choice method allowing for the effective collection and analysis of large numbers of responses and to ask a broad variety of general and sub-sector specific questions. For certain questions, respondents were given the opportunity to provide further detail on their responses in the form of open-text questions.

Most respondents were members of the organisations included in the Skills Survey Consortium of the OHRG, though external sources and databases were also used to contact businesses.

A total of 1,101 ornamental horticulture businesses participated in the survey. The majority of these participated in the telephone survey, while a total of twenty businesses found it more convenient to complete the survey online. At the outset of the survey, businesses were asked to identify their primary activity, upon which they were categorised in order to monitor the assigned survey response quotas per sub-sector.

The assigned survey quota was exceeded in each sub-sector, which is testament to the effectiveness of the assistance and promotion efforts of all OHRG members involved in the project, and those who supplied membership contacts and published survey press-releases.

1.3.2 Workshops

In addition, four workshops were held with businesses from each of the Retail, Plant Production, Landscaping, and Arboriculture sectors, aiming to get further insight and context on the above themes and survey results. During the workshops, industry experts and business leaders were presented with preliminary survey results relevant to their sector and invited to give more insight and detail and to discuss key research questions and their views of the survey findings. The findings from the workshops and all other qualitative responses to research questions are incorporated in the relevant sections of the report.

The four dedicated discussion workshops attracted active and engaged executives from businesses in the various sub-sectors. They were organised in ways convenient to the participants to discuss preliminary survey results and gain further related insight and context:

1. Arboriculture Show, 17 May 2019 - 14 participants
2. BALI National Contractors Forum (NCF), 18 June 2019 - 12 participants
3. National Plant Show, Garden Retail, 19 June 2019 - 5 participants
4. National Plant Show, Ornamental Plant Production, 19 June 2019 - 8 Participants

1.3.3 Analysis and Reporting

The analysis of the research findings used mixed methods of manual and computerised analysis using SNAP software employing cross-tabulations and results tables for the quantitative findings and NVivo for the qualitative inputs.

The questions asking respondents to rank their current and future skills need were analysed using a skills-scoring approach. Skills scoring involves employers rating specific current skills of their workforce on a scale from 1 (not at all skilled) to 10 (perfectly skilled), followed by a question requesting their rating of the perceived future importance of each skill. These results are presented as radar charts or as tables.

In addition, the skills survey results were cross-referenced with qualitative responses from a few businesses providing further information alongside the surveys, as well as with the results of the four subsector workshops. For the reports on the sub-sectors listed please see the five separate *Ornamental Horticulture Sub-Sectors Skills Reports*.

2. The Structure of the Ornamental Horticulture Sector

The OHRG defines ornamental horticulture as

“the science, design, technology and business of cultivating ornamental plants, trees and flowers”⁴.

As such, for the purpose of this skills survey, the boundaries of the ornamental horticulture sector are defined by the following sectors:

- 1.) **Arboriculture contractor activities**, including amenity and utility tree works, tree consultancy services.
- 2.) **Landscaping/Garden/Park design & contractor activities**, including for example designing, planting plans, hard landscape elements (paths, walls, paving, decking) and special features (such as water features, lighting and garden furniture), private garden or parks design/maintenance.
- 3.) **Ornamental Plant Production** including Hardy Nursery Stock, Protected Ornamentals, bedding plants, pot plants, bulbs, or cut flowers. It encompasses developers, growers and vendors of potted and bedding plants and trees, bulbs, cut flowers and real Christmas trees. It excludes the growing of any plants for commercial food production or consumption.
- 4.) **Public, botanical, heritage, education and destination gardens**, including building and maintaining gardens & parks for botanical collections, heritage, education, public and visitor attractions.
- 5.) **(Garden) Retail**, including garden centres selling flowers and plants, seeds and fertilisers.

In this context, it should be noted that the organisations having commissioned this skills survey do not cover all aspects of ornamental horticulture as part of their membership. These have, therefore, not been included in the scope of the research.

⁴ This is the definition that was used for the purposes of this report, though it should be noted that definitions of ornamental horticulture may vary.

2.1 Defining the ornamental horticulture sector

Defining the parameters of the sector was crucial to enable the skills survey to derive acceptable estimates for the total number of horticulture businesses in the UK.

The process began with a pilot study in 2018 which reviewed existing literature/reports and established a long list of Standard Industrial Classification (SIC) codes deemed to 'contain' the ornamental horticulture sector (see Table 2).

It is important to note that current SIC codes do not fully and neatly 'represent' ornamental horticulture and may thus deviate from the definitions of activities outlined above. Therefore, not all businesses classified under these SIC codes are automatically relevant to the research and there may be a number of businesses classified elsewhere which are important to the sector.

For example, Arboriculture is currently embedded within the wider category of 'ornamental plants' in the SIC codes but has been extracted here. Oxford Economics' 2018 study includes arboriculture within silviculture and other forestry activities. NOMIS indicates there are 2,475 organisations in the UK which operate within SIC code 0210 – *Silviculture and other forestry activities* of which Arboriculture is a component. We have, for the purposes of this research, estimated this component to be around a third.

Table 2 shows:

- estimated numbers of UK enterprises per category, according to NOMIS;
- percentage mix of UK enterprises per category;
- representative survey targets (i.e. prior to any manual under/over-sampling of certain sub-sectors);
- adjusted survey targets (which were agreed with the project steering group).

Table 2: SIC Codes describing Ornamental Horticulture (NOMIS, 2018)

Broad category		SIC Code and Description		Total UK enterprises
Ornamental plants (includes operation of tree nurseries)		01.3	Plant propagation (and seed processing for propagation 01.64)	630
Arboriculture			* extracted from SIC code 0210 and from ornamental plants 01.3 (subsumed in NOMIS within <i>Silviculture</i>) pertaining to this research	865
Retailers selling other goods in specialised stores		47.76	Retail sale of flowers, plants, seeds, fertilisers, pet animals and pet food in specialised stores	6,525 ⁵
Landscape services		7111/2	Landscape architectural activities	1,975
		8130	Landscape service activities	18,715
Green space management	Landscaping and garden design, build and maintenance	6820/1	Operating of Housing Association real estate	2,480
		8411	General public administration activities (local authorities)	250
		8412	Regulation of the activities of providing health care, education, cultural services and other social services, excluding social security	180
		91.03	Operation of historical sites and buildings and similar visitor attractions	425
		91.04	Botanical & zoological gardens & nature reserve activities	385
Total:				32,430

Using official NOMIS data, the SIC codes agreed for this study encompass around 32,000 companies which, when taken together with the 2017 Oxford Economics statistics (see section 2.2) imply an average company size of about 18 employees.

Using these SIC codes NOMIS provides an indication of numbers of businesses, split by business size and by turnover band (Tables 3 and 4).

By far the greatest proportion of businesses are in the micro end of the spectrum. Some 92% have less than 10 employees and less than 1% more than 100 staff.

⁵ NB: Pet animals and pet foods are not in scope for this research. The Horticulture Trades Association (HTA) estimates the number of garden retail businesses relevant to this research at approximately 2,000.

Table 3: SIC Codes and Employment Size Bands (NOMIS, 2018)*

Sub-sectors	SIC CODES	0-4	5-9	10-19	20-49	50-99	100-249	250+	Total
Ornamental	01.3	450	100	40	30	10	5	0	630
Retailers selling other goods in specialised stores ⁶	47.76	4,520	1,250	365	230	90	45	25	6,525
Landscape services	7111/2								1,975
	8130	15,930	1,855	610	235	60	15	10	18,715
Green space management & Landscape, garden design, build and maintenance	6820*	-	-	-	-	-	-	-	2,480
	8411*	-	-	-	-	-	-	-	250
	8412	35	0	5	20	40	35	45	180
	91.03	185	75	60	60	25	15	5	425
	91.04	135	50	40	65	40	40	15	385
		91.5%		6.6%		0.99%	0.95%		26,860

*not available by business size nor is Arboriculture/Silviculture included.

Table 4 Turnover Bands (£'000) (NOMIS, 2018)

Sub-sectors	SIC CODES	0-49	50-99	100-199	200-499	500-999	1000-1999	2000-4999	5000-9999	10000-49999	50000+	Total
Ornamental	1.3	100	130	185	100	45	25	15	15	5	0	630
Retailers selling other goods in specialised stores ⁷	47.76	430	1,200	2,960	945	465	245	180	50	40	5	6,520
Landscape services	7111/2	225	650	690	160	125	70	30	10	10	0	1,975
	8130	2,615	4,720	7,170	2,675	895	390	170	50	20	5	18,710
Green space management & Landscape, garden design, build and maintenance	6820*	365	420	530	330	240	150	140	75	155	75	2,480
	8411*	4,690	865	765	205	85	45	60	70	110	50	6,945
	8412	20	5	10	5	10	20	55	20	15	15	175
	91.03	50	65	105	70	50	40	20	10	10	5	425
	91.04	60	55	70	45	50	45	30	15	15	0	385

*not available by business size nor is Arboriculture/Silviculture included.

⁶ Pet animals and pet foods are not in scope for this research. This figure is potentially three times the likely figure as the Horticulture Trades Association (HTA) estimates the number of garden retail businesses relevant to this research at approximately 2,000.

⁷Ibid.

2.2 Overall economic contribution

The ornamental horticulture sector in the UK is a vital part of the UK economy and society. When assessing the economic impact of the sector in the UK, certain vital aspects have to be taken into account. These include contribution to GDP, employment figures, and impact on related sectors, such as tourism. Other impacts, which are not necessarily directly economic, include its impact on the environment, on national culture and heritage, as well as the undoubted but difficult-to-quantify effect that it has on public health and well-being (discussed in the drivers for change section 3).

According to a 2018 study by Oxford Economics, the impact of the UK ornamental horticulture sector is revealed in its total contribution of £24.2bn to the UK economy in (purely) financial terms. This represents approximately 1.2% of the UK's national output. Furthermore in 2017, according to the 2018 report, the sector in its widest sense was reported to support the employment of 568,700 workers in the UK economy, representing 1.6% of the UK's workforce. It also generated an estimated £5.4bn in tax revenue. The Oxford Economics study encompassed activities wider than the scope of this report, including wholesale and the manufacturing of garden goods and equipment. In addition, the Oxford Economics study only analysed the public garden sub-sector in the context of tourism.

Private gardening is an important activity for UK citizens, with UK households spending £7.5bn on gardening goods (which includes cut-flowers) and £2.4bn on landscaper and gardener services in 2017. On average, a UK household spends £350 on gardening per year. The following estimates form a valuable indication of overall economic size and importance.

Table 5: Oxford Economics View of the Sector – direct GDP contribution (2017)⁸

Sub-sector	Contribution to UK GDP (£bn) – est.
Arboriculture (includes Silviculture*)	709
Landscaping	6,846
Ornamental Plant Production	750
Garden Retail	1,944
Public gardens	1,182
Total	11,431

*NB the Arboricultural Association represents businesses that provide amenity tree care. The Oxford Economics report includes Silviculture which involves planting, growing and management of trees. They explain that this latter accounts for nearly two thirds of the sub-sector's GDP contribution (63 percent, or £446m) but which is not in scope of this OHRG report's definition.

⁸ These figures exclude Wholesale and Garden Goods, as they out of scope to this OHRG research.

Economically, the ornamental horticulture sector is thus comparable in importance to the wider UK agriculture sector, which employs some 400,000 workers and added £12bn to the UK economy in 2017⁹ ¹⁰. The ornamental horticulture sector makes a significant contribution to the UK economy which is why it is important to understand the sector's skills and training needs.

2.3 The Ornamental Horticulture Sector in 2019

This section provides a general overview of the UK ornamental horticulture sector based on the skills survey and is based on businesses from all sub-sectors carried out as part of the current study. In addition to this report, separate sub-sector reports have been produced, providing snapshots of each of the sub-sectors (Arboriculture, Landscaping, Ornamental Plant Production, Public Gardens and Garden Retail), extracts of which are contained in Appendices 2 to 4.

2.3.1 Main sector activity

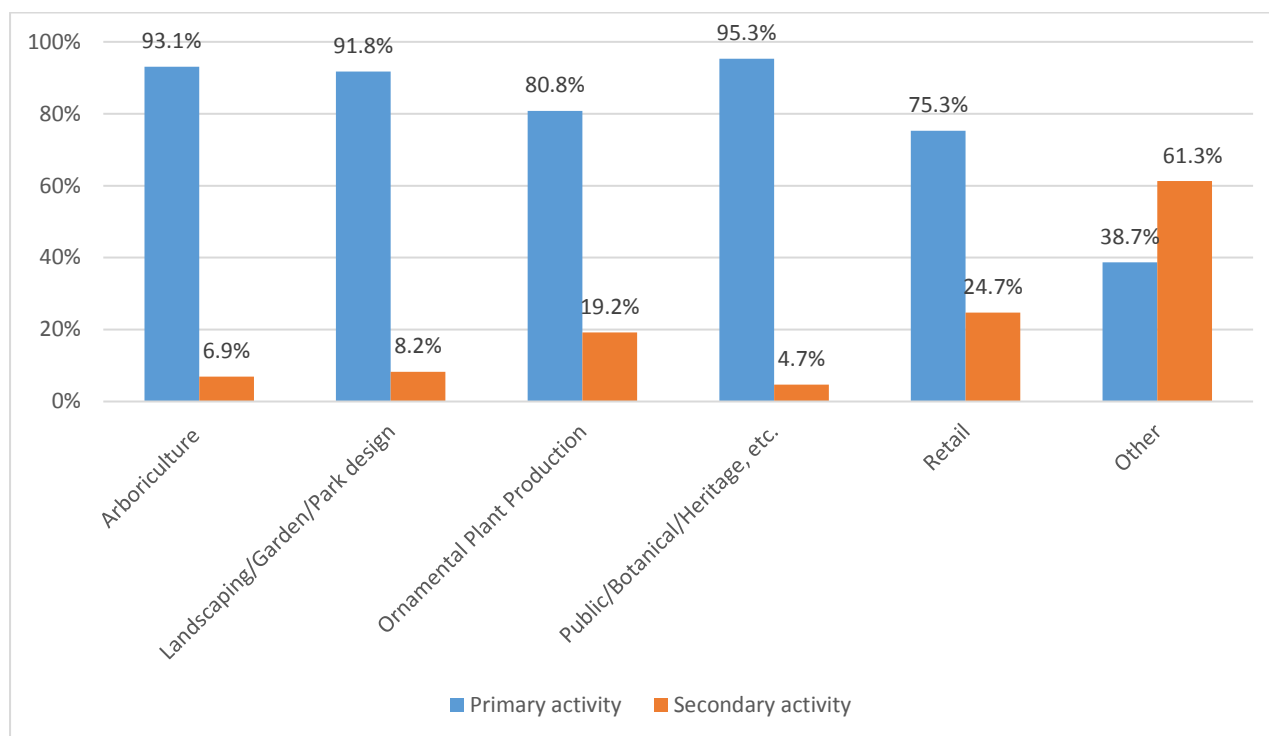
The following figure shows the primary and secondary activities of companies across the sector as related to the five ornamental horticulture sub-sectors (1,101 respondents).

For example, of all companies in the survey, 7% of those that undertake Arboricultural activity do so as a secondary activity to their main horticultural business, while 93% undertake arboricultural work as their prime business. Just over 19% of firms which work in ornamental plant production do so as a secondary activity. A quarter of retail companies have other primary activities.

⁹ Directly employs 338,200 – in terms of narrower definitions, Oxford Economics, 2017 – Fig. 12 pg.23.

¹⁰ Development Economics (2017) *Contributions of UK Agriculture*, p.11

Figure 1: Primary and Secondary Activities



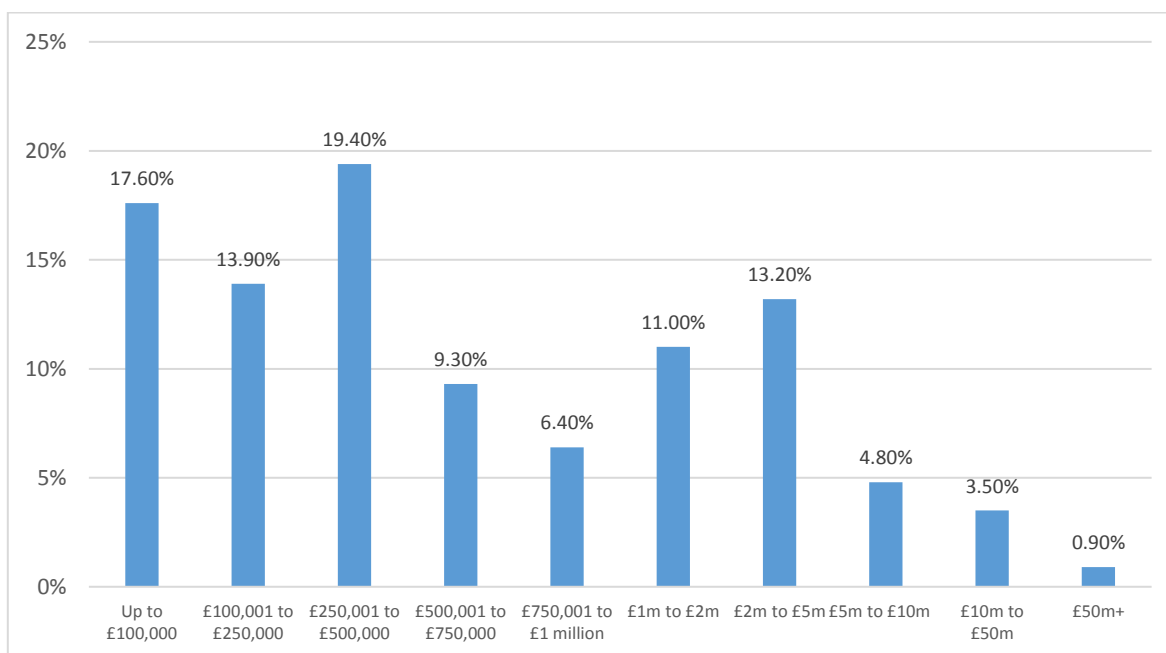
Base: 1101 respondents

2.3.2 Turnover and business size

Of the 1,101 businesses that participated in the skills survey, 454 (41%) supplied information about their annual turnover. Over half (51%) of these responding businesses have turnovers less than half a million pounds per year and two-thirds (66%) less than £1m. A further quarter have turnovers between £1m and £5m per year and just under 10% are in the over-£5m category. Around 1% of ornamental horticulture businesses have annual turnovers greater than £50m¹¹.

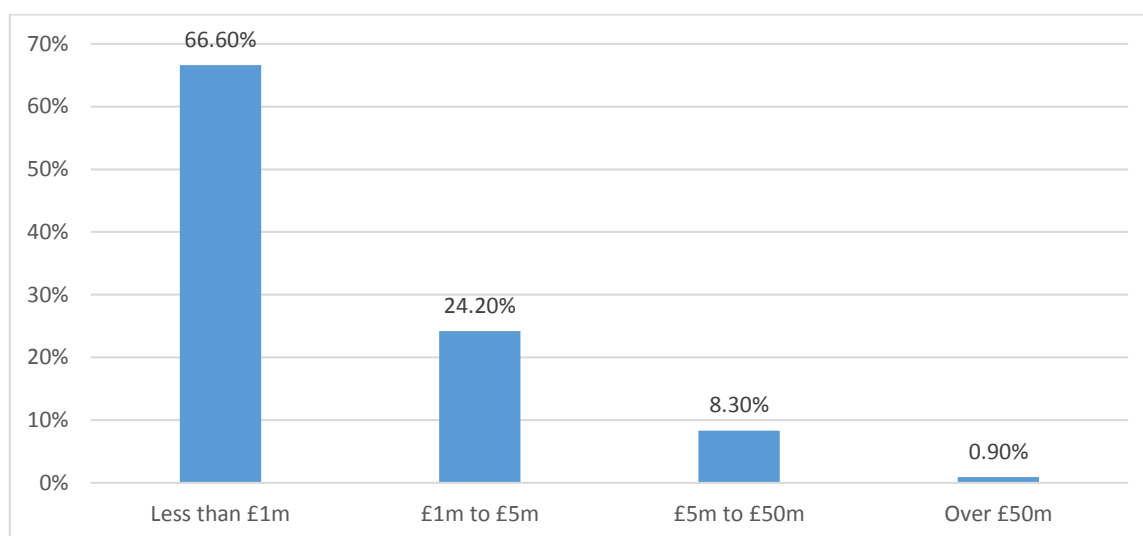
¹¹ Sector intelligence and analysis show that 70 of the biggest ornamental nurseries account for a combined turnover of more than £800m, and of the top 70 largest contractor businesses in the UK, Horticulture Week analysis (2019) revealed a combined turnover of £1.3bn. They also noted that the 20 contractor businesses together have a combined turnover of £961.8m

Figure 2: Business Turnover – Narrow Bands



Base: 454 respondents

Figure 3: Business Turnover – Broad Bands



Base 454 respondents

Over half of the total sample either did not know their turnover at the time of the survey or were unwilling to divulge that information. They were a mix of large and small businesses – a very similar profile to those who chose to respond.

Business size

In common with many sectors, the EU definitions of business size can be less than useful in practical terms. Very few companies in the modern economy employ more than 249 employees and this

means that interpretation of the larger end of the size-dimension can be difficult. In certain subsectors the “Large” category is virtually non-existent. For this reason, we agreed with OHRG that analysis could also be conducted on a definitional scale which set “Large” companies as employing more than 100 staff.

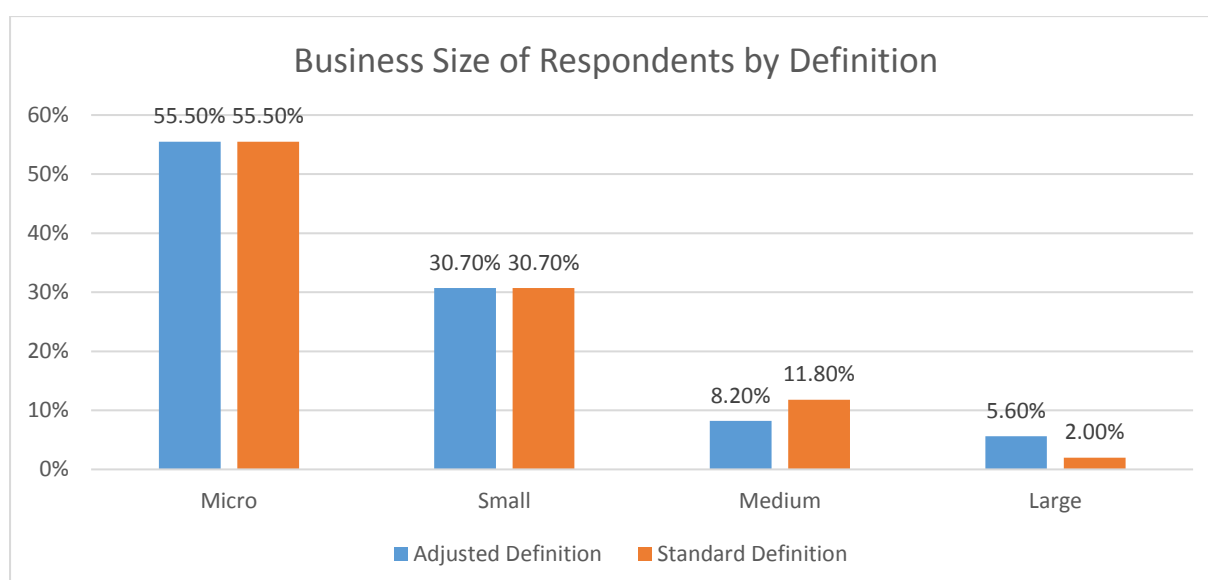
Standard Size Definitions (EU)

Micro (0-9 employees),
Small (10-49 employees)
Medium (50-249 employees)
Large (250+ employees)¹²

Revised Definitions as agreed with OHRG

Micro (0-9 employees),
Small (10-49 employees)
Medium (50-99 employees)
Large (100+ employees)¹³

Figure 4: Business Size - Employment (%)



Base: 1094, large business defined as 100+ employees

In common with all economic activity most of the firms engaged across the ornamental horticulture sector are “micro” firms – just over 55% for the entire sector but around 60% for sub-sectors such as arboriculture, landscaping, and public/botanical companies.

2.3.3 Staff job roles

The survey of ornamental horticulture companies received responses from employers representing a total of circa 43,000 workers. Removing volunteers (largely operating in the public gardens and heritage sub-sectors) reduces this total to just under 29,000. The average company in the survey

¹² House of Common Library (2018), *Business Statistics*

¹³ Ibid

employs around 27 people¹⁴. Our own survey may well have over-represented larger companies due to the fact that these companies more readily participate in surveys, may be involved as a member in one of the trade associations (see Appendix 5) commissioning this survey and, therefore, may be more able to provide estimates of staff numbers, business activities, etc.

The average number of employees within the sector is therefore likely to be between 18 and 27.

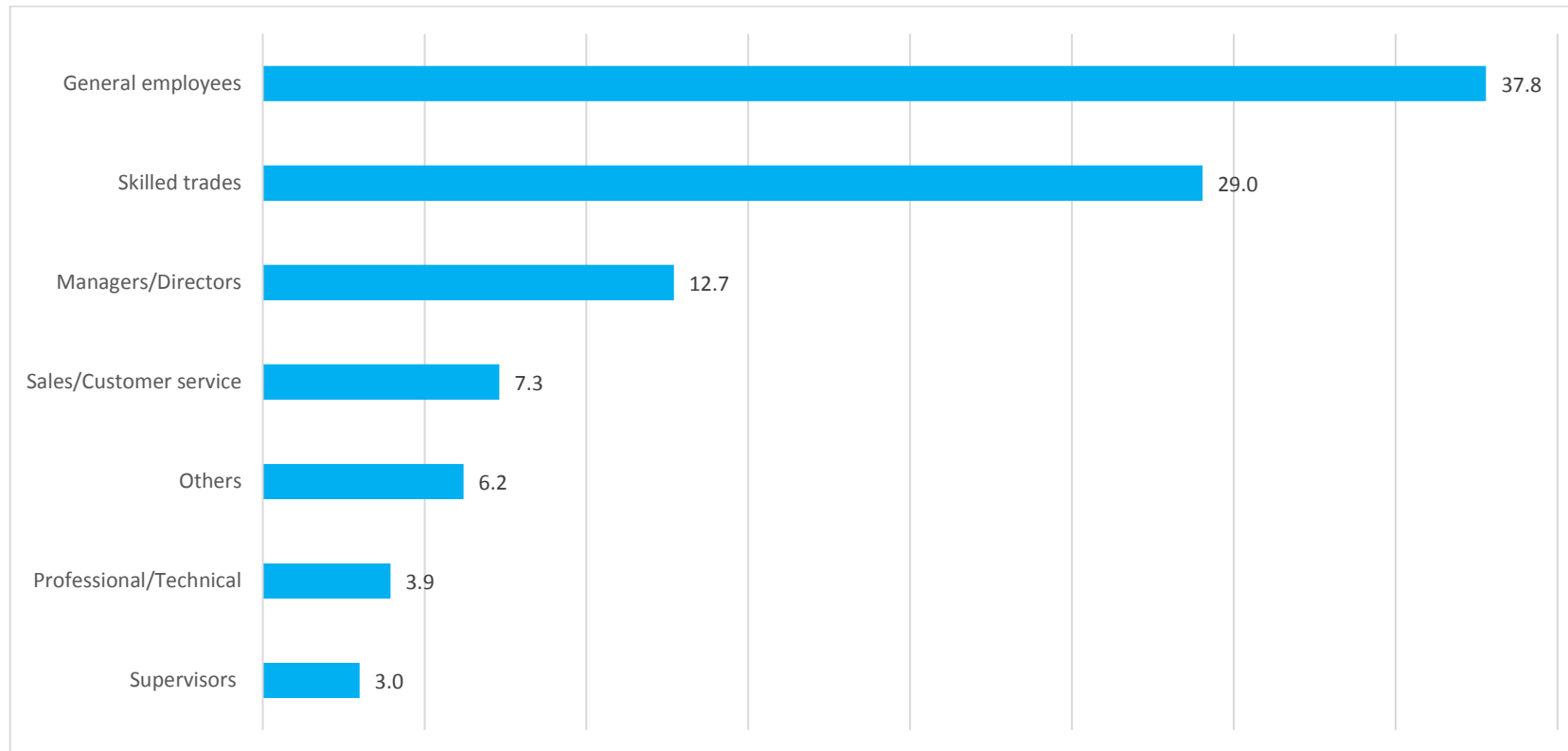
A key objective of the skills survey was to assess the importance of specific job roles associated with horticulture skills and knowledge. To this end, respondents were asked to quantify current and future numbers of staff including managerial roles, skilled trades or general employees whose work and jobs tasks could be associated with ornamental horticulture skills and knowledge.

The figure below illustrates the current situation for the entire sector. Almost 40% of staff employed across the workforce are classified as general employees (which for some respondents may include staff with general skills) while c. 30% are recorded as being in skilled roles. Sales staff account for just over 7% of staff and professional and technical roles 4%. Only three in one hundred staff in the sector are classified by employers as supervisors compared to around 13% being managers or directors. The low proportion (3%) of supervisors represents a situation that the various sub-sectors see as a significant issue. Finding supervisory staff for managing work/teams and for succession planning was referenced by individual companies in the workshops too and is acknowledged as a critical issue by the members of the Skills Survey Consortium drawn from the OHRG. The numbers of supervisory staff are predicted to grow by 8.5% in the next two years at a time when 10% of supervisor vacancies have remained open for over a three-year period.

It is recognised that, anecdotally, client work is being undertaken by managers/directors of businesses in lieu of undertaking the more usual leadership and managerial duties.

¹⁴ This figure is larger than the figure calculated at the beginning of this report – 18 average staff size - based on the Oxford Economics data – because our survey probably over-represents larger companies. The extent of over-representation is impossible to ascertain because there are no reliable statistics other than those (equally estimated) calculated for the Oxford Economics report.

Figure 5: Current Staff Profile (%)

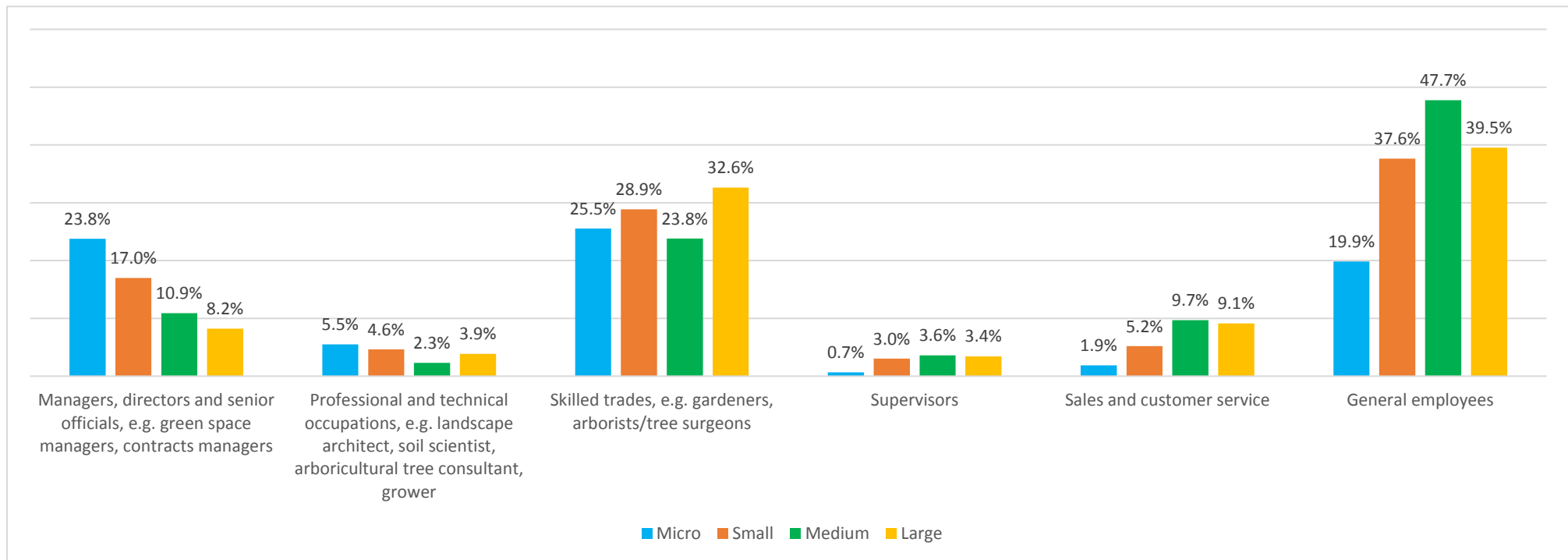


Base: 1092 respondents, 27,557 responses

Only around a quarter (24.7% or 269) of those responding to the question on current numbers of staff gave answers to the subsequent question on foreseen increases and decreases in specific role numbers. In addition, the staff increases are net of a very small number of foreseen decreases and are

reported by a minority of the sample of businesses¹⁵. Among those 269 companies there is a general consensus that numbers of staff will increase over the next two years.

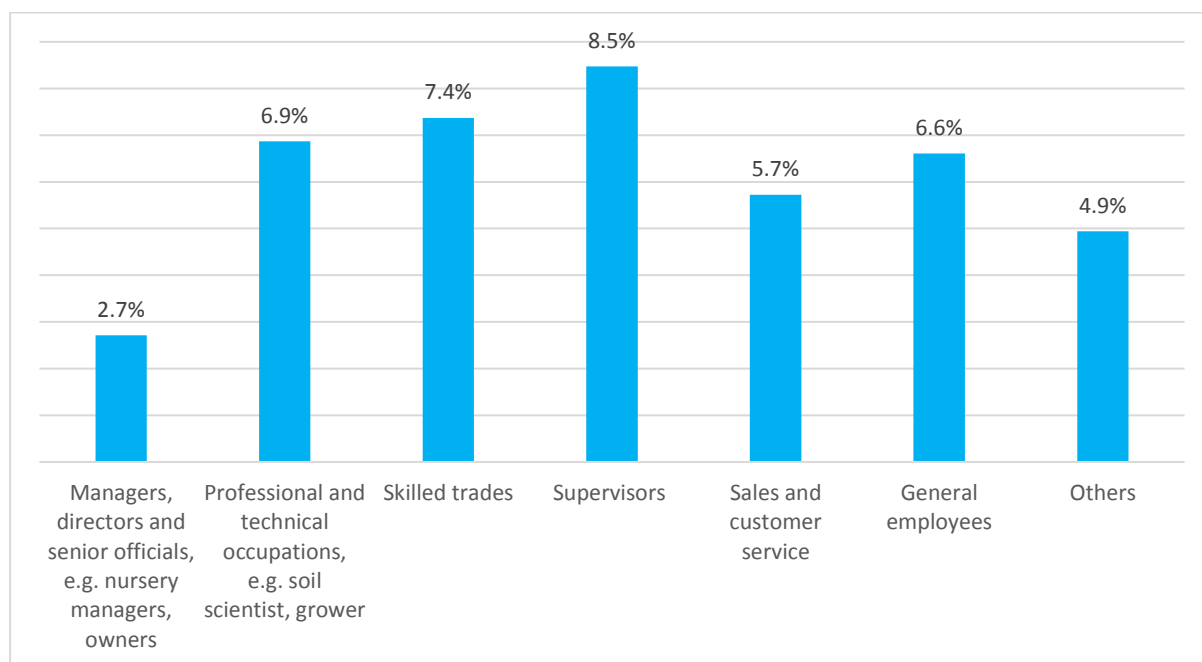
Figure 6: Current Staff Profile by business size (large =100+)



Base: 1092 respondents, 27,557 responses

¹⁵ Therefore, the results on predicted increases or decreases should be reviewed with caution.

Figure 7: Predicted percentage increase in staff numbers



Base: 269 respondents, 5536 responses

2.3.4 Staff by age group

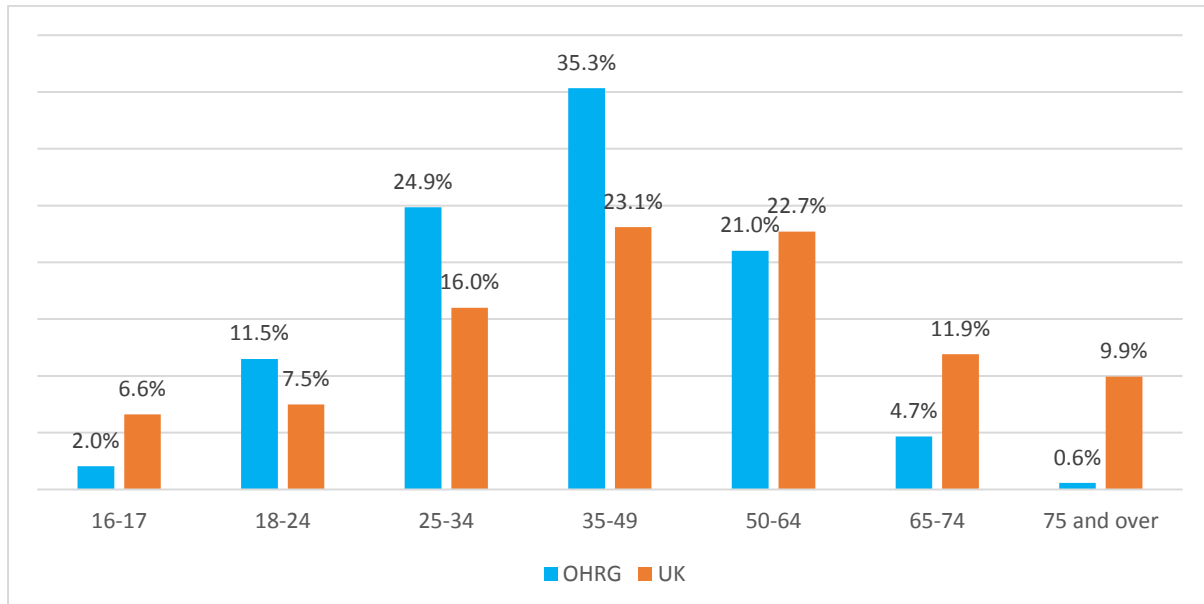
The age profile for the sampled ornamental horticulture sector is relatively well balanced in terms of proportions of age groups. Some 27% of the workforce are over 50 while 38% are aged less than thirty-five. Nevertheless, when considering the average age of staff working for the responding businesses, there is clear evidence of an ageing workforce in a sector that mostly requires- by skilled trades - physically demanding tasks.

The estimates made by employers responding to this question include all job roles and it is clear that these may be skewed somewhat by this overall calculation. For example, it is probable that general roles will tend to have a younger profile than managers, supervisors and technical roles. Employers may therefore be fully justified in regarding their workforce profile as “ageing” on the basis that “core” roles that are vital to business success and survival are ageing even though younger staff are employed in sales or general roles.

As the responses show, employed full-time staff are, on average, aged 39.5. This may be below the national average, but the physical nature of some of the work in this sector has to be taken into account. Correspondingly, part-time staff are, on average, aged 40.4 years, while trainees are aged 40.3 years, a possible indication for the high rate of career changers in the sector (confirmed in the survey and workshops).

The figure below shows the profile from the survey compared with the age profile of those employed in the UK.

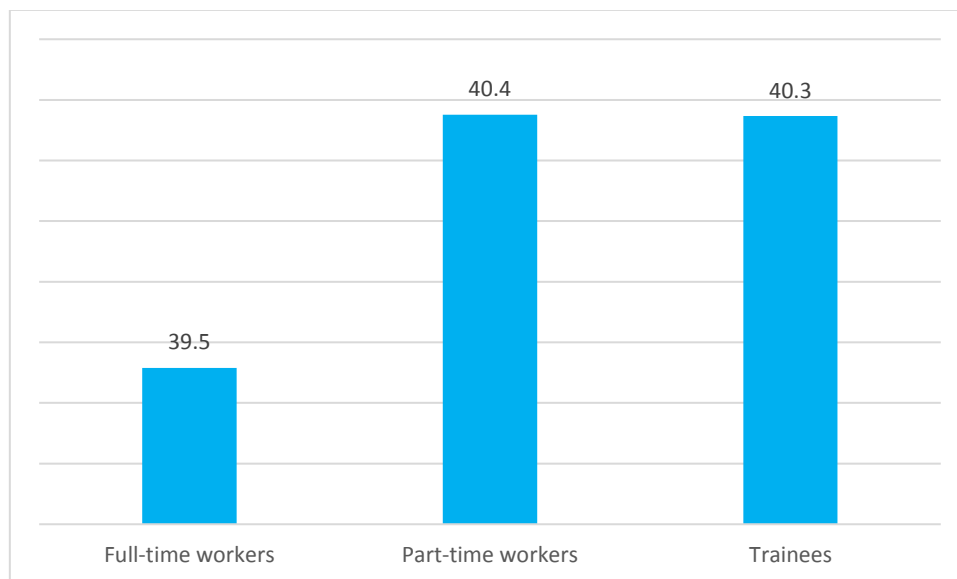
Figure 8: Average Age Profile of horticulture staff (excl. volunteers and seasonal workers)



Base: ONS Population Stats 2018. The OHRG survey base is 391 respondents (who were able to provide the breakdown) and for permanent staff only.

Further evidence which might add to the impression of an ageing workforce is the low proportion of apprentices and the difficulty employers say they are facing in recruiting and retaining them (see section 5.6 of this report).

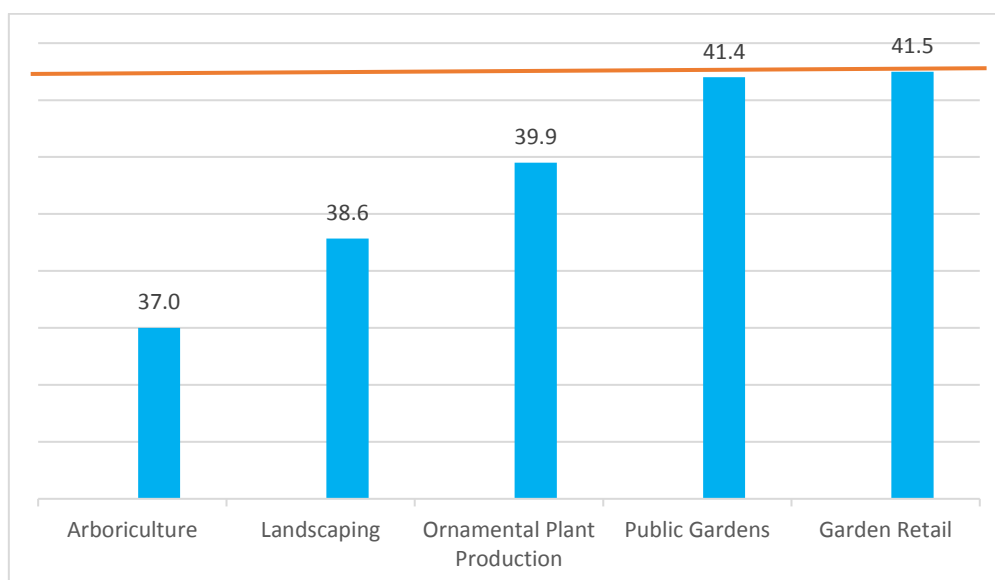
Figure 9: Average age of the workforce (in years) by employment type



Base: 874 respondents. Responses relate to 17,404 employees for which this information was provided

Based on the data for this question, the average horticulture worker is 40.1 years old. The national average age of workers in the UK in 2016 was 41.5¹⁶. Broken down by sub-sector the average worker's (full time, part-time, trainee) age is:

Figure 10: Average age of the workforce by subsector



UK average workforce age: ———

Horticulture work often involves physically demanding work outdoors. Taking this factor into account and low numbers of apprentices in the sector (discussed below), the sector may well be facing the challenge of an ageing workforce among key job roles which it has not been possible to identify in this particular study.

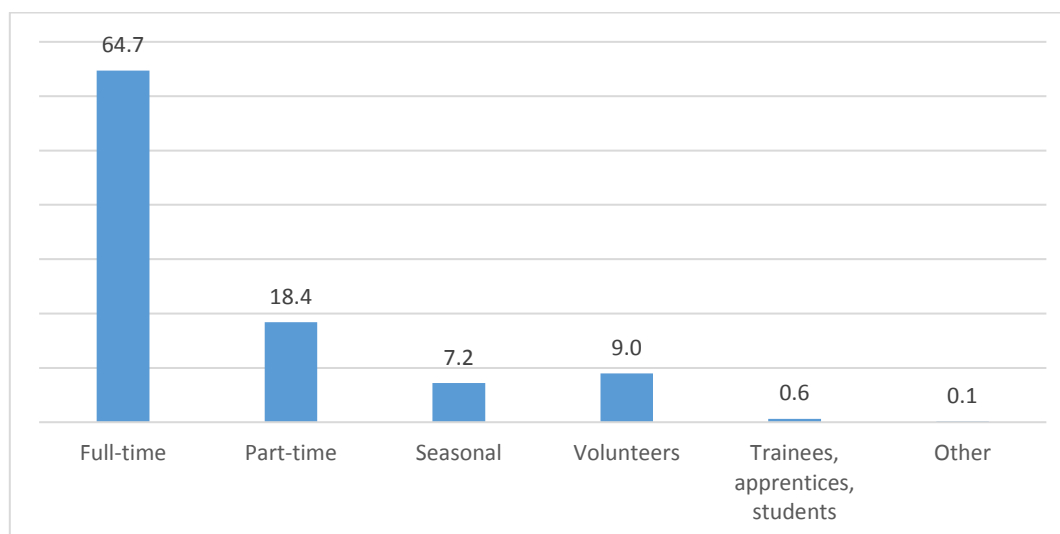
2.3.5 Working modes

The survey shows that the majority of horticulture staff work as full-time or part-time permanent staff (84%). Volunteers form the second largest individual group (9%). The average proportion of seasonal workers is higher in certain sub-sectors and the numbers of volunteers may vary considerably. This is discussed in each of the sub-sector reports.

The low proportion of trainees and apprentices may be an indication of recruitment challenges, which is confirmed to an extent in later sections of this report.

¹⁶ AVIVA (2016), *Aviva comments on ONS Labour Market Statistics*, <https://www.aviva.com/newsroom/news-releases/2016/08/uk-aviva-comments-on-ons-labour-market-statistics-17658/>

Figure 11: Working Modes (% of workforce)



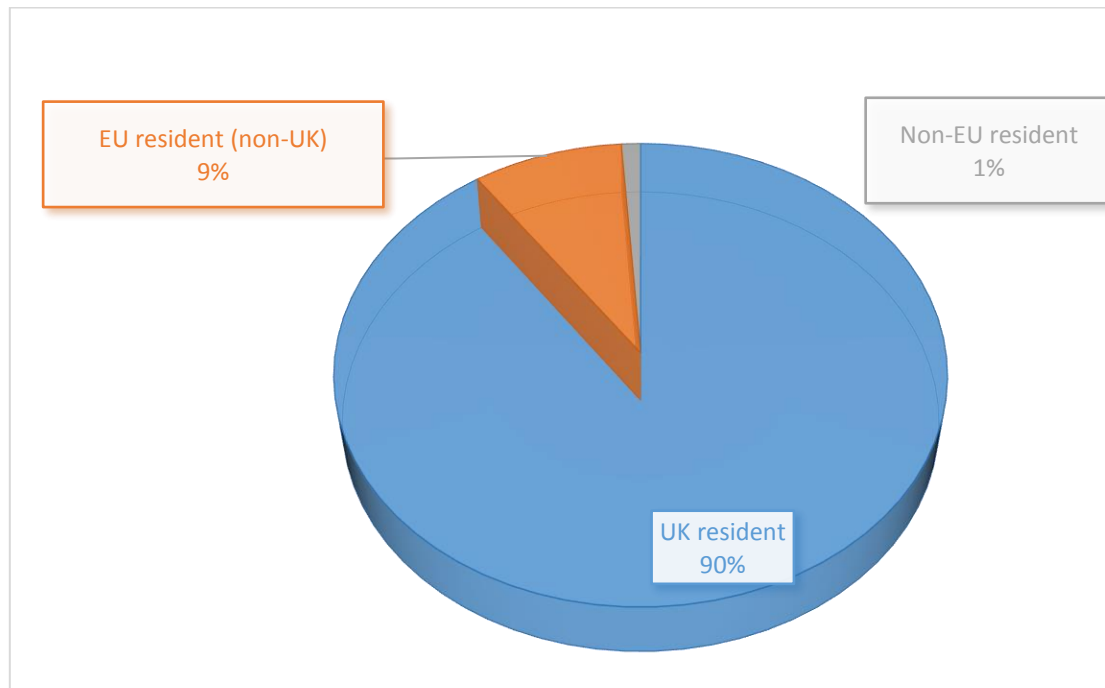
Base: 1092 respondents, 27,557 responses

NB: A statistic for the average number of annual volunteers for a single large employer has been excluded from the analysis in order to reduce the effect of skewing on totals and percentages. The employer in question employs some 700 permanent staff nationally and uses the services of an average of some 8,500 volunteers in any given year. This figure for volunteers is more than twelve times higher than the next highest company which uses 700 volunteers. Consequently, these volunteers have been excluded, unless stated otherwise, in order to give a more realistic overall impression of the contractual ways of employment in the sector.

2.3.6 Country/bloc of residence

For the ornamental horticulture sector, the majority of staff are permanent residents in the UK. This does not, of course, take into account nationality, dual citizenship or naturalisation. In terms of non-UK residents, some 9% of permanent staff are EU residents. Non-EU residents currently account for just 1% of permanent employees.

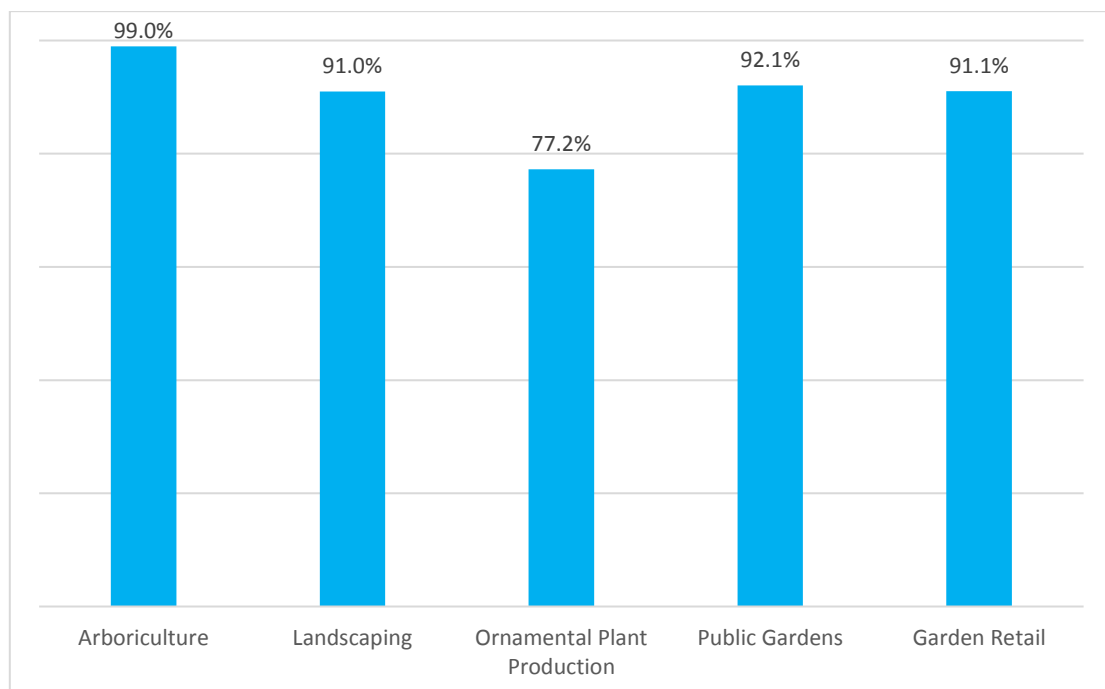
Figure 12:Residence of Sector Workforce



Base: 1101 respondents.

The figure below breaks this down further by each sub-sector.

Figure 13:Residence (UK) of Sector Workforce



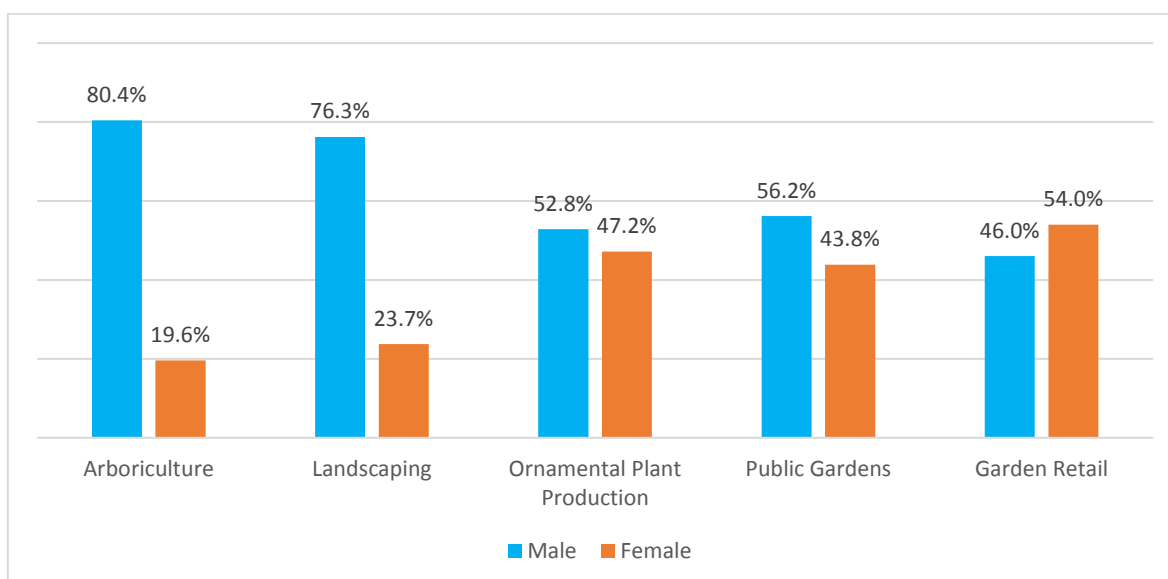
Base: 1,048 respondents, 24,976 responses

2.3.7 Gender balance

A little less than two-thirds of staff in the ornamental horticulture sector are male (60%). There will be a number of very cogent reasons for this figure, ranging from historical factors to type of work, and from public perceptions to the understanding of the sector among teachers and careers advisors. The survey showed 38% female and the remaining 2% not stated.

In this context, an analysis of the survey results on gender balance (i.e. 60% male and 38% female) by sub-sector, shows that the proportions of male workers in Arboriculture and Landscaping are higher than in other sub-sectors. When addressing skills shortages and recruitment (see further discussion on these points in sections 4 and 5), this may have to be taken into account.

Figure 14: Gender balance – sub-sectors



Base: 1049 respondents, 25,279 responses.

2.3.8 Ethnicity and background

In terms of ethnicity, the sector is dominated by workers of British origin (approximately 95%) and other white backgrounds (approximately 3.5%). Workers of “any other ethnic group” represented approximately 1%. Combined, workers of Indian, Pakistani, Bangladeshi and “any other Asian background” comprise less than 0.2% of the surveyed workforce. Mixed white and Black African, Black Caribbean or Asian workers constitute 0.02%. Other ethnicities are in even lower proportions. Thus, on the basis of 901 responses, the horticulture workforce of the sector is predominantly of British origin and other white backgrounds.

3. Drivers of Change

This section looks at the drivers of change that may be affecting businesses in ornamental horticulture. These encompass companies engaged in the sale or provision of ornamental plants, landscape design, landscape construction and maintenance services, amenity tree services, garden retail, historic landscapes and sites, private estates/gardens and botanical gardens.

Change in society, culture, technology, population, environment, and many other things have as much potential to affect the ornamental horticulture sector as economic factors and these are all discussed in the appropriate places below.

3.1 Non-economic impact

As mentioned above, the economic contributions of the sector do not do justice to its full value to UK society. While gardening, for example, is a major activity for UK households – they constitute the main consumers of ornamental horticulture products – the social benefits of the sector extend well beyond the provision of a hobby. Physically, private gardens are a significant feature of UK geography. Around 87% of UK households have a private garden and the combined area they cover has been compared to one-fifth of Wales or all of Somerset¹⁷. In addition, and arguably of greater importance, private gardens comprise around 30% of a UK city's urban spaces¹⁸. The activity of gardening not only creates demand for the equipment and services provided by the sector but also contributes economically to the UK in indirect ways – through creating a fitter, more mentally well-adjusted, and even happier workforce.

3.1.1 Public health and well-being

There is clear scientific evidence that access to green and blue spaces (water areas) and private gardening benefit public health and wellbeing. For instance, gardening or visiting and walking in public gardens represents a valuable form of physical exercise that alleviates health issues including obesity or risks of heart disease, cancer or musculoskeletal conditions. The activity generally strengthens the immune system¹⁹. Gardening, landscaping, the presence of trees and the visiting of green and blue spaces are also linked to mental health benefits, including the reduction of stress and depression levels, combating loneliness and isolation through increase of social interaction and even the lessening of dementia symptoms²⁰.

The Office of National Statistics estimates the societal gain of visiting urban green spaces at £4.4bn per year²¹, while 85% of respondents to a survey by the National Garden Scheme (NGS) confirmed

¹⁷ <https://hta.org.uk/learn-develop/market-information/garden-statistics.html>

¹⁸ <https://www.ons.gov.uk/economy/environmentalaccounts/bulletins/uknaturalcapital/ecosystemaccountsforurbanareas>

¹⁹ The King's Fund (2016), *Gardens and Health – Implications for policy and practice*

²⁰ <https://www.who.int/sustainable-development/cities/health-risks/urban-green-space/en/>

²¹ ONS (2018), *UK natural capital: ecosystem accounts for urban areas*

that visits to gardens improves their sense of well-being²². Studies also suggest that hospital patients experience beneficial effects to their recovery if they had had a view of nature from their hospital bed or room or had had access to a hospital garden²³. If the ONS estimate is accurate even this aspect of ornamental horticulture adds a quarter to its contribution to GDP.

In this context, a King's Fund report commissioned by the NGS suggested making gardening (such as through community gardening) a formally-recognised intervention of the NHS and social care system for mental and physical health issues - a practice known as "social prescribing"²⁴ or "green prescribing". A report by Natural England²⁵ and the 2018 UK government 25-year environment plan²⁶ also highlight the potential health and well-being benefits of gardening and visiting green spaces.

Further social benefits may accrue, from the impact of ornamental horticulture on crime. Green spaces and trees are believed to reduce crime rates in urban areas. There is evidence that green urban spaces are more frequented and thus create stronger social ties between residents²⁷. This is, however, not sufficiently researched to be a proven impact.

3.1.2 Environmental impact and natural capital

There is mounting evidence that ornamental horticulture products and services – through public spaces and private gardens – provide complex and highly necessary habitats for various species of insects, birds, and mammals. This impact may be of particular importance in urban areas.

In addition, evidence suggests that gardens, amenity trees and other green spaces increase biodiversity and can mitigate flooding²⁸. Indeed, a 1996 study confirmed that for every 5% of tree cover added to an urban area, water run-off is reduced by 2%²⁹. Furthermore, green spaces and amenity trees have a proven impact on air pollution. An acre of trees absorbs the equivalent 26,000 car miles worth of carbon dioxide and generates sufficient oxygen for 18 people to breathe for a year³⁰. The trees and other vegetation also have a cooling effect on urban areas, as they absorb less heat than pavements, buildings and structures. Amenity trees may also absorb water pollutants thereby increasing water quality.

Private and public gardens as well as green spaces and amenity trees thus constitute a valuable resource, often described as "natural capital". The increase of this natural capital, including urban greenspaces such as parks and gardens as well as amenity trees is a key priority of the government's 25-year Environment Plan.

²² <https://ngs.org.uk/85-say-garden-visiting-is-good-for-the-soul/>

²³ <https://www.scientificamerican.com/article/nature-that-nurtures/>

²⁴ The Kings Fund (2016), *Gardens and Health – Implications for policy and practice*

²⁵ Natural England (2016), *A review of nature-based interventions for mental health care*

²⁶ HM Government (2018), *A Green Future: Our 25 Year Plan to Improve the Environment*

²⁷ Kuo (2003), *The role of Arboriculture in a healthy social ecology*

²⁸ Living with Environmental Change (2016), *Gardening sustainably for the future*

²⁹ Coder (1996), *Identified Benefits of Community Trees and Forests*

³⁰ <https://www.hellistreeconsultants.co.uk/story/2015/01/08/the-environmental-benefits-of-amenity-trees/15/>

3.1.3 Education

According to related studies^{31 32}, engaging children with gardening activities may improve their learning and cognitive, physical and motor skills. This in turn leads to increases in self-esteem and knowledge, which are transferred to classroom and enhances learning in other disciplines such as mathematics and the sciences. The educational effect also extends to children with learning and behavioural difficulties, where beneficial effects have been associated with either undertaking gardening activities, playing in green spaces and living in a green residential area. Apart from these two studies, this field of research is still relatively new.

All of the above describe factors which have the potential to change the sector as well as the wider UK society by underpinning a better understanding of the value of ornamental horticulture. Similarly, the findings also point to ways in which businesses in the sector can implement valuable changes to the way they do business and the products and services they provide.

3.2 Drivers of future change

To provide information on their future outlook of the ornamental horticulture sector, businesses were asked to name the most important drivers of future change from their perspective.

The question on drivers of future change was a closed, multiple choice one, but it also gave respondents the opportunity to provide further qualitative information via the option “Other” – such issues raised are described below.

Perhaps understandably, top of the table are environmental issues, followed by skill shortages with the “availability of labour”, a closely related and frequent issue.

The section below presents the main themes of these qualitative responses to the skills survey as well as adding the key related results of the four dedicated workshops. This provides context to the top-five drivers of future change identified by the sector:

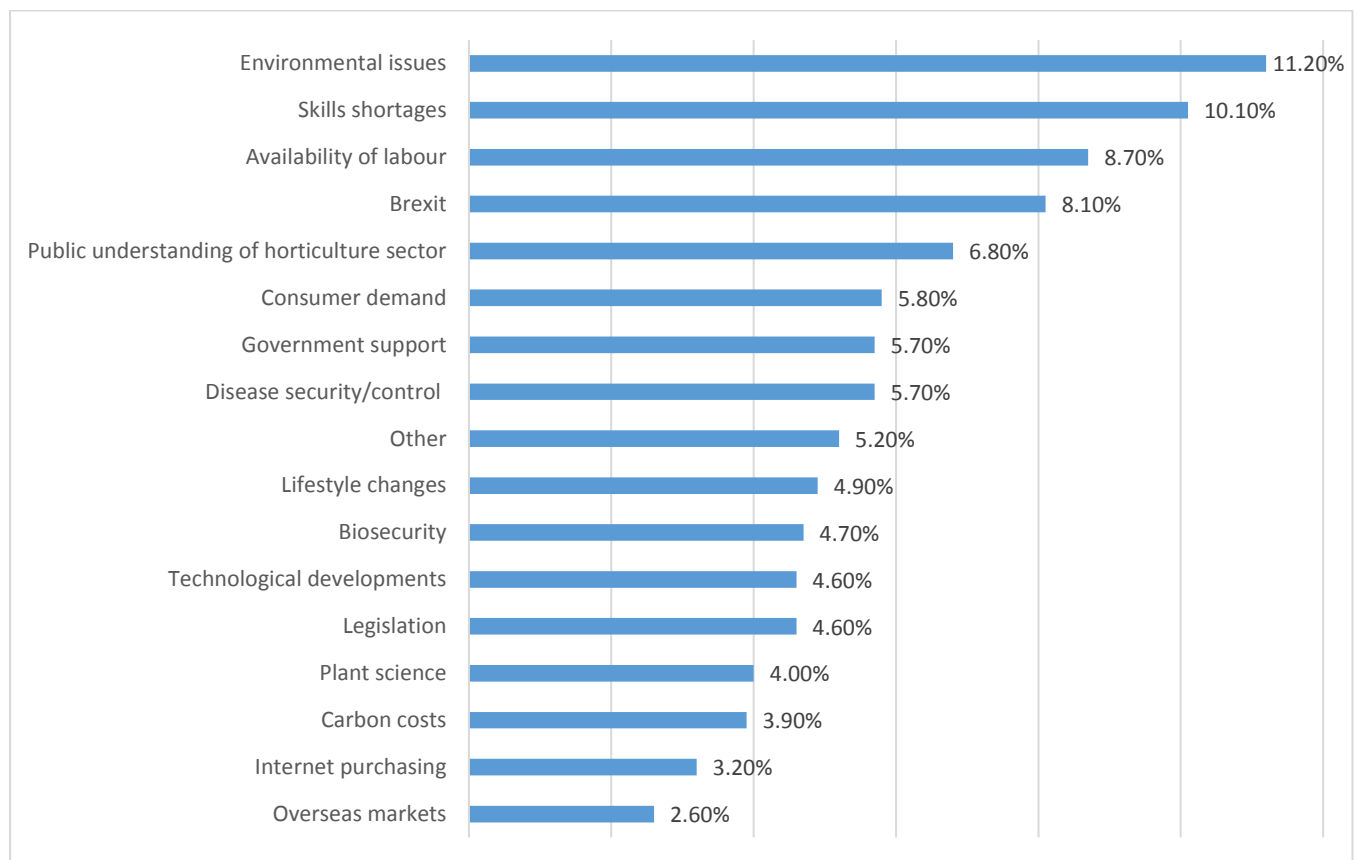
- Environmental Issues,
- Skills shortages (see section 5) and availability of labour,
- Brexit, and
- Public opinion and understanding of the horticulture sector.

The following figures first reflect these responses for all respondents and are then broken down by business size.

³¹National Foundation for Educational Research (2014), *Impact of school gardening on learning*

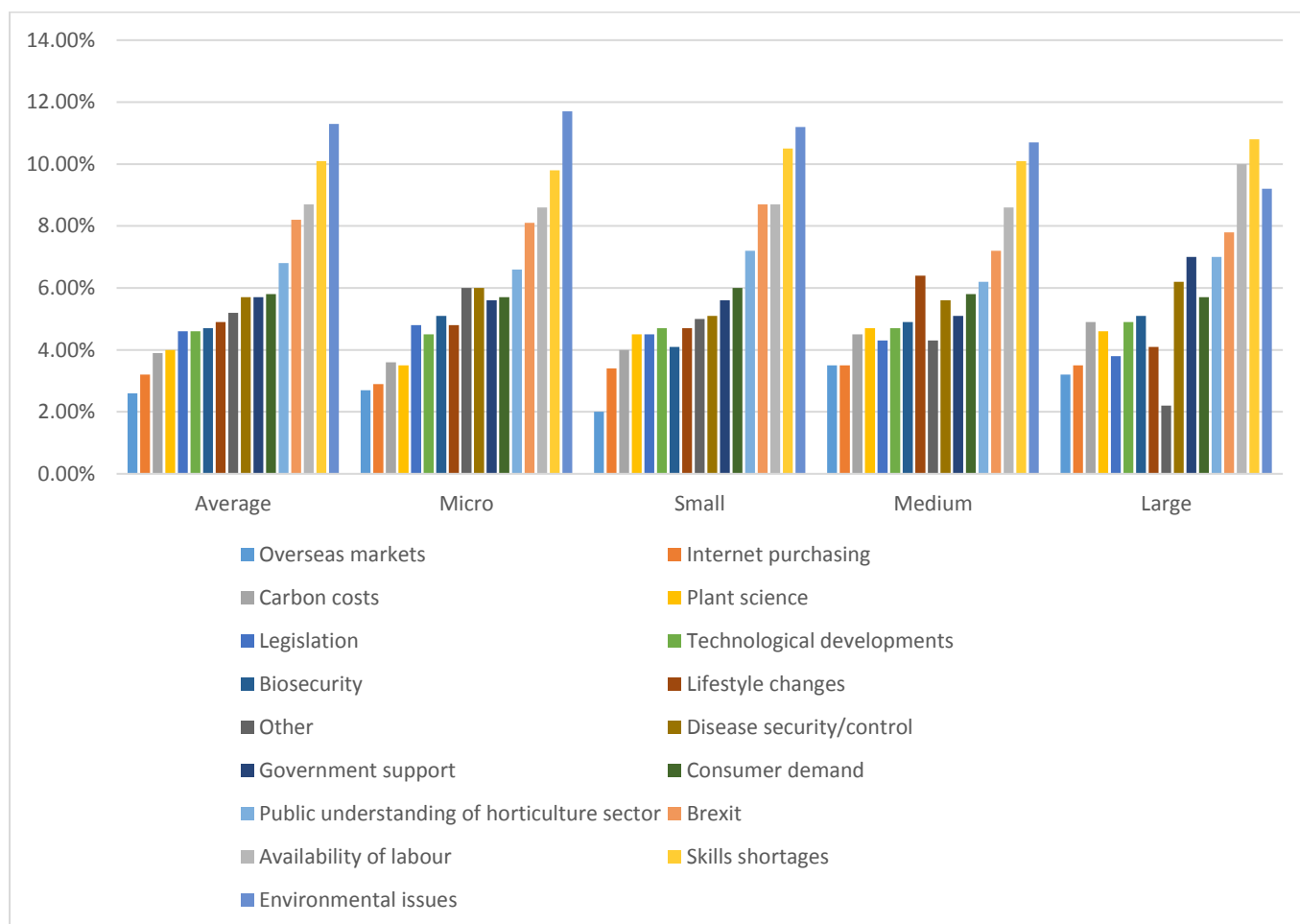
³² National Trust (2012), *Natural Childhood*

Figure 15: Drivers of future change (%)



Base: 4901 responses (multiple choice question)

Figure 16: Drivers of future change – by business size



Base: 4869 responses (multiple choice question); sorted by importance (left to right)

3.2.1 Environmental issues (e.g. climate change, water scarcity)

Environmental issues were the highest scoring driver of future change overall and of particular importance for all sized businesses.

Developments in recycling (e.g. of flower-pots) and the related regulations are a key concern for businesses here, as well as the use, disposal and recycling of non-plastic materials. Also, several respondents expected that climate change will lead to new training needs, while one respondent expected an impact on the kinds of plants that can be grown in the UK.

3.2.2 Skills shortages and availability of labour

Skills shortages and availability of labour along with recruitment challenges featured prominently in the skills survey responses and the workshop discussions. The availability of labour also featured prominently in the workshop discussions. Skills shortages are further discussed in section 4.1 and skills gaps in section 4.2.

Availability of labour

Seasonal labour is a very important factor for large parts of the ornamental horticulture sector. There are concerns about the difficulties in hiring new recruits, including apprentices. The workshops identified low awareness of the opportunities in the sector, a lack of interest in working manually either outdoors in general or the ornamental horticulture sector specifically, as well as changing work patterns towards flexible working hours as prominent recruitment barriers. Poor working attitudes and behaviour problems were also mentioned in both workshops and the qualitative responses of the skills survey.

Furthermore, the UK is having to compete with other European countries for foreign labour and Brexit may make it more difficult to recruit internationally. As a potential solution, workshop participants suggested an awareness campaign encompassing schools and colleges as well as the general public promoting engagement with ornamental horticulture such as through school classes and TV programmes.

The qualitative responses across all sub-sectors included diverging views of wages in the sector. While a large proportion of these responses highlighted low wages as a major disincentive to work in the sector, others were concerned about rising costs of employing workers. Reducing the need for labour by the increased use of machinery and/or automation was met with an element of scepticism in both workshops and qualitative responses, mainly due to investment costs and the need of specific skills sets.

Competition from supermarkets is also becoming an increasing issue, limiting revenue and earnings. Further suggestions to improve the standing of the ornamental horticulture sector in general could include increasing information and advice on the ornamental horticulture sector through the National Careers Service and including ornamental horticulture in the science and technology national curriculum. This issue is further discussed in section 4.3 on Vacancies and hard to fill roles.

3.2.3 Brexit

Using the response option “other”, respondents gave more details about their assessment of Brexit. Furthermore, being asked to give additional comments, further respondents shared their views on Brexit. These answers provide an excellent supplement to the analysis of the drivers of future change and the discussions during the workshops.

Arboriculture – Brexit

The participants of the Arboriculture workshop felt that Brexit is not a major concern for the industry but may affect customers and consumers. The number of foreign workers is quite low in the sector. Foreign recruitment is limited by skills parity issues and salary thresholds for non-EU nationals. Conversely, it was mentioned that foreign companies come to the UK to recruit talent.

One survey respondent said that Brexit uncertainty has led to a reluctance of businesses to invest or expand. Two respondents expressed concerns over biosecurity after Brexit, with one making comments about potential impact on pest and diseases regulations though no further detail was given.

Landscaping – Brexit

Brexit was not a major discussion point during the workshop. The skills survey responses on Brexit were mixed, with 8/17 respondents saying either that Brexit would not affect them or being unsure about the potential impact of Brexit. Two respondents said that customers may be more affected by Brexit than their business, without giving further details.

Another 4 respondents felt that Brexit could affect the availability of labour due to more difficult access to non-UK workers, many EU workers already employed and the general challenges of recruiting young UK nationals into the sector. Finally, one respondent said that Brexit, if leading to lower immigration, could increase competition for a reduced pool of workers.

Ornamental Plant Production – Brexit

The workshop participants emphasised that Brexit could impact on the access to EU workers, which several of the businesses employ. The availability of labour and the importance of EU workers was also mentioned by three skills survey respondents. Furthermore, 9/22 respondents were concerned that Brexit could affect imports and exports of plants due to tariffs or changing regulations (e.g. pest control). Another 5 respondents either said that Brexit would not have an impact on them or that they were unsure.

Public Gardens – Brexit

Out of seven responses, three do not expect Brexit to have an impact. One respondent said that Brexit could have a large impact, as Europe is a major destination for their flower exports. Another respondent was concerned about continued access to seasonal workers from the EU.

Garden Retail – Brexit

The participants of the Garden Retail workshop felt that a no deal Brexit could have an impact on trade relationships and supply chains. The price of plants or flowers is, however, more dependent on the value of the Pound.

Only one skills survey respondent made comments on Brexit and expressed confidence that Brexit would make the business more self-sufficient, possibly implying that UK production could be increased.

3.2.4 Public opinion and understanding of the horticulture sector

Participants at all workshops agreed that there is little public awareness of the importance of the sector and related career opportunities. Participants felt that awareness of the professions in the sector and its value needs to be raised in schools and amongst parents, grandparents and the general public. Several workshop participants suggested a TV programme similar to Countryfile on the ornamental horticulture sector.

In terms of opportunities, the ornamental plant production sector offers great opportunities for science graduates and entry is less competitive. Therefore, further awareness needs to be raised of the sector.

Another questioned if the term ‘ornamental horticulture’ is one that resonates with young people.

3.3 Looking to the future, technology and automation

The automation of work processes through the use of robotics and advanced machinery will significantly transform skills and labour needs. To what extent this industrial transformation will impact on the ornamental horticulture sector and if it could change labour needs and thereby replace unskilled or skilled workers is difficult to foresee.

Fully consistent data on the automation potential of the ornamental horticulture sector is presently not available. In 2013, the Oxford Martin School published a research paper on the future of employment³³. On a scale of “0” for “non-computerisable” and “1” for “fully computerisable”, this study ranked and assessed the automation potential of 702 occupations. Unfortunately, not many occupations relevant to ornamental horticulture are listed in the report. One occupation, that may be relevant for most of the sub-sectors subject to this survey, Soil and Plant Scientists, faces a low likelihood of automation of 0.021. Landscape Architects also have a low automation potential of 0.045. Other occupations that are relevant to at least parts of the ornamental horticulture sector are more susceptible to automation. For First-Line Supervisors of Landscaping, Lawn Service, and Grounds-keeping workers the likelihood of automation is forecast as 0.57.

For Landscaping and Groundskeeping Workers, the automation potential is predicted as 0.95. Correspondingly, for Tree Trimmers and Pruners, the automation potential is also relatively high at 0.77. This does not necessarily mean that a high number of jobs will be replaced by machines or robots but indicates the potential for employing advanced technology in those work processes. These data do not provide sufficient detail on how automation and new technologies may be integrated into current work processes and what impact this may have on skills and labour needs however³⁴.

³³ Oxford Martin School (2013), *The future of employment*

³⁴ Ibid

Automation could lead to productivity gains fostering economic growth in the ornamental horticulture sector and may substitute for workforce needs. For instance, technologies such as robotics could be used for trimming in gardens³⁵ or in plant growing in greenhouses³⁶.

In addition, smart systems could promote energy and water efficiency by automatically regulating lighting and irrigation or through managing temperature and ventilation³⁷. Drones can be employed for landscape surveying or tree inspection (thereby avoiding at least some of the dangers of climbing). Computer Aided Design (CAD) could equally assist in the design of gardens, greenspaces and landscapes. In this context, the Netherlands' horticulture sector appears to be taking the lead in automation, demonstrating the potential of new technologies, though much of this is focused on Dutch greenhouses. Equally automation is already being used in construction work – particularly the use of surveyor drones and automated machinery.

These seemingly boundless opportunities were put to the test as part of this skills survey, during which respondents and dedicated workshop participants were given the opportunity to express their views on the automation potential of tasks and skills associated with ornamental horticulture in the sector.

As is outlined in the following sections, professionals and leaders in the sector currently view the short-term automation potential as limited. Referring to the skills scoring results, the majority of businesses agreed that the future need for skills in robotics, automation or artificial intelligence may increase in the near future (3-5 years) for professional occupations or skilled trades in the sector. Nevertheless, based on their rather low importance currently, the impact of automation on the sector in the near future is seen as limited. In addition, workshop participants across the four sub-sectors argued that the ornamental horticulture sector is not as susceptible to automation as other economic sector such as manufacturing, due to the higher prevalence of specialist tasks that require human intuition, hand-eye coordination, and skill (this notwithstanding the Dutch examples). Automation potential may exist in parts of the sector that are cross-cutting with other economic sectors such as “hard landscaping”, which has strong similarities with the construction sector.

New training needs related to new technologies also have to be taken into account. This may pose a challenge for the sector, as indicated in Section 4 of this report, which confirms that many companies rely on internal training and that the availability of training of a sector-specific nature locally can be an issue. This is compounded by problems in recruiting already skilled staff and new recruits with the passion and motivation to work in the sector.

To assess the current degree of automation, digitalisation in the sector as well as to investigate the types of technologies and processes currently in use, respondents were asked if they currently use technologies related to automation, 4th generation technologies, plant genetics or advanced materials. There were 382 respondents answering this question out of 1101 responses to the skills

³⁵ <https://ahdb.org.uk/news/10-exciting-tech-developments-in-horticulture-as-seen-in-the-netherlands>

³⁶ <https://www.rhs.org.uk/advice/profile?pid=732>

³⁷ <https://www.priva.com/uk/solutions/horticulture/greenhouse-automation>

survey overall. This may not necessarily mean that the remaining businesses use none of the listed technologies and processes but may mean that some respondents did not have the necessary insight to give an informed response to this and related questions.

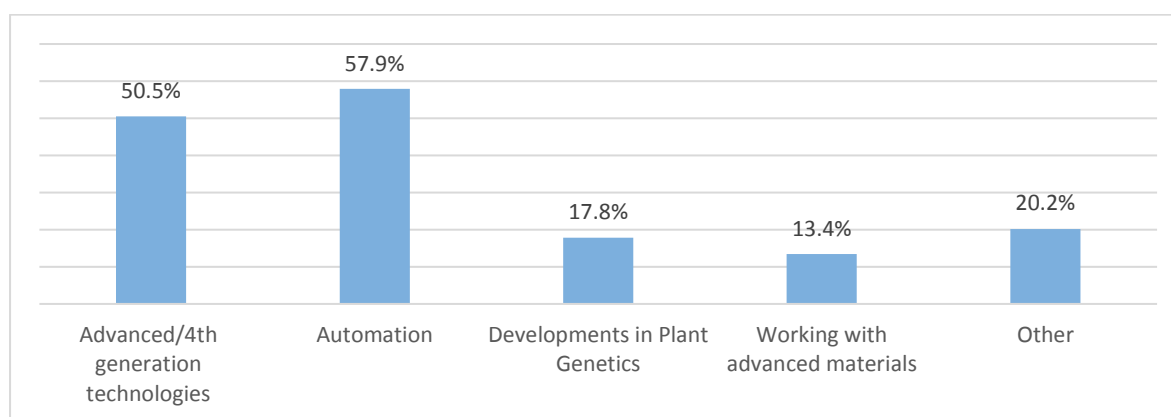
Nevertheless, as the figures below show, automation technologies and processes including robotics, drones or 3D land-surveying are quite widely used, closely followed by advanced/4th generation technologies such as digitalisation or controlled use of fertilisers. Overall, the use of plant genetics and advanced materials was rather low, though it should be emphasised that these technologies and processes may not have much application in some of the sub-sectors.

As the list of technologies and processes was fairly generic, respondents were also given the opportunity to individually name technologies and processes in use in the response category “other”. The related responses, (see Appendix 3), show a high degree of innovation and modernisation of technologies and equipment in longstanding use.

While more advanced technologies such as CAD were also mentioned, the results of technology currently in use and their predicted impact for the future do not necessarily indicate the “quantum leap” or disruptive impact often associated with Industry 4.0 in other economic sectors.

3.3.1 Technologies and processes currently in use

Figure 17: Technologies and processes in current use (%)



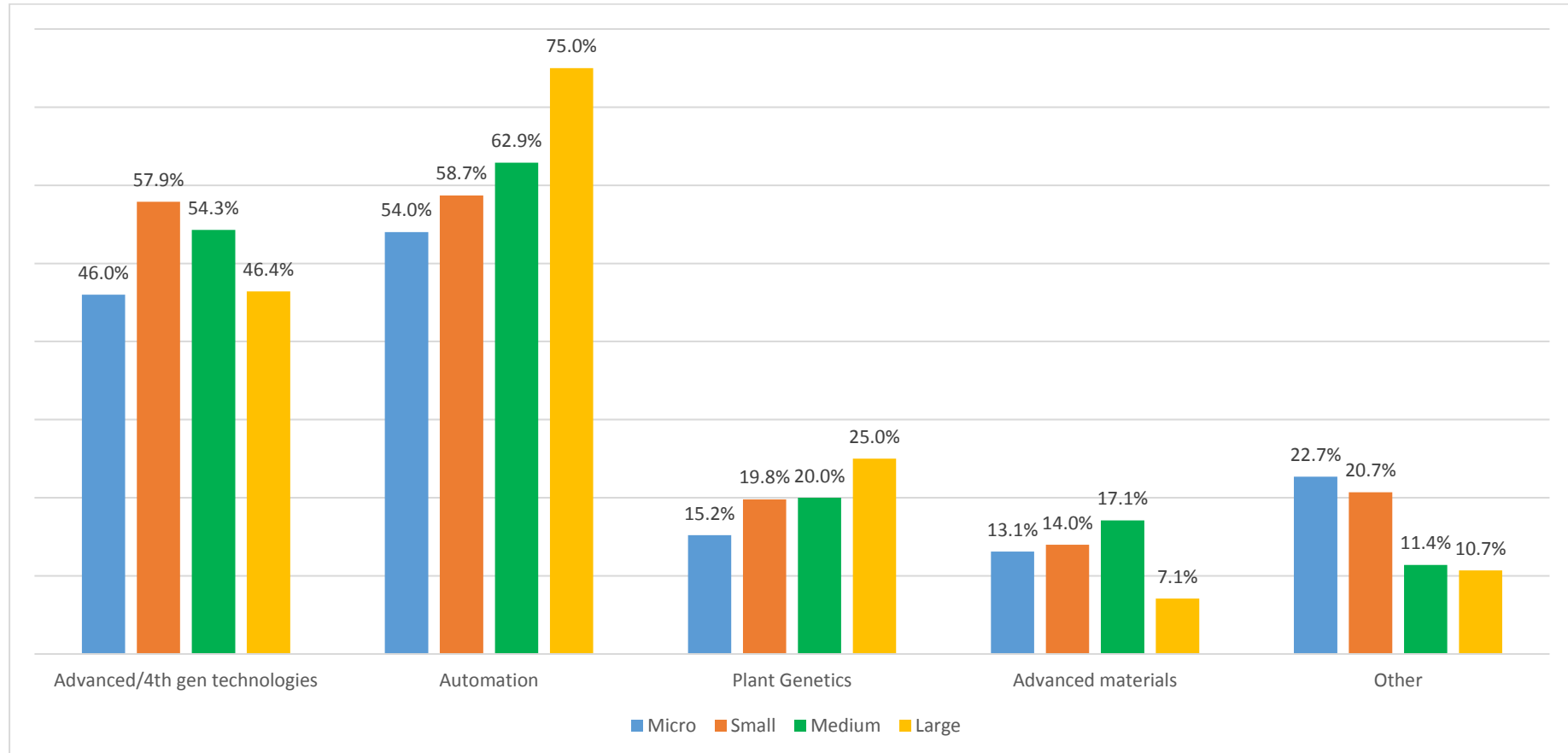
Base: 382 respondents and 610 responses (multiple choice question)

The figure draws on the responses of 382 businesses. This suggests that the number of businesses in the ornamental horticulture sector that employ automation and 4th generation technologies is overall relatively moderate.

Broken down by business size, the figure below shows that automation technologies are most widely used in large business (75%), on the 4th generation technologies include telecommunications and mobile device solutions, which may explain the high use of these technologies in small businesses.³⁸

³⁸ International Journal of Technical Research (2016), *The Scope of 4G Technology: A Review*

Figure 18: Technologies and processes in current use – by business size (%)



Base: 610 responses (multiple choice question)

A high proportion of companies say that they are using advanced technologies and automation but the definition of these terms is clearly being generously interpreted by some firms. Technology where the definition of what is entailed is very clear – e.g. plant genetics – may, perhaps, be delivering more accurate results. In this area, a little less than a quarter of larger companies are involved but only half that proportion are micro and small firms.

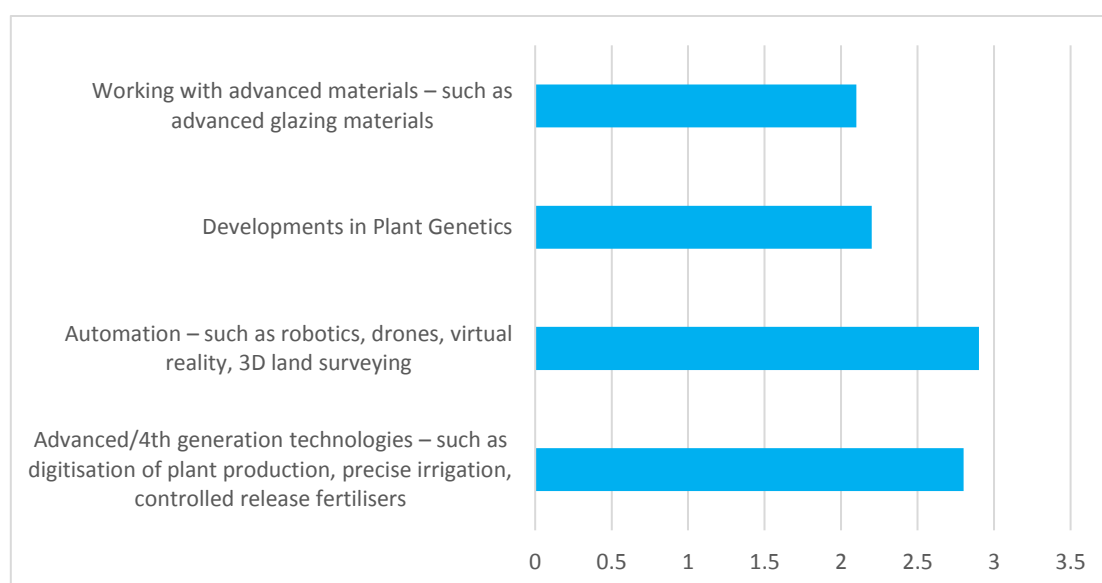
The sub-sector analysis of qualitative responses shows that the technologies defined as belonging to the categories are not fully understood. Respondents do not regard some of them as advanced as the underlying principle of the questions would require. Rather, attendees interpreted them as technological upgrades and innovations of prevalently used equipment like chainsaws and CAD systems.

The question of the penetration of advanced technologies into the sector and its subsectors will require a more precise and extensive investigation. This would be of immense value for training development and for other support initiatives. More detail by sub-sector is presented in Appendix 3.

3.3.2 Future impact of technologies

In addition to naming the technologies and processes currently used, respondents were also asked to rank the future impact of technology on their business on a scale from 1-10. The figure below shows the mean averages of this ranking exercise as completed by all respondents participating in the skills survey.

Figure 19: Expected Impact in three years

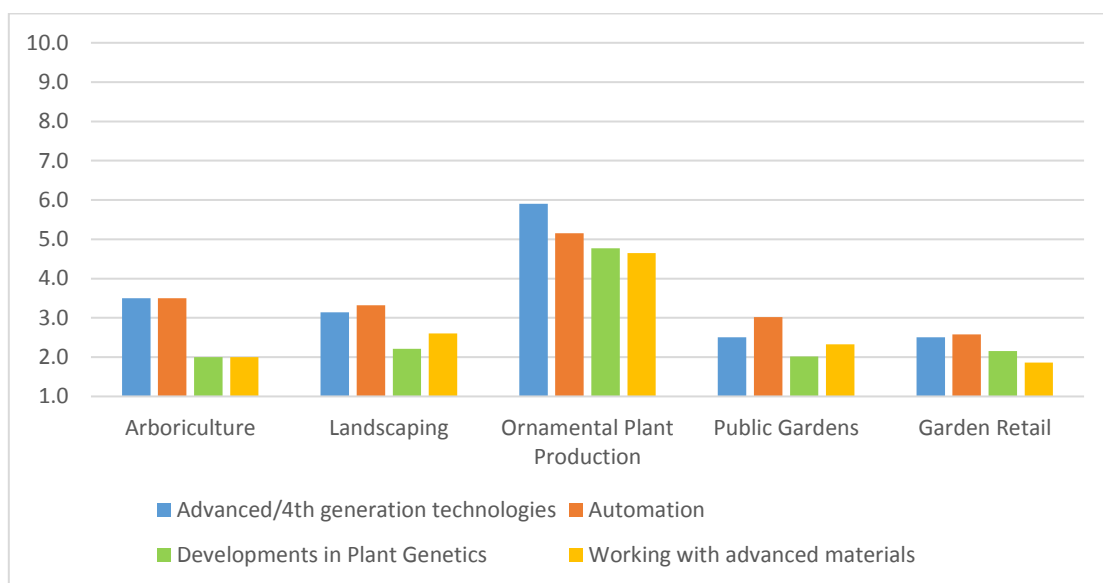


Note on base: The chart illustrates results from four separate questions which were scored on the same scale. Numbers answering these questions varied between 761 and 837.

As can be seen from the figure above, the future importance of all of the technologies is scored very low by employers. A score of less than three out of ten is low and this may reflect the short-term time frame of 3 to 5 years during which employers may well feel is insufficient to show significant change.

When assessing the views of medium and large-sized businesses by sub-sector, this pattern is largely repeated. Whereas Ornamental Plant Production businesses see these technologies as having a bigger impact, on the scale from 1-10, the related results are still quite moderate and all score below six.

Figure 20: Expected Impact in three years - medium and large-sized businesses (all subsectors)



Further explanations of this were provided by ornamental horticulture businesses in the four dedicated workshops.

Overall, there was agreement that, whereas menial tasks could be automated with relative ease, the ornamental horticulture sector requires a specialist set of skills for many tasks. In this context, it should be emphasised that predicting the impact and importance of technology and automation is very challenging from a business perspective, particularly when considering that the ornamental horticulture sector is largely made up of micro and small businesses.

3.3.3 Future job roles

In the context of technological transformation, automation and digitalisation, as well as other drivers of change, respondents were also asked to name and identify any new job roles that may be created as a result of these changes. Again, this is presented by subsector in Appendix 3, though it has to be emphasised that many responding businesses were unsure how to predict the creation of new job roles.

Based on the subsector answers (see Appendix 3), new jobs related to automation seem to present a more profound potential impact for businesses in Ornamental Plant Production and to a certain extent, landscaping. Correspondingly, for the Arboriculture sector, biosecurity and disease control expertise is at the top of the agenda, while environmental and climate change expertise will have a significant impact for the public garden sector. In addition, for Garden Retail, IT skills were of high importance.

This further corroborates earlier results listed in the report that the impact of new technologies, automation and other drivers of change such as environmental issues will affect each sub-sector differently.

This also has implications for how the sector as a whole can engage with government and other relevant stakeholders. Furthermore, it could necessitate a very sub-sector specific skills planning process, as the skills-scoring and the future drivers of change results indicate. This may also lead to changing patterns in the priorities of staff groups for training and CPD listed in section 5.

4. The Skills Challenge

As stated in section 2, the ornamental horticulture sector makes a very valuable and unique economic and non-economic contribution to the UK's economy and society. Notwithstanding this contribution, as the survey has confirmed, the sector is facing a significant skills challenge.

This challenge results both from skills gaps requiring training of the existing workforce as well as skills shortages, requiring the recruitment of suitably skilled staff. Building on the results in sections 2 and 3, this part of the report shows that the skills challenge manifests itself through a stagnation in overall workforce numbers (partially caused by the current full employment market), an ageing workforce (in key roles), difficulties in recruiting workers with the right skills and attracting apprentices to the sector, and a major general concern over availability of labour i.e. a sufficient pipeline of future labour.

Aside from the above factors, the survey results and the workshops, indicate that the skills challenge is caused by other factors as well. For instance, the perceived poor quality of apprentices in terms of work ethics and behaviours and a lack of awareness of the nature of the tasks in the sector, are frequently pointed out by employers. Resolving the issue, however, may also require revision of expectations of apprentices as well as internal training practices to address shortcomings observed. As the skills scoring exercise presented in section 4.1 show, people management, while already scoring high will rank even higher in the future, and soft skills are of growing importance in each staff category. Furthermore, the relatively low number of trainers, verifiers and assessors may also indicate the need to formalise on-the job training further. The perceptions around the low wage situation experienced in the sector has also been mentioned several times (see section 3) and was discussed from an incentive to work in the sector and potential burden due to additional costs perspective.

In a nutshell, based on the survey results and the workshops this survey has confirmed skills challenges for this sector, that manifests itself in multiple facets, but if not addressed could stifle growth in the sector and potentially permit overseas competition to take greater shares of the UK market.

4.1 Skills Shortages

One of the main drivers of change identified by employers – second only to environmental issues – is the skills needs in the sector. The four dedicated workshops and quotes from the survey give more context per sub-sector (see Appendix 2).

Skills shortages extend to where particular skills are hard to find and recruit.

4.1.1 Skills Scoring of current and future skills

As a key component of the skills survey, respondents from all sub-sectors were asked to score the current level of skills for a selection of job-role groups such as managers or skilled trades on a scale from 1-10 – where one is the lowest score and ten the highest.

Respondents were also asked to score the importance of these skills in the next 3-5 years on a divided scale from one to four and then from six to ten. These rankings were then analysed for this report using skills scoring methods. The following charts show the results of the skills scoring exercise. Overall, each group of soft and technical skills is expected to increase in importance, with the exception of automation, robotics and AI.

The results of both exercises, that is scoring of the current importance of skills and predictions of future importance in the next 3-5 years, were entirely based on employers' perceptions of both. They thus accurately reflect what employers think and are therefore subjective and align to their circumstances.

The staff categories surveyed included:

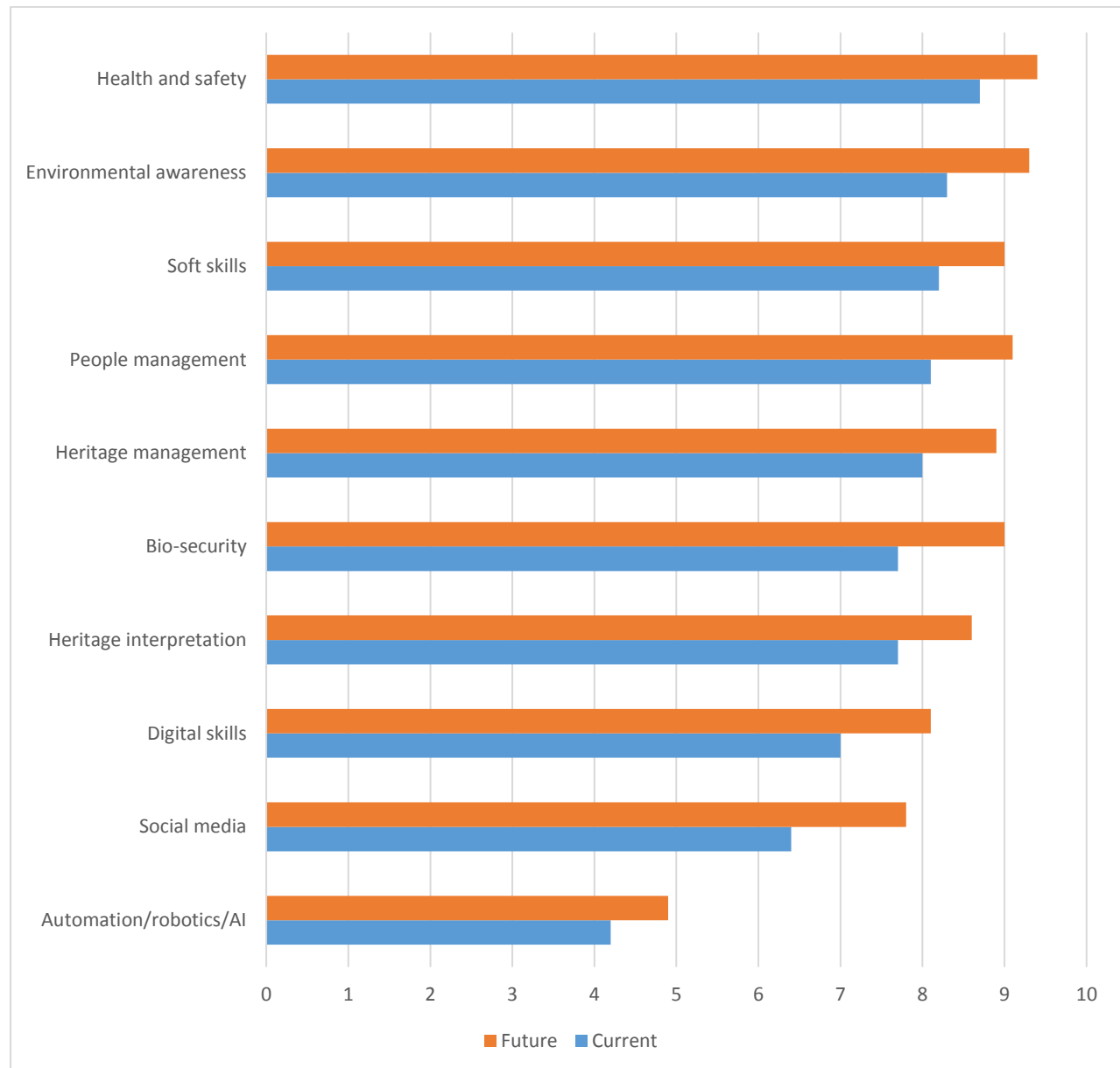
- (1) Directors, managers and senior officials,
- (2) Professional and technical occupations,
- (3) Skilled Trades and
- (4) General Employees

For each of these employers were asked about a core set of soft skills, social media and digital skills, followed by a list of occupation and/or sector specific skills.

The skills queried were agreed in advance with the OHRG. The following sections provide an evidence base on the soft and technical skills needs of the workforce in the ornamental horticulture sector. It also assists efforts to ensure the sector's workforce is equipped with the right skills to maintain the importance of the sector for the UK economy and society, as well as to promote its further economic growth.

4.1.2 Managers, directors and senior officials

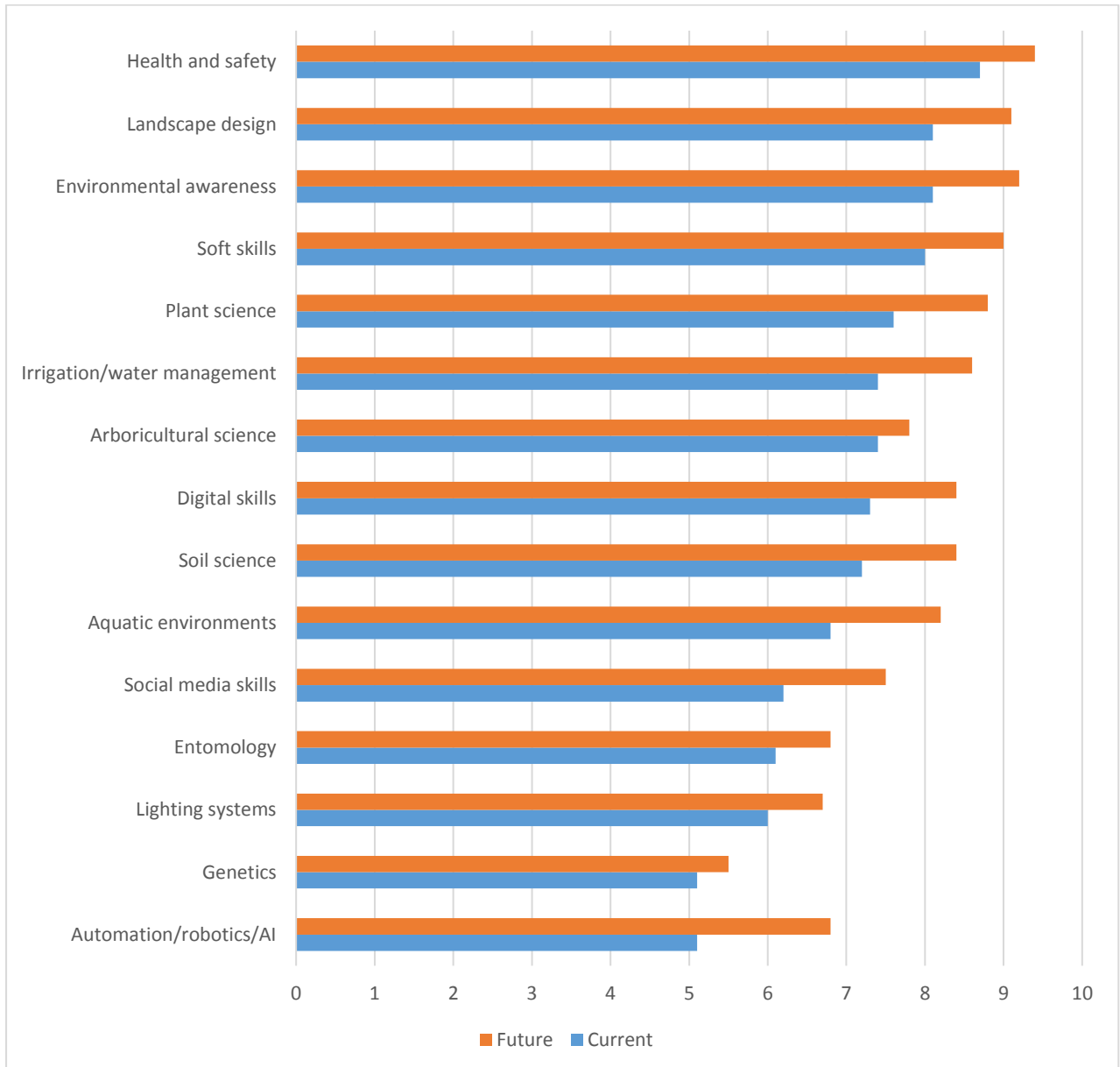
Figure 21: Senior level skills scoring – current skill level and future skills need



Base: 1,101 respondents, responses range from 128 to 5668

4.1.3 Professional and technical occupations, e.g. landscape designer or contractor

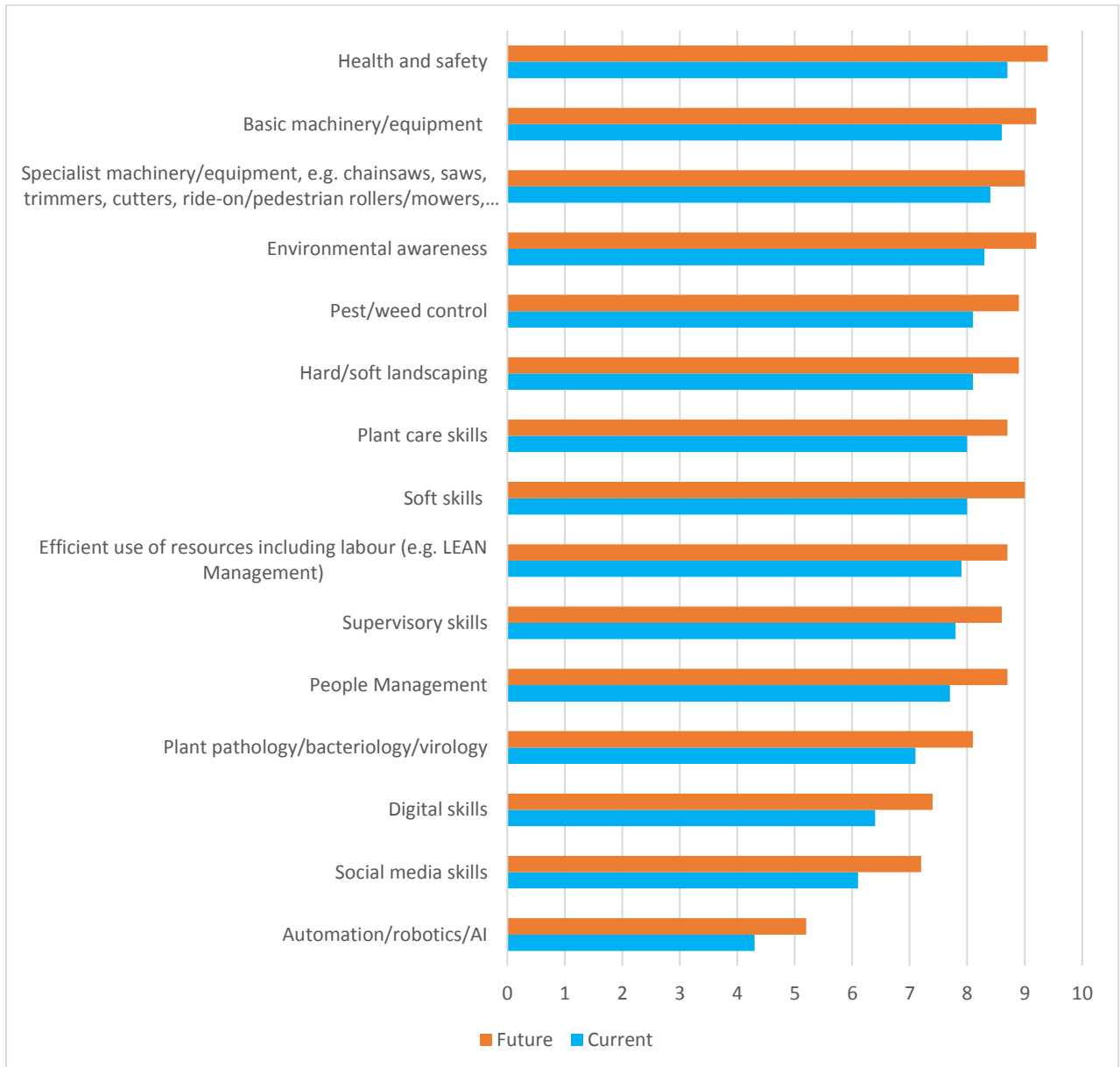
Figure 22: Professional and technical skills scoring – current skill level and future skills need



Base: 1,101 respondents, responses range from 128 to 5668

4.1.4 Skilled trades, e.g. gardeners, arboricultural consultant or contractor

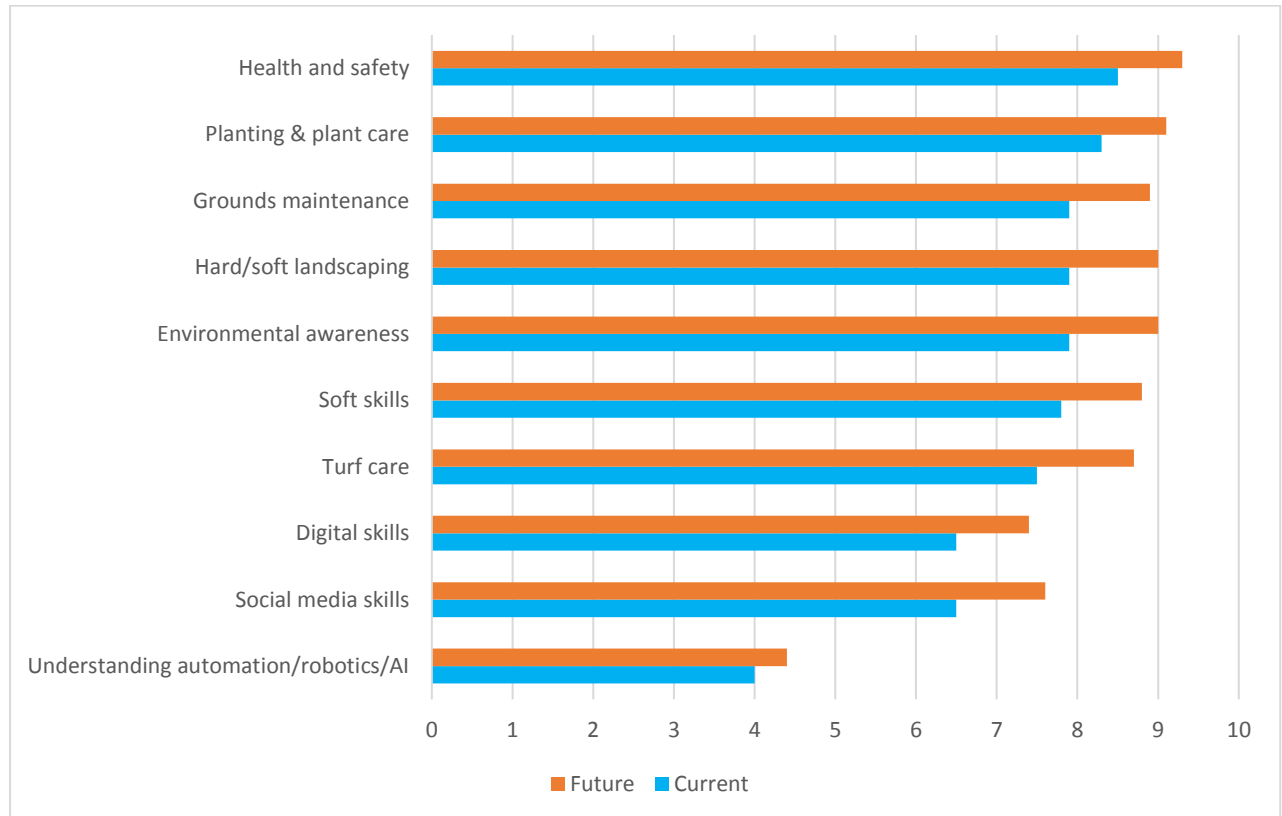
Figure 23: Skilled Trades skills scoring – current skill level and future skills need



Base: 1,101 respondents, responses range from 128 to 5668

4.1.5 General employees

Figure 24: General employees' skills scoring – current skill level and future skills need



Base: 1,101 respondents, responses range from 128 to 5668

4.1.6 Skills scoring – Analysis of cross-cutting skills and observations

The results above show that employers believe the sector to be relatively highly skilled. This is underscored by other evidence from the survey on degree qualifications (section 5.8). This also demonstrates a confidence by the sector that currently dominating skillsets will increase in importance in the future.

Understanding automation/robotics/AI- importance

As can be seen from the skills scoring results, the current skill level of *Understanding automation/robotics/AI* ranks among the lowest across all professional groups. Other skills such as Arboricultural science or Genetics may rank lower due to their specialist and sub-sector specific nature. Interestingly, employers believe that the future importance of the *Understanding of automation/robotics/AI* will moderately increase for Managers (17%), skilled trades (21%), and General Employees (10%) while increasing considerably for Professionals (33%). These results, however, are based on relatively low current skills scores. In combination with the responses highlighted in sections 3.3.1 and 3.3.2, this may indicate that the automation processes predicted for

other economic sectors such as manufacturing or construction are not seen as having the same disruptive impacts on the ornamental horticulture sector.

Digital skills- importance

The sector does not expect a significant difference in this pattern for digital skills either. Currently of modest importance for all staff groups, the future increase in importance of digital skills is, similar to automation for managers and skilled trades (16%), professionals (15%), skilled trades (16%) and general employees 14%.

It should be noted though that employers recognise the growing potential of robotics, automated systems, social media, and even of virtual reality (albeit at a low ranking for the immediate future). This recognition would seem to contradict the low expectations for the importance of digital skills (which is generally recognised in other sectors as being of high importance for the future).

Nevertheless, a growing trend towards e-learning may make this skill an asset for companies in the future and could also address the widespread concern related to the time required for businesses to release staff for external training as well as access issues to sector-specific training.

Social Media - importance

Social media skills are of relatively modest importance for all staff groups at present. Nevertheless, their importance will increase in the future for managers (22%), Professionals (21%), skilled trades (18%) and general employees (17%). When considering the apprentice recruitment barriers mentioned in section 5 and the drivers of future change (section 3) including public opinion, social media may assist the sector's businesses in raising awareness of work opportunities, the nature of work in the sector and the general importance of the sector for the UK economy, environment and well-being of society (see section 2).

Soft Skills- importance

Soft skills rank highly amongst all staff groups and are predicted to increase. For managers (10%), skilled trades, professionals and general employees (each at 13%) are predicted to be moderate, though the initial scores are already high. Taking into account the section 5.3 results discussed below, which show that few businesses employ certified trainers, verifiers and assessors, while a majority relies on internal training, sustained training and upskilling in soft skills may be required, for instance for trainers.

Environmental awareness – importance

Similarly, the values for Environmental awareness are set to moderately increase across all staff groups surveyed. While already high at current levels, the importance of this skill will increase further by 12% for managers, 14% for professionals, 10% for Skilled Trades and 14% for General Employees respectively. These results therefore correspond not only with the above cited crucial

role the ornamental horticulture sector plays in the protection and promotion of “natural capital” and related UK government policies, but also corroborates the sector’s assessment of the major drivers of future change (see section 3.2), amongst which environmental issues (e.g. climate change, water scarcity) ranked high.

Health and Safety - importance

The need for this skill is already high among all staff groups. The respondents predict further future increases in importance to a varying degree for managers, professionals and skilled trades (each at 8%) and general employees (9%). Combined with the needs for training results in section 5, where respondents from all sectors repeatedly mentioned the need for Health and Safety and or First Aid training, this could signify a crucial skills gaps and shortage challenge in the sector in the near future.

Competition with other sectors

Employers in the ornamental horticulture sector may not regard many of the skills as being of high importance to the sector – e.g. digital, automation, etc. – but the fact remains that other sectors may be embracing these technologies and skills more readily and that young people may, therefore, not regard this sector as being at the “cutting edge” and therefore less attractive than other sectors.

4.2 Causes of Skills Gaps

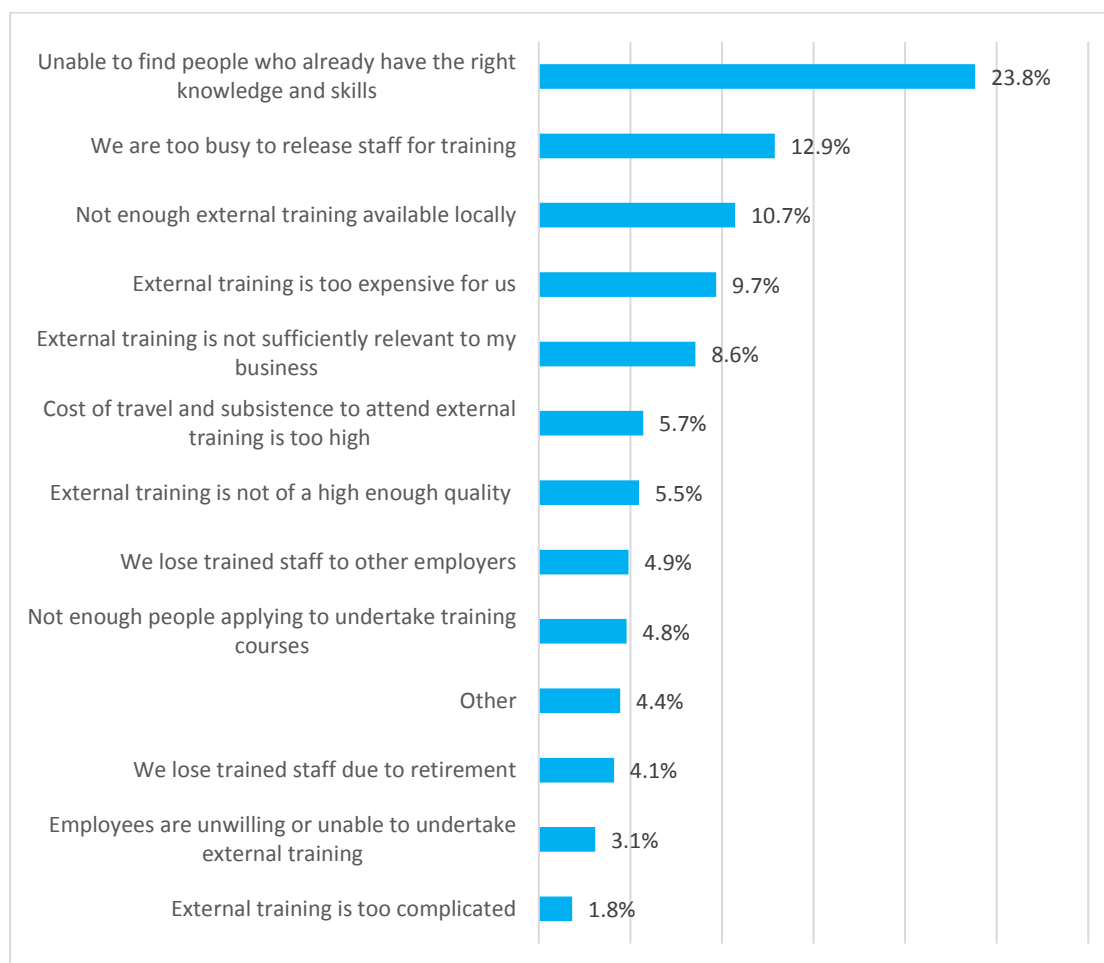
Skills gaps refer to those skills that are reported to be missing or lacking somewhat in the existing workforce.

The following chart shows the reasons for or causes of workers not having the right or sufficient skills in the sector.

The most common reasons are that external training is perceived to be not available locally or too time-consuming (too busy to release staff) and the cost of training – these were cited as the top factors causing skills gaps in the workforce. This corresponds to the issues highlighted by businesses in the context of training needs in section 4.1.

These answers also tie-in to section 3.2 on the drivers of future change. Respondents selecting “other” were invited to give further detail on their responses. The most relevant responses are listed in Appendix 2 by sub-sector.

Figure 25: Skills gaps



Base: 670 respondents, 877 responses

4.3 Vacancies & Hard to Fill Roles

In total, the surveyed businesses reported 7,061 horticulture vacancies over the last three years, an average number of 8.5 per business. This represents a proportion of vacancies of 16% based on the overall number of staff (and volunteers) reported as 43,000 (see section 2.3.3). It also represents a staff turnover (vacancies only– not accounting for replacement or general churn) of just over 22% of the average staff numbers per company over the three-year period.

In addition, of the 7,061 vacancies, 431 or 6.1% remained open at the date of the survey. This figure can be taken as a broad indication of hard-to-fill roles.

The following table shows the average vacancies reported by respondents for the specified job roles and the numbers they said remain unfilled at the time of the survey.

Table 6: Hard-to-fill vacancies over the whole ornamental horticulture sector

Job Role	Past 3 years	Remain open	% Remaining open
Managers/Directors	101	2	2.0%
Professional/Technical	277	31	11.2%
Skilled trades	1954	266	13.6%
Supervisors	90	9	10.0%
Sales/Customer service	201	7	3.5%
General employees	4338	106	2.4%
Others	100	10	10.0%

c. 35%

Base: 772 responses for vacancies, 229 responses for vacancies remaining open based on questions individually statistical analysed. A small number of very recent vacancies just advertised may be included in the overall total inadvertently by the respondent.

The results provide a broad indication of which job roles are most difficult to fill at present. Leaving aside the unknowns in the “Other” category the most difficult job roles to fill are skilled trades, professional and technical roles, and supervisors in that order, which in total amount to nearly 35% of vacancies residing in the instrumental/technical roles of professional/technical, skilled trades and supervisors. According to the Employer Skills Survey 2017, an average of 33% of vacancies were considered as hard to fill or “skill-shortage vacancies”. The ratio of hard to fill vacancies in the sector is therefore close to this reported average. When considering the category “skilled trades”, however, the ornamental horticulture sector’s proportion of hard to fill vacancies (13.6%) is much lower than the national average of skilled trades (42%)³⁹. Nevertheless, this does not necessarily indicate that all vacancies were filled with staff meeting all qualification requirements.

In reviewing those who reported hard to fill vacancies remaining open AND could allocate numbers to a job role (89 respondents could do so), the following were noted which may represent a sector-wide trend (but has not been statistically tested).

100% of their vacancies remain unfilled	21%
50 and 99%	22%
10 and 49%	36%
Less than 10%	9%

³⁹ Department for Education (2018): *Employer skills survey 2017*

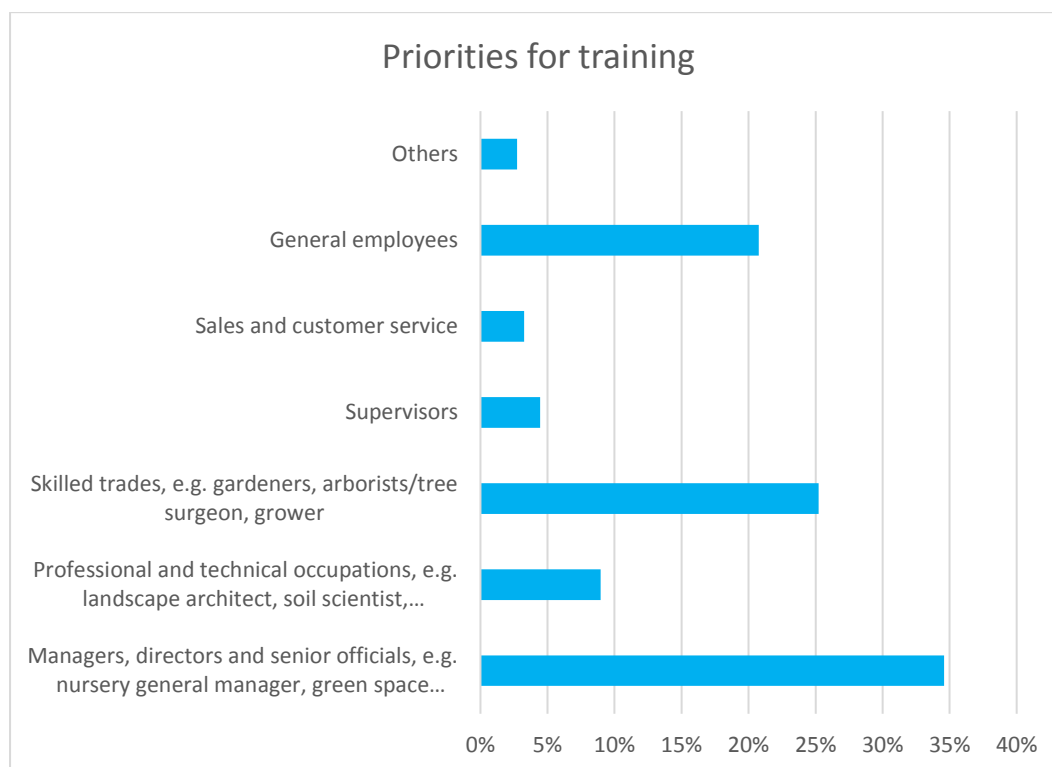
5. Workforce Training and Staff Development

In this section, we describe the reactions to, involvement in and the needs of the sector as described by the surveyed businesses and workshop attendees, regarding training/CPD and development activities; we also summarise the apparent attitudes and behaviours regarding workforce training.

5.1 Training

Respondents were asked to indicate – for each cluster of job roles – whether they would prioritise these roles for training. Across the various job roles, training and CPD have virtually equal priority.

Figure 26: Priorities in Training

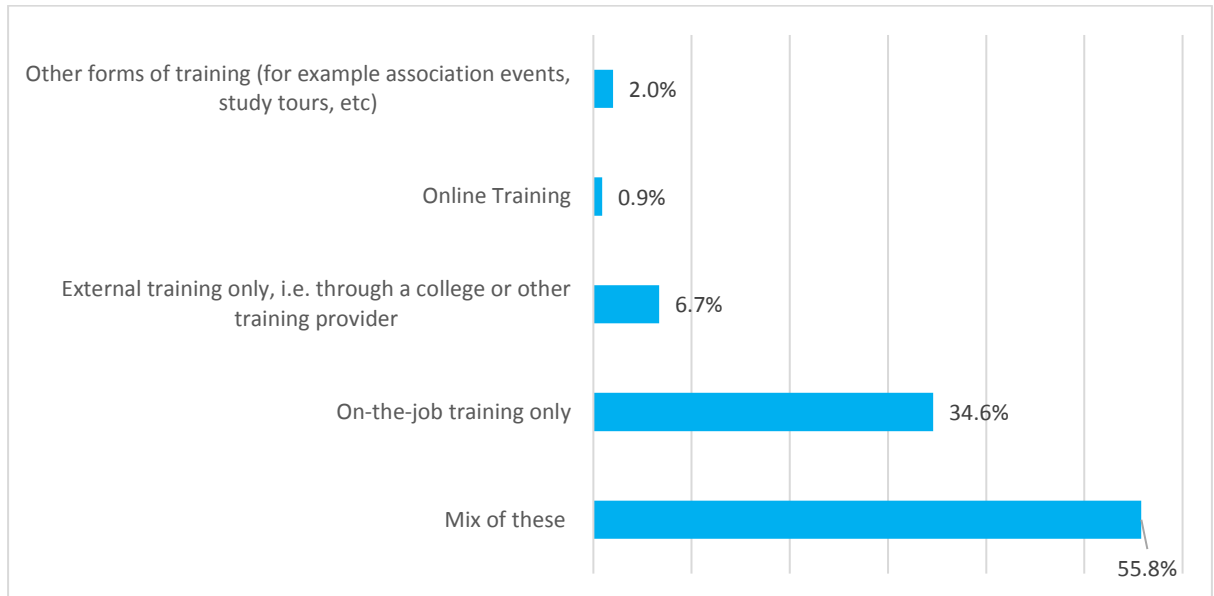


Base: 2320 responses (multiple selections possible).

One plausible reason for the managers, directors and senior official roles being the focus for training is that due to the lack of supervisors in the sector as mentioned earlier in the hard to fill vacancies section, people may well be promoted into job roles for which they are not fully trained and do not possess the right skills. As shown earlier in 4.2 the main cause of skills gaps (30%+) is this one.

5.2 Training modes

Figure 27: Ways staff receive training

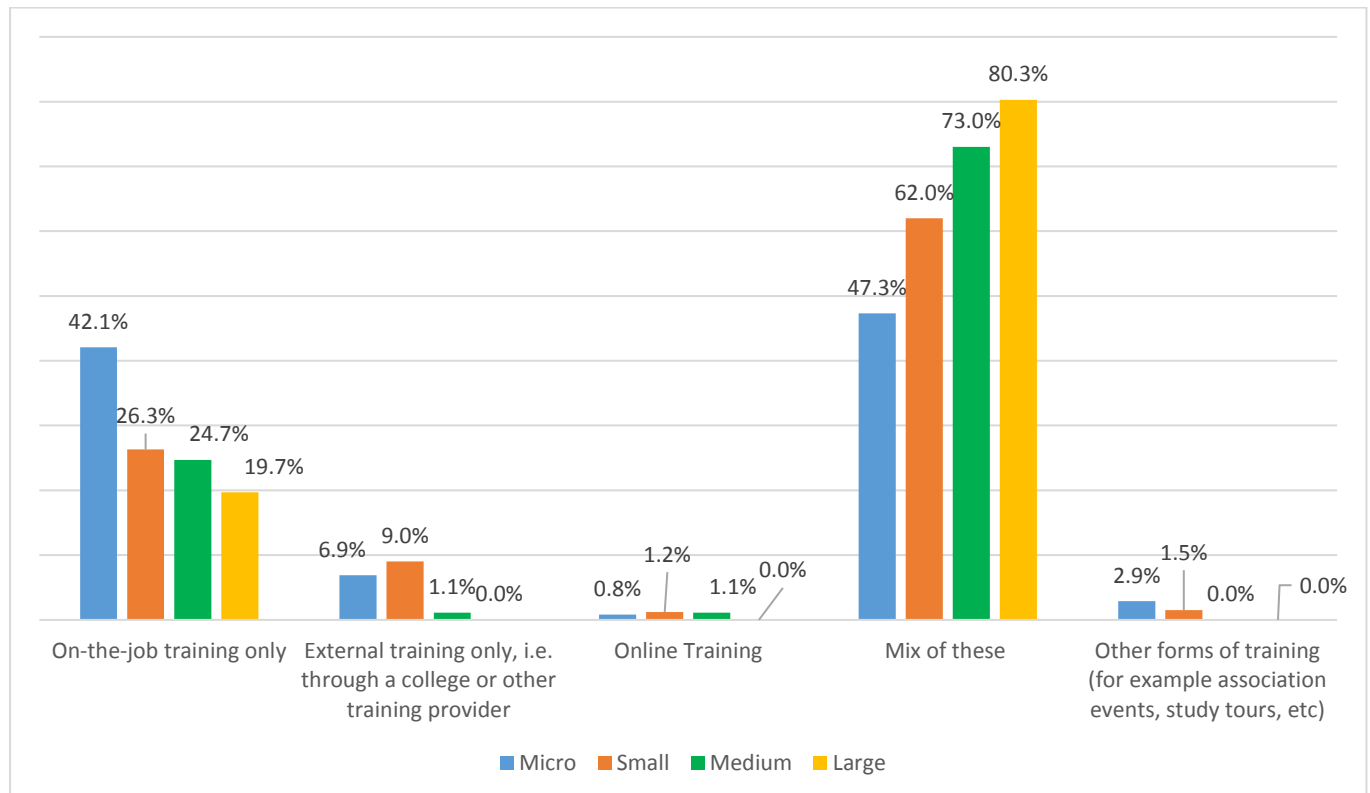


Base: 1079 responses

Respondents were asked to identify their main source of training. Around a third of employers say that they use on-the-job training but over half (55.8%) use “mixed methods” i.e. a mix of on the job, external and online training. The latter two are utilised as the main method by very few businesses. Other forms included trade association related activities for example study tours or events.

As the figure below shows, this pattern is largely continued across the range of business sizes. The majority of businesses of all sizes rely on a mix of training methods. Perhaps understandably, a large proportion of businesses that rely exclusively on on-the-job training are micro or small-sized.

Figure 28: Ways staff receive training (by business size)

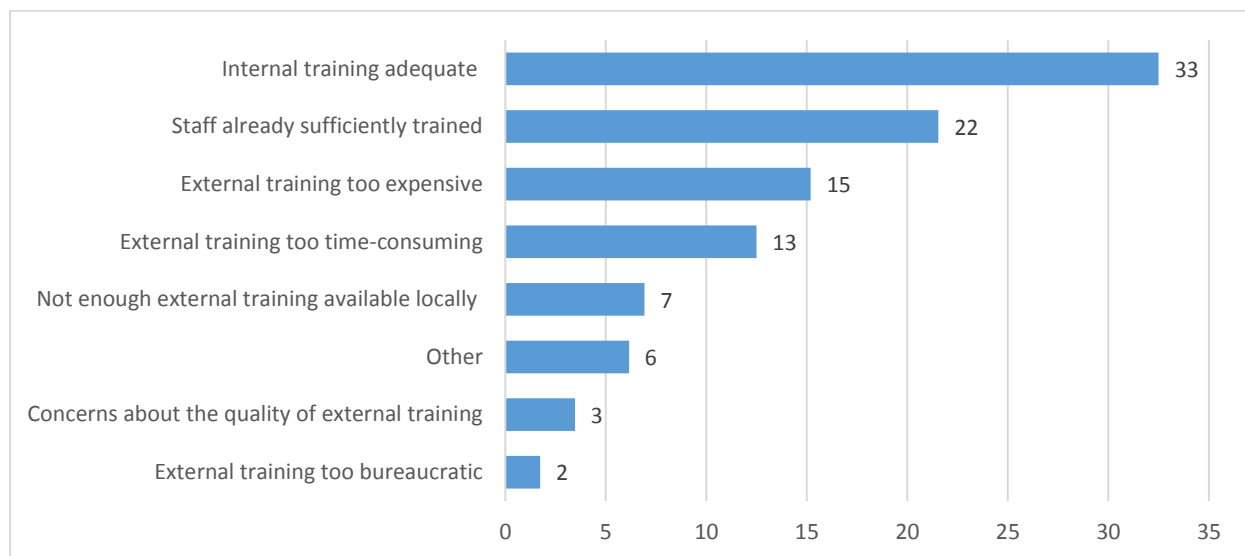


Base: 1076 responses

The following two figures focus on the reasons for on-the-job training and the related analysis of qualitative responses give further insight into related dynamics.

Indeed, when asked why businesses focus on internal training exclusively, a majority of businesses responded (33% of all responses by the businesses who answered this question) selected the reason that 'internal training is adequate' or that their staff are already sufficiently trained (22% of all responses).

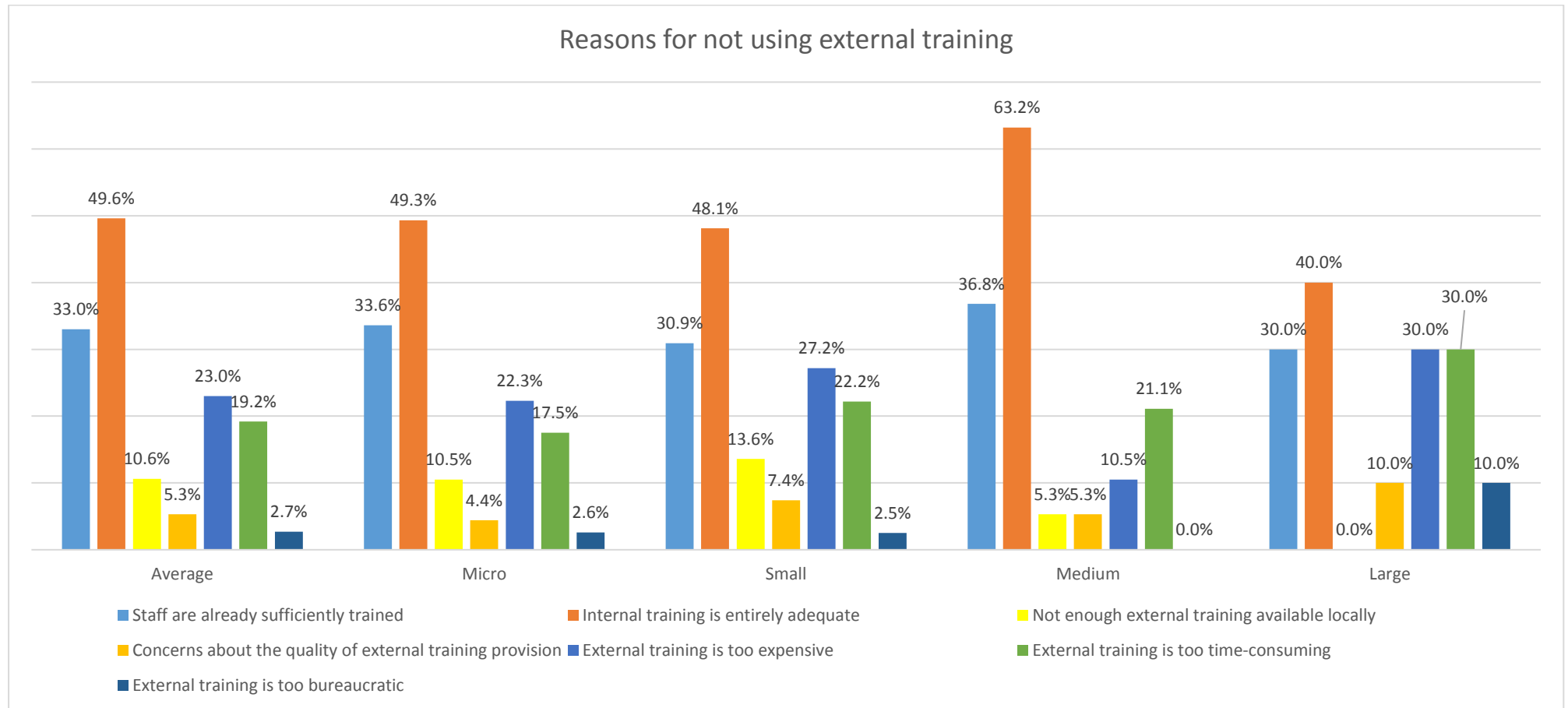
Figure 29: Reasons why external training is not undertaken (%)



Base: 520 responses to a list of potential reasons – chart analysed on responses.

The point about time and resources being needed to invest in external training also featured prominently, while the lack of external training locally is a concern for 7% of businesses. External training quality does not seem to be an influential factor.

Figure 30: Reasons why external training is not undertaken by business size (%)



Base: 520 responses (multiple answers question)

Patterns are similar between size bands. Surveyed larger businesses are less likely than other sizes to regard their staff as sufficiently trained, that internal training is adequate, or that there is no external training to be found. By contrast – and probably because these companies use more external training – they are slightly more likely to regard external training as time-consuming, bureaucratic and expensive. Correspondingly, confidence in the quality of internal training is comparatively high among medium size businesses (44%) and micro businesses (34%).

The costs of external training were also a factor that for all businesses including 27% of small businesses in their reasons for not using such a training mode.

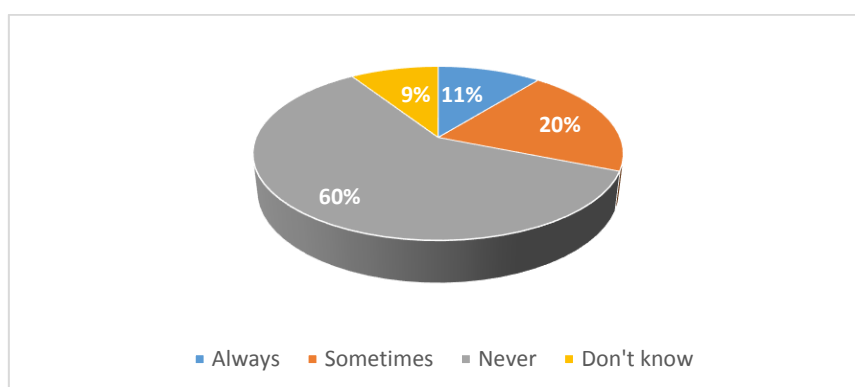
The perceived lack of external training available locally, while very low overall, was of higher concern for micro and small businesses.

Nearly 10% of businesses selected the response option “other” and could thus provide further details. These responses are presented in Appendix 4 by sub-sector and supplemented with responses from businesses that participated in the workshops.

5.3 Funding usage

In consideration of external training, the question was asked about making use of or accessing funding for those purposes. The cost of training is a major concern for ornamental horticulture businesses, indeed, as the figure below shows, 60% of businesses do not currently look to access funding for external training purposes. Nevertheless, they may benefit from funding indirectly through subsidised college courses for instance. The result, therefore, may simply reflect that businesses may not apply for external funding, but may still benefit from it.

Figure 31: Companies Accessing Funding for External Training



Base: 858 respondents – single response question

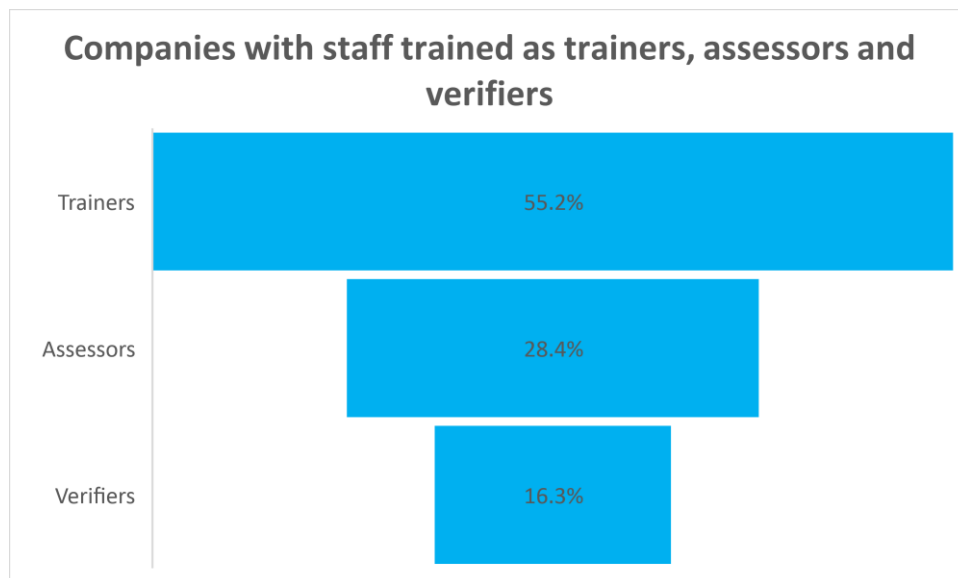
Respondents not using funding for external training were asked to elaborate on the related causes. A recurring theme across all sub-sectors (see Appendix 4 for the sub-sector detail) is a lack of awareness of funding resources available for external training.

5.4 Trainers, Assessors, Verifiers

Out of 1,101 responding businesses, just 172 (16%) confirmed that they employ staff qualified as either trainers, assessors or verifiers.

Some 55% of this number employ trainers while it appears that just around 16% of all ornamental horticulture companies employ verifiers.

Figure 32: Companies with trained Trainers, Assessors and Verifiers



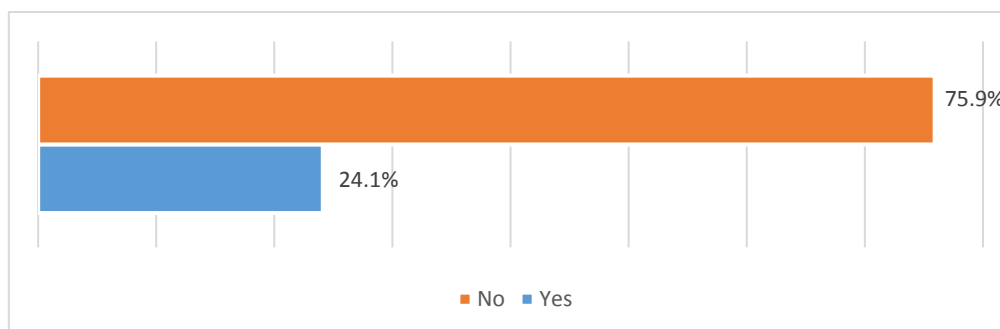
Base: 172 respondents – multi-choice question.

In terms of business size, the employment of staff qualified as trainers was fairly evenly distributed. The number of assessors was slightly more prevalent amongst micro and medium-sized companies. For verifiers, the small number was quite even when comparing small and large businesses, while medium-sized businesses employ the lowest ratio of verifiers amongst the four business-size groups.

5.5 Availability of sector-specific training

Approximately a quarter of respondents said there is insufficient sector-specific training to meet their needs.

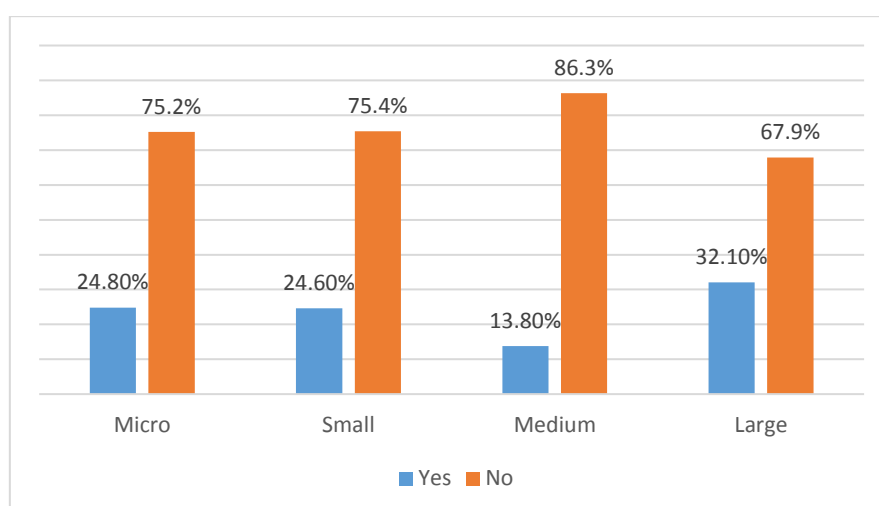
Figure 33: Are you aware of sector specific training which is needed but is not available?



Base: 945 respondents- single response question

In this context, as shown above in section 4.2, concern over external training costs and related bureaucracy is highest amongst large businesses.

Figure 34: Sector specific training needed but not available – by business size



Base: 943 respondents – single response question

Further analysis of qualitative responses to these questions by sub-sector indicates that training needs are very diverse for each business. Nevertheless, training needs may be divided into general soft skills and industry-specific skills. The most relevant answers are described in Appendix 4 and also below (see also section 4).

5.6 Apprenticeships and Trailblazers

According to the skills survey results, the indications are that the average number of apprentices in a business will only slightly increase from 1.4 to 1.5 over the next three year.

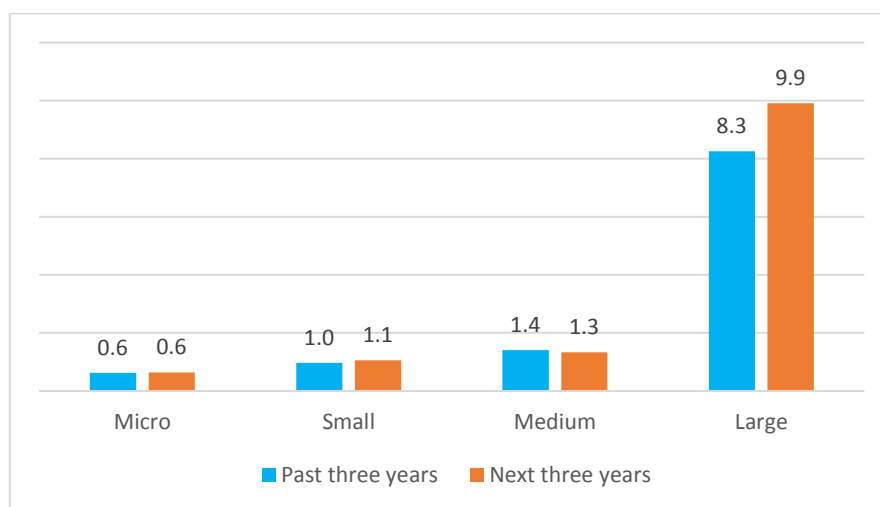
Reasons for this situation could be related to the barriers employers believe they face when trying to recruit and retain apprentices. We must point out that these concerns are by no means restricted to the ornamental horticulture sector and that recent surveys in very different sectors have revealed similar concerns.

In general, the respondents to the skills survey confirmed that employers face multiple barriers when trying to recruit apprentices. A lack of appropriate attitudes or behaviours displayed by the potential apprentices that are suitable for the workplace was identified as a key barrier, followed by a lack of practical skills and challenges in the supply of local external training. Little interest in the sector and low applicant numbers were also widely confirmed by employers.

Few employers employ apprentices but of those that do, the main barrier, in their view, is that of attitudes and behaviours. This suggests that the companies considering apprentices may have had negative experiences during an engagement with a provider for the purposes of recruitment of potential apprentices to an Apprenticeship in some form or other.

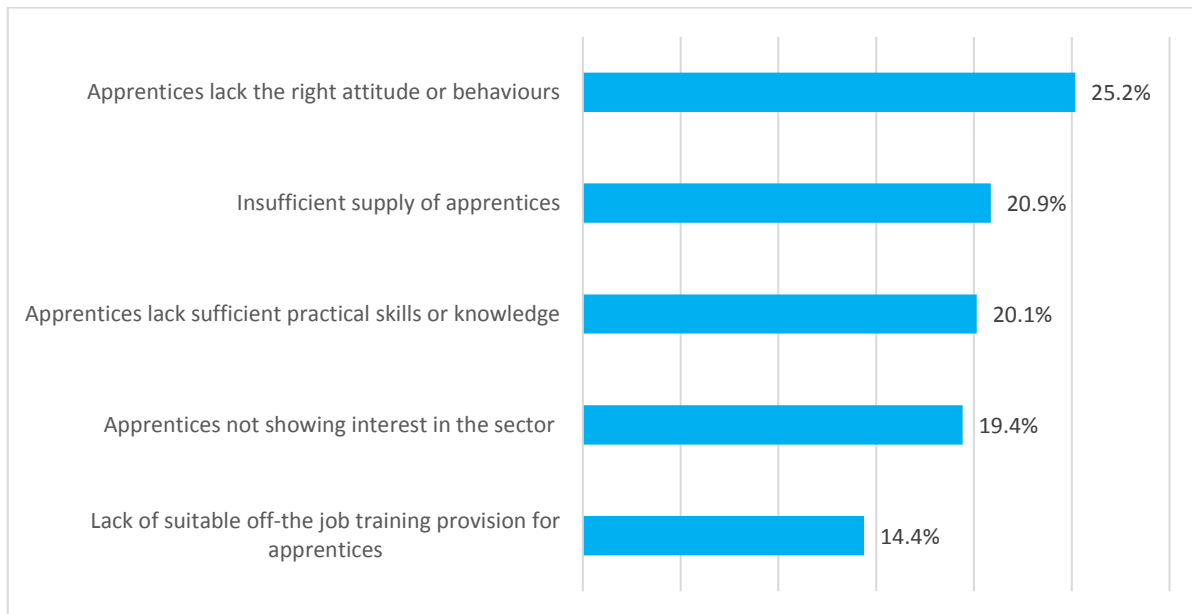
With the sector being mainly made up of micro and small-sized businesses, the survey indicated that the large businesses (100+ employees) tend to employ a greater average number of apprentices. The smaller the business the fewer the apprentices on average are employed. This pattern is envisaged by employers to continue over the next three years.

Figure 35: Average apprentice numbers by business size (past 3 years and forecast for next 3 years)



Base: 721 respondents

Figure 36: Barriers to finding/recruiting apprentices



Base: 296 respondents – multi-choice question and analysed on 556 responses

Shortcomings in work attitudes were also a recurring theme at the dedicated skills survey workshops. Employers confirmed that attitudes related to the world of work and general life-skills represented a major challenge to the sector. A lack of awareness of opportunities in the sector and the nature of tasks and work were also repeatedly cited. In this context, the outdoors element of ornamental horticulture was perceived to be a major reason deterring applicants and prompting apprentices to not finish their apprenticeship. Other issues included an observed change (by many employers) in preferred work patterns. Employers believe (again in common with employers in several other sectors) that young people are steering away from the traditional full-time routine to more part-time and casual work with flexible hours. Overtime requirements during peak season were also mentioned by companies as a barrier to young people (i.e. they are generally not interested in potential overtime).

5.7 Apprenticeship Levy

The Apprenticeship Levy is a government scheme aiming to increase apprenticeship numbers in the UK. Introduced in April 2017 to help encourage the meeting of the government target, the levy is designed to fund three million starts on apprenticeships by 2020.

It should be emphasised that this figure is related to apprenticeship starts, not completions. The levy is paid by all companies with an annual wage bill of over £3m. The levy amounts to the equivalent of 0.5% of the annual wage bill and each in-scope employer receives an allowance of £15,000 to offset against their levy payment. In addition, the government will top-up each monthly levy payment by 10%. Levy-paying companies may then use these funds for apprenticeships and certain other training, such as financing college training. Levy funds are reported and paid to HMRC using PAYE.

Funds paid under the levy must be spent within 24 months or they will expire, meaning they will be retained by HRMC⁴⁰.

To be eligible, apprentices need to be working at least 50% of the time in England⁴¹. Apprenticeship starts in the UK have increased by 7.1% (from 290,500 to 311,200) in 2018 compared to the previous academic year. However, apprenticeship starts are still 29.3% below those in 2015/16 and 19.1% below those in 2016/17⁴². The government credits the recent, 2018, increase to the apprenticeship levy.

Nevertheless, since the introduction of the levy, overall starts of apprenticeships in the UK have not met expectations. In response, the government has made efforts to assist non-levy paying companies by decreasing employer contributions to apprentice training from 10% to 5% in 2018. In addition, since April 2019, levy-paying companies may transfer up to 25% of their levy to companies in their supply-chain, to assist these companies with financing apprenticeships⁴³.

An inquiry by the APPGHG in 2019 confirmed that the apprenticeship levy as a policy instrument has not fully benefitted the ornamental horticulture sector, which is dominated by SMEs, i.e. businesses with relatively low wage bills. Furthermore, businesses in the sector have highlighted a lack of technical qualifications, including apprenticeships that are specific to the horticulture sector and that the yet to be introduced sector-specific qualifications (such as trailblazers) are being delayed.

When asked to provide comments on their view of the Apprenticeship Levy, a key theme across all sub-sectors was the relatively low quality of candidates for apprenticeships. Business leaders at the dedicated skills workshops and in the skills survey have also argued that the design of the Apprenticeship Levy is too complicated and have expressed concerns that the government is too focused on high-level apprenticeship qualifications, including degree apprenticeships. By contrast, for instance in the Garden Retail sector, Level 3 and HND qualifications have hitherto been seen as more appropriate to the sector's needs.

Overall, they argue, flexibility is needed to allow employers to respond to their training needs in a bespoke way. Media outlets and studies have confirmed these concerns are shared across the wider UK business community⁴⁴.

Out of the 1,101 businesses that participated in the skills survey, 250 provided a response about their experience of being levy payers, this total (250) is very much out of kilter with the number of businesses that would be large enough to have a £3m wage-bill. It can be explained if the question was interpreted by companies as being about levy-payers to AHDB rather than to the government

⁴⁰ <https://s3-eu-west-1.amazonaws.com/bppassets/public/assets/pdf/brochures/bpp-professional-apprenticeships-levy-guide.pdf>

⁴¹ <https://www.gov.uk/government/publications/apprenticeship-levy/apprenticeship-levy>

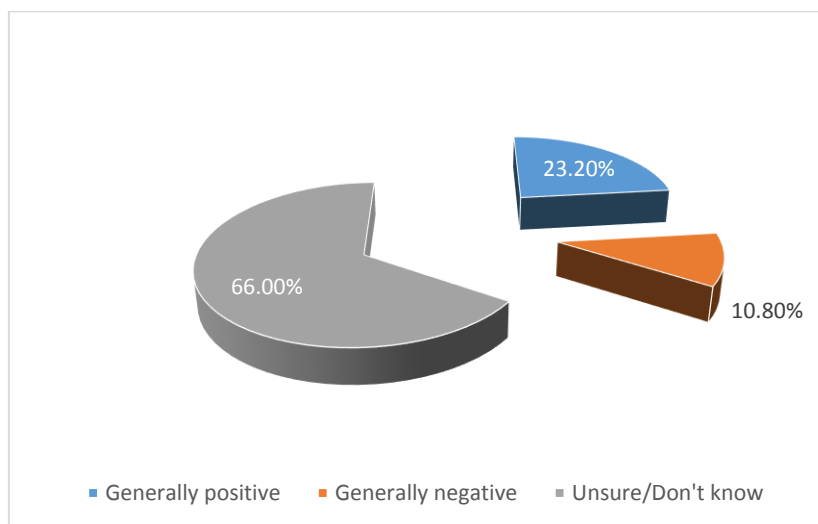
⁴² https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/815291/Apprenticeships_and_Traineeships_release_July19_main_text.pdf

⁴³ <https://www.gov.uk/government/publications/apprenticeship-levy/apprenticeship-levy>

⁴⁴ https://www.cipd.co.uk/Images/assessing-the-early-impact-of-the-apprenticeship-levy_2017-employers-perspective_tcm18-36580.pdf

for Apprenticeships. Of that 250 a majority of these were unsure about the levy's impact, while less than a quarter of these levy payers feel that the impact of the levy has been generally positive.

Figure 37: Impact of paying a Levy on the business



Base: 250 respondents – single choice question

5.8 Degrees

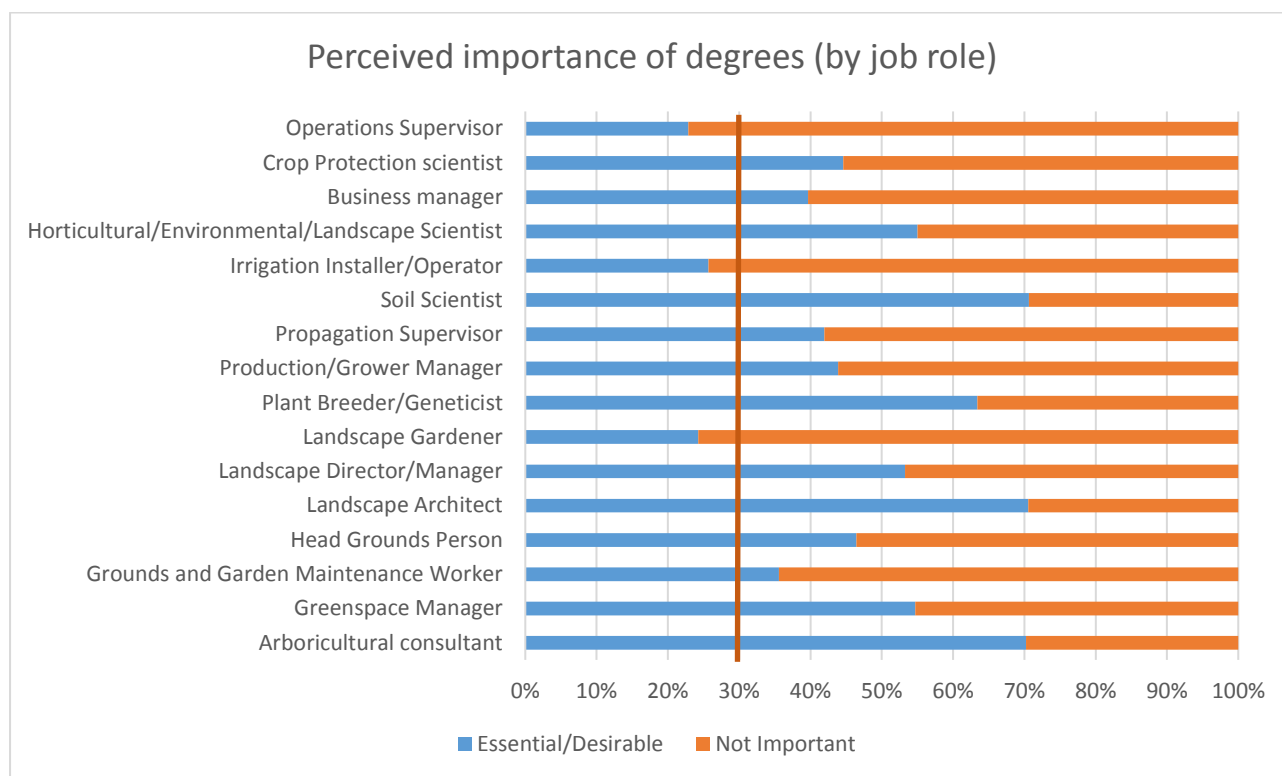
Apart from training needs, this survey also assessed perceptions by businesses on which occupations in the sector are considered to benefit from having a degree level qualification. The results of the survey (the figure below) indicate that a large proportion of respondents view senior level roles (e.g. Landscape Architect, Arboricultural Consultant, Propagation Supervisor, etc.) as generally benefiting from having a degree – (essential or desirable).

The ONS average for the percentage of the population that holds a degree is about 30%.

Several participants across the workshops however bemoaned the loss of older, practical qualifications which, they argued, were iterative – e.g. ONC/D and HNC/D providing employees an opportunity to rise through the ranks by acquiring part-time qualifications from local colleges.

For specific, selected job-roles the employer views were as follows (the vertical line shows the proportion of the general UK population having obtained a degree qualification):

Figure 38: Job roles and qualification requirements



Base: 1,101 respondents, responses range from 49 to 1296

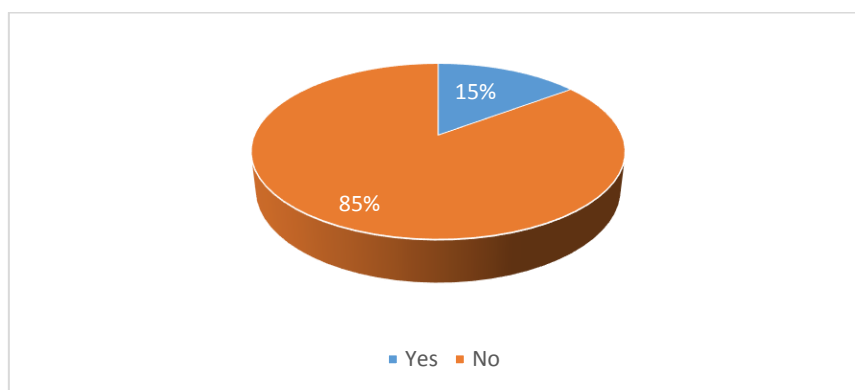
5.9 T-Levels

T-Levels are a UK government initiative aimed at increasing post-16 vocational and technical education in colleges at Level 3 and offering an alternative route (2 year programme) for pupils who do not wish to undertake A Levels. Consequently, T-levels will be focused on technical education and skills, rather than academic subjects. Averaging 900 hours, contact hours for T-Levels are set to be higher than standard 16-18 education programmes.

They will also include a mandatory work-placement of 45-60 days with a subject-related employer. The government is at present exploring funding options for providers for work placements, delivering courses and the upskilling of teachers. Related training has been available since Spring 2019. The full rollout for all 11 routes is scheduled for September 2023 and in general, business and industry sectors have welcomed the initiative.

There is no dedicated T-Level pathway for ornamental horticulture and not all T-Level subjects will be relevant to ornamental horticulture. Nevertheless, examples like culture & heritage visitor attractions, Accounting Logistics, Agriculture, Land Management and Production, Digital Business Services, Design, Planning and Surveying, or Onsite Construction may at least be partly relevant to ornamental horticulture.

Figure 39: Awareness of T Levels (%)



Base: 1054 respondents

In particular, the Agriculture, Land Management and Production route may enable students to start careers as an Arborist, Landscape Horticulture Operative/Technician (also involving greenkeeping and landscape construction), Landscape Horticulture Manager, Landscape Horticulture Professional, Pest Control Professional, Environmental Protection Officer and Estate Manager⁴⁵. Within the route-core specific material, Maths and English are also priorities.

Nevertheless, the skills survey clearly showed that, currently, a large majority of ornamental horticulture businesses are unaware of the upcoming T-levels, this may change when T-Levels are fully rolled out in the next couple of years – 2021-22.

5.10 Missing Training

Many attendees at the workshops and a number of comments on the survey mentioned the perceived “gaps” in training provision for the sector. Most of these have been mentioned within previous sections on the sub-sectors but most relate not so much to specific skills or areas of knowledge as to the access to education and training for a sector that is characterised by companies in geographically-remote areas and skills that do not have direct equivalents in other economic sectors.

Furthermore, a few of the “job role” and “skills” areas discussed in the workshops and in the survey, can be ambiguous. For example, in the responses to the survey there were eighteen references to “management” as a skill and training need. However, while a number of respondents clearly meant business management and leadership, others were more concerned with very specific management gaps in training such as wildlife management, woodland management, and specialist areas such as the “management” of Elm disease and turf.

Soft skills were sometimes mentioned as a training need but not as a specific gap in provision. However, several respondents mentioned training on computer, IT and digital knowledge and skills *as they relate directly to the sector and its sub-sectors*, as almost impossible to acquire.

⁴⁵ <https://www.instituteforapprenticeships.org/media/3168/agriculture-environmental-animal-care-may-19.pdf>

Horticulture and gardening skills were mentioned not so much as being totally unavailable as being not available in certain areas and regions.

The most common requests in workshops and in the survey responses were for provision to be made more accessible throughout the UK and particularly for provision in horticulture-specific computer and IT skills.

Similarly, the respondents who called for more training in chainsaw, climbing, damp-proof, digger, propagation, turf, and biosecurity skills were not arguing that they do not exist but that horticulture-specific courses were difficult to find and that the provision is not geographically consistent.

Calls for more training in soft skills were common and were tied to statements that these were not being adequately provided by colleges and schools. Nursery skills, team leadership, “growing” skills, and even turf raking were all additional skills identified as gaps in the current provision by some respondents.

Altogether there were eleven separate mentions of horticultural course “gaps” – for basic courses, computer courses, online courses, tree surgery, general tree training, tree inspection, tree felling, plant knowledge, and plant identification. It is unclear from the responses as to whether these are considered to be completely unavailable, unavailable in large areas of the country, difficult to find, or difficult to afford.

5.11 Use of College/Training providers

Just under 30% of the respondents provided an answer when asked about cooperation with providers to train apprentices and others. The most common responses are described below.

The vast majority of businesses of all sectors surveyed (73%) state that they collaborate with various further-education colleges in training their apprentices. Of these, it is the major land-based colleges – or colleges specialising in agriculture, horticulture and animal and plant husbandry – which make the most frequent appearance in the responses. Twenty of the respondents from all sectors state that they work with Capel Manor College, a leading further education provider in the study of animals, plants and natural environment, and 15 mention working with Sparsholt College. Colleges which also score highly include Pershore College (mentioned by 12 respondents), Writtle University College (mentioned by 11 respondents), Askham Bryan College (mentioned by 9 respondents) and the Berkshire College of Agriculture (mentioned by 8 respondents).

In contrast to the large number of employers who work with further-education colleges, only a small proportion of those who participated in the survey (3.2%) say that they collaborate with universities. One respondent states that their company works with the Royal Agricultural University, and a further three mention working with Scotland’s Rural College. The University of the Highlands and

Islands, Sheffield University and Nottingham Trent University all also received mention by one respondent each.

A smaller proportion of the respondents (7.8%) also state that they work with various specialist agricultural, Arboricultural or horticultural associations and training providers to help train their apprentices. Five separate companies say that they work with DART, a training provider specialising in gardening and landscaping. A further four say that they collaborate with the Royal Horticultural Society; three mention working with the Arboriculture Association, and one business says that they have participated in the RAGS apprenticeship scheme run by the WFGA, a UK horticultural charity. One respondent says that they work with a horticultural agronomist to train their apprentices. Lantra and EasTec were also mentioned once respectively.

5.12 Attitudes to training

Whilst there are a number of sector-specific initiatives and programmes aimed to help the sector/sub-sectors, such as examples mentioned in Appendix 1 (a non-exhaustive list), it seems that there is more that more could be done to help the sector.

Whilst there were generally positive attitudes to training, Apprenticeships and CPD/further development, there were also a number of hurdles or barriers expressed by different sized businesses and within the sub-sectors. It is a sector that is dominated by micro and small businesses that are not in-scope to the Apprenticeship levy, due to their annual payroll size being below over £3m and, therefore, are not encouraged as such to look at the benefits their investment could bring. They also, by the nature of their work, encounter a number of features that are relatively difficult such as working outside, the seasonal nature and being subject to the vagaries of the weather – factors that other similar sectors – such as construction – also struggle with when looking to recruit young people.⁴⁶ Finding willing and keen candidates for Apprenticeships was a common concern as well as accessing quality training courses that are specific to horticulture, cost effective and near to them geographically.

Micro and small businesses are struggling with the challenges of finding skilled staff and filling their skills gaps and, therefore, pushing for better standards and working with providers to improve these factors is possibly regarded as a lower priority.

⁴⁶ *Educating the Educators* – in Construction, Pye Tait 2015, list of sectors that young people prefer to work in.

6. Conclusions

According to NOMIS, the ornamental horticulture sector has over 32,000 businesses – largely as defined by the remit of the Ornamental Horticulture Roundtable Group⁴⁷. The Oxford Economics report (2017) estimates that the sector directly employs 338,200 people. The sector comprises just under 92% micro and small businesses but contributes near on £12bn to GDP (2017). An important sector that has wider impacts than is immediately perceived, and as the Oxford Economics report suggests, its full/wider economic contribution extends well beyond the estimates given in their and this report.

1. Skills and labour issues are of key concern for the entire sector in the near to medium term. There are significant skills issues (skills gaps and shortages) which were highlighted by the sector through the survey and workshops and which need to be addressed for both the sector as a whole and for specific sub-sectors. These skills challenges are indicated by:
 - Difficulties recruiting people with the right skills and/or attitudes (accounting for 24% of all skills gaps – the highest share);
 - A relatively high proportion of vacancies in skilled trades, professional and technical occupations and supervisory positions remaining open after three years (combined 35%) (see Table 6)
 - This is compounded by the fact that the number of jobs in skilled trades is expected to increase by 7.4% (see Figure 7) in the next two years
 - Similarly, supervisory staff is predicted to rise by 8.5% over the same time period
 - An ageing full-time, part-time and trainee workforce
 - A low average number of apprentices per business (1.4)
2. Twenty four percent of businesses anticipated increases in staff numbers over the next two years, especially among medium and large businesses. This was noted at a time when, due to there being almost full employment, there is a challenging labour pool for employers. Due to the need for skilled labour (almost 25% of hard to fill vacancies remain open for professional/technical and skilled trades) it is important to note that the 24% (current number of businesses anticipating increased in staff numbers) could easily become much higher in the short-medium term as skills deficiencies in the sector begin to bite further.
3. It is reported by the respondents that recruits to the sector often lack professional behavioural skills – for example 25% selected this as a barrier to the recruitment of Apprentices. T-levels could help in guiding more young people into the sector, but 85% of businesses in the sector are virtually unaware of them. Perceived low wages/salaries in the sector, according to workshop participants and some surveyed businesses, exacerbates this recruitment and skills issue.

⁴⁷ although it includes silviculture which is broader than the definition focussed on here for arboriculture.

4. The average age of workers (40.1 years) is very slightly lower than the UK average (41.5 years). Nevertheless, there are strong perceptions among employers that the workforce is ageing (from workshop feedback and some survey open answers) and while this survey did not have questions permitting the necessary degree of disaggregation there are possible reasons why there may be a serious “ageing” problem including a low number of apprentices in the sector, the ageing of key job roles (managers, supervisors, technical staff etc), and the effects of the physically demanding nature of work relate to ornamental horticulture. There is a clear and pressing need for more detailed research into this matter.
5. Whilst staff turnover at 22% over the last three years seems relatively moderate, this hides concerns experienced by businesses of a lack of skilled people and subsequent ‘make-do’ activities such as a greater use of volunteers. The sector may need to undertake a gradual increasing use of flexible working as a result, to accommodate the growing atypical workforce structures being experienced⁴⁸. The Taylor Review (2017) noted that *‘Full-time, permanent work remains the norm, but other ‘atypical’ arrangements are usually chosen and valued by the individuals concerned.’*
6. Automation and advanced technologies are not, at present, perceived by employers as being of great importance. However, employer attitudes to automation and advanced technology may – particularly among smaller companies – be due to a relative lack of understanding and awareness. There may, therefore, be a need for case studies and informative efforts to raise understanding and awareness of the benefits of these technologies.
7. As an extra point allied to automation and advanced technologies, the potential for young people to be attracted to other sectors with higher “technology profiles” could be argued to be a hidden issue affecting recruitment and retention. Allied to the workforce structure comment above, the reach of the gig economy (those using apps to sell their labour or services), is increasing. According to Taylor, technology is facilitating new business models based around matching sellers and buyers of goods and services; this is likely to be a relevant factor in the future ornamental horticulture sector.
8. Besides environmental issues (the most common driver of change selected in over 4900 responses), skills, availability of labour, Brexit and public opinion and understanding of the sector are the next four concerns reflecting the skills, recruitment and training challenges that the sector is facing. In addition, it should be recognised that the current labour market of almost full employment will be a cause in the concerns around the poor availability of labour being experienced in the sector.
9. All skillsets which were queried in the survey are perceived by employers as increasing in importance over the next 3-5 years. Of particular focus are soft skills, environmental awareness, health and safety, biosecurity, landscape design, use of specialist machinery and equipment and planting and plant care.

⁴⁸ *Good Work*, the Taylor Review, 2017

10. The relatively low average number of apprentices in the sector and the cited perception of the low quality of apprentices in terms of behaviour and skills indicate that talent pipelines into the sector needs to be improved. The survey indicates that the average number of apprentices in a business will only slightly increase from 1.4 to 1.5 over the next three years and thus – bearing in mind margins of error - will effectively stagnate. This also suggests that employers may need help with understanding the apprentice model and the benefits to their business. The new Apprenticeship trailblazer standard is relatively new to the sector and the time-lag in this bedding in reinforces the need for great understanding.
11. The high use of in-house training and the lack of awareness of resources are additional indications (in addition to low apprenticeship applicant numbers) of a low take-up of “new” initiatives like Apprenticeship trailblazers.

Appendix 1 – Current Initiatives

Aside from engagement with the government, the OHRG members have launched their own initiatives on recruitment, work process optimisation, and upskilling of which the section below provides a non-exhaustive selection of these OHRG member initiatives. The AHDB's SmartHort initiative is aimed at using technology to optimises work processes and productivity and the HTA operates an e-learning system allowing for remote access to training and upskilling resources relevant to Garden Retail. In addition, BALI and the CIOH operate recruitment and careers information initiatives.

SmartHort

Launched in 2018, the AHDB's SmartHort initiative⁴⁹ aims to address issues in the ornamental horticulture and edible horticulture (fruit and vegetables) sectors' workforce requirements by using modern technology, and management and motivation techniques to increase labour productivity. This includes a series of Action Plans and pilot projects with a selection of companies serving as Strategic SmartHort Centres. The centres serve as regional hubs providing workshops on techniques, processes and best practices to local businesses.

E-learning

The HTA partnered with the Garden Retail Association in 2016 to give HTA members access to the GROW package: an online learning programme of ninety courses⁵⁰. In addition, the HTA has launched the HTA Academy offering further eight courses online to both HTA members and non-members⁵¹.

GoLandscape

GoLandscape⁵² is a recruitment and careers information initiative focused on the Landscaping sector and coordinated by the sector association BALI.

As such, GoLandscape is an *“education, skills and careers initiative, designed to inform and inspire new recruits and combat industry issues, including a severe skills shortage”*.

As part of the initiative, dedicated BALI Ambassadors and the BALI Education Officer visit careers events and schools, as well as Armed Forces resettlement programmes and prisons etc. In addition, BALI facilitates the building of show gardens by apprentices and trainees to provide practical demonstrations of the opportunities, skills and talents in the sector.

⁴⁹ <https://ahdb.org.uk/smarthort>

⁵⁰ <https://www.gardenforum.co.uk/headlines/gca-opens-up-e-learning-packages-to-hta-members/>

⁵¹ <https://hta.org.uk/learn-develop/academy/e-learning.html>

⁵² <https://www.golandscape.co.uk/about-golandscape/>

Grow Careers

The CIH operates the sector-specific careers information website Grow Careers⁵³. The website provides career information on occupations and pathways in horticulture sector (ornamental and edible). In addition, the website features relevant case studies: success stories of professionals in the sector.

⁵³ <https://www.horticulture.org.uk/grow-careers/>

Appendix 2 – Skills challenges by sub-sector

Sector responses: Skills shortages (hard to fill vacancies)

The following examples highlight the perceptions of the respondents.

Arboriculture-skills shortages

There is an overall shortage of apprentices in the industry. Recruiting apprentices is relatively easy, their retention proves more difficult. This may be related to little awareness of the true nature of the profession and its physical demands. Aspiring candidates seem to be aware of exciting Arb features like climbing, but underestimate the physical demands and menial tasks involved. Work ethics and behaviours are also issues.

Knowledge of the sector and the knowledge of trees should be promoted in schools and teachers should be engaged as well. Horticulture skills should be included in career days. The pathways and career progression routes and a pride in the profession also should be promoted.

“Speaking specifically with regards to arboriculture, the lack of suitably qualified staff is directly linked to the increased numbers of small companies being created each year. Whilst this is not a bad thing for the local economy, it does put a huge strain on staff retention and has created a situation whereby skilled staff are now working for companies who display a less than acceptable level of health a safety compliance. A government endorsed scheme specific to arboriculture, highlighting the need to use skilled, qualified and insured professionals who consider their whole supply chain, is the only way that I can see the public perception of the industry changing.”

Further evidence which might add to the impression of an ageing workforce is the low proportion of apprentices and the difficulty employers say they are facing in recruiting and retaining them (see later sections of this report).

Landscaping - skills shortages

Apprentices are often not ready for the world of work and work patterns and may also not have the right work attitudes. There is a high attrition rate, as many young people are not fully aware of the nature of the job, including the requirement to work outdoors. Awareness of the profession needs to be raised in schools and beyond. The GoLandscape initiative seems to be the only initiative promoting careers in the sector. In terms of specialist skills, there is a lot of competition for more specialist roles such as engineers with the manufacturing and other sectors.

The main clients of landscaping services are local authorities. In their contracts, however, local authorities do not stipulate wage ranges. This in turn makes the industry less competitive in attracting skilled workers and makes staff retention more difficult.

“Government and employers alike need to address the skills shortage of the sector. There needs to be more awareness and encouragement aimed towards young people so they can consider this sector as an option”.

Ornamental Plant Production- skills shortages

Recruitment proves difficult, as the structure of the business requires strict working patterns. More flexible work patterns and micro-shifts are being considered. Employing agency workers is not possible for one company as a registration with the Gangmasters and Labour Abuse Authority (GLAA) is required. Spring and Summer are busy periods for selling and potting. In these periods, seasonal workers are employed, but this getting more and more difficult. In addition, young people are put off by work outdoors and retention is difficult.

Nevertheless, the sector offer great opportunities for science and technology graduates and entry is overall less competitive than other sectors. New recruits are often people starting a second career in horticulture that need intensive training and requiring considerable investment. Skilled immigration may not address immediate skills shortage issues, but also the Migration Advisory Committee (MAC) does not consider the sector as skilled. This hampers recruitment abroad.

In this context, awareness of the sector’s opportunities has to be raised amongst young people and teachers, parents, grandparents. Furthermore, the success stories and pathways have to be widely publicised. The media could play an important role here too.

“There should be more classes in school for younger people 14+ teaching the skills needed for the industry. Plant more trees and the right ones in the right places. Know the species.”

Garden Retail- skills shortages

There is a lack of apprentices and (sector specific) Apprenticeships in the sector. Few young people seem to be interested in apprenticeships in retail or horticulture. Also, few young people are aware of the nature of the profession, let alone its pathways and opportunities. Degree apprenticeships are not very suitable for the sector. Level 3 or HND are more appropriate. Employers are now seeing trends such as young people preferring flexible work patterns and contracts, which makes recruitment for more skilled roles difficult.

To boost recruitment and interest in the sector, the perception of horticulture will have to be improved. Suggestions such as the government promoting horticulture as a skilled, rewarding, exciting and important career along with TV programmes aimed at people of all age ranges and other media campaigns. The growing trend of micro-gardening could increase the passion for, and interest in, the sector.

“[There is a] misrepresentation of what is involved in horticulture so we need to attract people into the business and horticultural training needs to be funded at level 2 onwards not at degree level. Practical skills are missing from the current system and should be made a priority as it was 30 years ago. It isn’t a place to push the less able students into as there is much more skill involved than is perceived”.

Sector responses – skills gaps (existing workforce)

Arboriculture – skills gaps

A total of 13 business mentioned the difficulty in recruitment of workers with the right skills and experience. Tree surgery (8) and tree climbing/rigging (3) featured prominently in this group of respondents. Also, two businesses said that having the required tickets (e.g. for chainsaws) does not necessarily mean having the right level of skill and experience in practice. Another business felt that applicants often do not have the right certification for chainsaws or the use of chippers. Lastly, one business said that college leavers are not equipped with the right skills and experience for working in the Arb industry.

Landscaping– skills gaps

Of a total of 83 Landscaping businesses, several confirmed that internal training is a good way to address skills gaps. In some cases, tasks that require skills not available in a company are sub-contracted. A total of eight businesses reported having difficulties in recruiting staff with the right skills. This includes finding people having the right CSCS card certifications, CAD and sketching skills as well as hard landscaping and plant knowledge.

Ornamental Plant Production– skills gaps

Succession management was an issue that was mentioned by eight businesses who said that there is a lack of interest in careers in the sector or a general difficulty to recruit people with the right work ethic. Another four businesses mentioned training needs for the use of social media. One of these specified that social media could be used for marketing purposes while the others did not provide further details. No locally available training for propagators was listed by 1 business.

Public Gardens– skills gaps

Two public gardens indicated a difficulty in recruiting supervisors with horticulture experience. Two businesses were also struggling to recruit a soft landscaper and a tree-surgeon respectively. Another business said that there is a lack of machine maintenance knowledge in their workforce. The availability of specialised training was also mentioned by 4 businesses. One of these referred to therapeutic horticulture, while the others did not provide further details.

Garden Retail– skills gaps

One business expressed concerns about difficulty to schedule First Aid training and related costs. Another business said that there is a need for pruners.

Additional sub-sector commentary on drivers of change

Landscaping– environmental issues

Cleansing is the most prevalent landscaping task and is even more prevalent than activities relating to horticulture. Green policy priorities and legal changes, such as combating littering or introducing minimum standards of horticultural quality in green spaces, could be opportunities for the Landscaping industry. This will, however, depend on increased public investment. Furthermore, one skills survey respondent was concerned about the cost of green waste disposal, while another pointed to a growing need for recycling of plant pots to be improved. In addition, according to one respondent, climate change may lead to the introduction of new wildlife species and pests.

Garden Retail – environmental issues

A wider use of recyclable plant pots and the use of biodegradable materials were seen as key drivers of future change. It was not further explained whether the impetus for these developments would come from the sector or would be imposed by the government. In addition, environmental issues may boost recruitment. Indeed, an increasing awareness of the importance of environmental issues and the contribution horticulture can make to address climate change may attract more young people to pursue a career in the sector.

Ornamental Plant Production– environmental issues

One respondent expected an increased importance for the recycling of plants, but no further detail was given and another respondent suggested that potential water shortages should lead to a change in attitudes in the sector towards higher resource efficiency.

Public gardens– environmental issues

While no workshop was conducted with public gardens, the qualitative responses equally featured recycling as a key issue as well as the need for efforts in sustainability. One respondent identified extreme weather patterns such as droughts or heavy rains as a future challenge. Another respondent called for further education of professionals in the sector on environmental issues and climate change.

Appendix 3 – Automation impact - discussions by sub-sector

Arboriculture -automation

The potential of automation and related processes is seen as limited. Overall, the sector is dependent on human instincts, thinking and knowledge. Digitisation and robotics will therefore not affect the entire sector. Nevertheless, financial support by the government for technological innovation would be welcome, but training would need to be prioritised.

Landscaping-automation

There is limited scope for automation in the sector. Some menial tasks could be automated, and drones and sensor technologies could be used for inspecting green spaces and managing landscaping work.

Nevertheless, it is expected that the sector, will continue to be dominated by manual labour for the foreseeable future. The impact of automation on different components of landscaping could be on such areas as cleansing. The construction components of hard landscaping could be susceptible to automation developments currently ongoing in the construction sector, e.g. Building Information Modelling (BIM), Computer Aided Design (CAD) or the use of robotics.

This is less likely to be the case in maintenance and soft-landscaping. Legal liability issues when using technologies like drones also have to be considered. Construction sites are relatively confined whereas parks and gardens are public, open spaces. The impact of automation will also be influenced by cost-effectiveness and added value of new technologies. In the current climate, clients (mainly comprised of local authorities) will be reluctant to accept higher prices to fund technological transformation. There is also some potential to use digital technologies for off-site garden design.

Ornamental Plant Production-automation

Automation and digital technologies are becoming a very important option to address staff shortages in the context of availability of labour and Brexit in the future. The use of new technologies could also attract more young people to careers in the sector and thereby change perception of the sector. New technologies could be used to increase plant production in the UK and substitute for imports.

Garden Retail-automation

The Netherlands are taking the lead in automation in horticulture. It is not clear if this can or will be translated to the UK. Automation, such as robots in greenhouses may reduce the need for labour, but employers do not believe it will be a game-changer for the sector.

Arboriculture – future job roles

Biosecurity featured prominently among the 76 Arb businesses that responded to this question. As such new job roles included Biosecurity Consultants and professionals with a high level of expertise of disease and pest control, which were mentioned by six Arb businesses. One business predicted a growing need for expertise in biochemistry, while another business referred to CAD professionals

Landscaping – future job roles

Among 63 Landscaping businesses, expertise in IT for garden designers, robotics and biosecurity stood out (one respondent each). The majority of the remaining businesses could not provide further predictions on new job roles, but rather referred to present recruitment needs such as sketchers, landscape gardeners or hard landscapers.

Ornamental Plant Production – future job roles

Out of the responses by 60 businesses, expertise in Robotics, the maintenance of robotic equipment and the management of AI stood out, which were mentioned by six businesses. Another two businesses predicted an increased need for biosecurity/pest control professionals.

Public Gardens – future job roles

Environmental issues were a dominant concern among the 88 public gardens responding to this question. Indeed, 6 gardens said that climate change would lead to new skills requirements such as soil analysis or water-efficient irrigation. This also included the ability to deal with changing weather patterns or growing new plants that are more resistant to climate change.

Garden Retail – future job roles

The use of IT and social media expertise was important for 4/50 garden retailers. One Retailer mentioned data-base management and suggested creating a joint database the UK garden centres while another retailer highlighted E-commerce. Another retailer emphasised skills in robotics, though providing no further detail.

Appendix 4 – Training by sub-sector

Arboriculture – Training Needs

A total of 46 Arb businesses provided further, albeit mixed details on sector specific current and future training needs. For instance, four businesses pointed out training needs in team leadership, while another four businesses said that general and soft-skills training is needed for supervisors, business and operations managers as well as employees. Another five businesses mentioned CSCS card training. Of these, two referred to the BALI Register of Land-based Operatives (ROLO) training and BALI CSCS card training in general. The others provided no further details.

Access to refresher courses in chainsaw operations, health and safety, tree surgeon, climber, rigger and tree surgeon assessor courses was prioritised by 3 businesses. In terms of industry-specific training courses, operating telehandlers, tree inspection, tree surgery, plant identification, tree species, windblown trees, CAT scanning were mentioned by one business each, while another business pointed to the operation of log grabbers and biosecurity training needs. Obtaining a C1 driving licence was mentioned by another business.

Landscaping– Training Needs

Of 62 landscaping businesses, seven identified training needs in soft-landscaping, including turf management, using spraying equipment, turfing, turf management and turf-raking, removing Japanese knotweed and plant identification. In addition, another seven businesses referred to technology and equipment training, of which three mentioned the use of Computer Aided Design (CAD), and one drone training. Damp proofing and lorry driving were mentioned by one business each. Another business called for machine-related BALI training, including hedge-cutting and trimming. Furthermore, three businesses noted access issues to apprenticeship training, while another did not feel informed about training provided by local colleges for apprentices.

Ornamental Plant Production– Training Needs

From a total of 36 businesses, 16 identified horticulture training needs including grafting (1), propagation (4), growing (2), nursery skills (1), plant identification (1) and biosecurity (3). In this context, four of this group of businesses identified a scarcity of specialised horticulture training in general.

Of these, one said that if there were funding available, they would send their staff to attend a biosecurity course.

Another two businesses listed the need for IT training, while one business specified the need for robotics training. In addition, three businesses expressed a need for management training, including for supervisors.

Public Gardens– Training Needs

The responses from 52 public gardens were mixed, similar to the other sub-sectors. Of these, nine specified needs in horticulture related training such as plant knowledge (2), lawn trimming (1), cut flowers training (1), orchid (1) and wildflower (1) training, propagation (1), tree health (1) and biosecurity (1). In addition, chainsaw training and the use of trailers was mentioned by three businesses. Leadership, supervisory and management training also featured prominently (5). Distinguishing the public garden sector from the other sub-sectors were three references to training in mental health and special needs, including therapeutic horticulture, confirming the public health of horticulture outlined in section two of this report. Furthermore, 3 businesses expressed concerns about the accessibility of training in colleges, with 1 business saying that the nearest college to them is 200 miles away.

Garden Retail– Training Needs

Geographic isolation hampered access to training providers was also an issue for two out of 15 garden retailers that provided further information on their training needs. Another business mentioned the need for a specific retail horticulture course, while two businesses expressed a training need in health safety/first aid. Staff management and management skills tailored to horticulture were also important to one business respectively. Furthermore, one business had a training need for bookkeeping.

Reasons for not using external training.

Arboriculture – other reasons why external training is not taken

One respondent to this skills survey question from the Arboriculture sector explained their reliance on internal training was the use of specialist machinery requiring on-the-job training.

During the Arboriculture workshop, participants confirmed difficulties in accessing training through local providers, for example, wood chipper operations, and that they often have to travel long distances for training. Arb businesses therefore often resort to pooling of resources and networking to obtain training and funding. One contractor has collaborated with other local contractors to gather enough trainees to make a short training course viable.

The lack of related skills and up-to date equipment among training providers is also an issue. Correspondingly, in-house training is often hampered by a lack of resources. The technological aspect of Arboricultural work has, in the opinion of this respondent and many in the workshops, ‘gone through the roof’ and they feel that training providers are getting left behind. One business had even offered to loan equipment to a local training provider. College training is also regarded as too academic in some cases. If industry veterans try to be trainers, they need refresher training themselves. There may be a need for a “training of trainers” initiatives in this sub-sector.

Landscaping other reasons why external training is not taken

The eight respondents from the landscaping sector have varying reasons for their focus on on-the-job training. Of these, three respondents said that (1) the external training on offer is not relevant to the business, (2) they value practical training on-the-job over external training, and (3) little external training is available locally (rural Wales).

Other respondents (4) said that they try to hire experienced staff with the requisite skills and certification, thus minimising the need for training, or that they mainly employ seasonal workers with low training needs.

The participants of the landscaping workshop (senior leaders of large companies) added that training is often provided in-house, due to a lack of external training available. Tailored competence training is needed. Business-size is an influencing factor in the extent of in-house training used and large businesses in this sub-sector tend to focus on in-house training. Their view is that managers and senior staff need formal training in mentoring and training in order to effectively pass on knowledge to trainees.

Ornamental Plant Production - other reasons why external training is not taken

Twelve ornamental plant production businesses also cited various reasons for their focus on on-the-job training. One business said that most people who enter the business are mid-aged career-changers. They believed that external training is mainly designed for young school-leavers or apprentices and is their rationale for using in-house training which they saw as both more appropriate and more effective.

Another respondent complained that the local college was not only inadequate for training - which another respondent also mirrored for their own situation - but also for communication (dates of next courses, etc.). The cost of external training was also cited by one respondent, while another said that they are working on having their internal training certified externally (providing no further details).

Workshop participants' reiterated some of the points already made. Training is often conducted in-house, apart from tasks needing formal qualifications such as the use of pesticides, etc. There is perceived to be a lack of external training and the external view is of some colleges chasing funding opportunities and not focussing on specific sectors for training.

The in-house training programme of one (large) company involves four modules (irrigation, pest control, nutrition and feeding & husbandry). They explained that these were designed to explicitly train trainee growers who are then mentored by experienced workers.

Workshop participants agreed that trainers need training in people skills to more effectively pass on their knowledge. In addition, quality and access to education and training are issues: the view is that not much local external training is offered in Ornamental Plant Production and Horticulture in

general. As explained by a participant, there is a shortage of external training. Landscaping seems to be more popular but this has led to an oversupply of courses which are perceived by some to be below the required standard.

Public Gardens - other reasons why external training is not taken

Out of three respondents, two believe that local external training is inadequate for their business needs and tasks that have to be performed. Another respondent said they only employ trainees from the local college during summer time (presumably as a work placement), providing no further details.

Garden Retail - other reasons why external training is not taken

Out of five respondents, one confirmed that there is little need for external training as most jobs (such as manning the tills) can be taught in-house. Another said that they rely on seasonal workers to work for 5-6 weeks in a year to whom they provide in-house training for this limited time.

Another respondent pointed out staff retention concerns, having had a bad experience, they are concerned about paying for external training for staff given the possibility they may leave the business shortly thereafter. Training agreements were seen as a necessity in those situations.

The Garden Retail workshop confirmed these response patterns. The HTA provides e-learning courses, including some on water conservation. These tools are currently being updated. A clear reference point (e.g. a dedicated portal, etc.) for these tools is needed though. The Garden Centre Association (GCA) offers e-learning modules (GCA GROW) as well. GCA GROW is available to GCA and HTA members. The attraction of the e-learning courses is the ability to download and use them at any convenient time and they cater for different levels of staff.

Funding usage:

Arboriculture – cause of not using funding for external training

Of 56 Arb businesses giving further information on why they do not use funding for external training, 26 businesses said that they either were not aware of funding or had not been informed of funding available.

In this context, one respondent remarked that the organisation “Businesslink” had organised their funding for training. With Businesslink now defunct, no funding for training is being arranged. Another respondent said that the administrative burden (“red tape”) for funding is too great and therefore deters businesses from accessing funding.

Another five respondents confirmed that no funding is available to them, for which no further information was provided. Another two businesses say they do not use funding because they do not

employ apprentices. A further seven businesses confirmed that they simply pay for external training themselves.

Landscaping – cause of not using funding for external training

Of 155 Landscaping businesses, 63 confirmed that they pay for training themselves or that the employer pays for training. Another 15 said that they were not aware of any funding sources. A further 8 respondents confirmed that they rely on internal training. In addition, 2 respondents said that the costs of training are budgeted for in client contracts while another said that work requiring specialist skills not available in the business would be subcontracted. Similar to Arb businesses, four respondents said that they do not employ apprentices and therefore do not need funding.

Funding not being tailored enough to the landscaping sector was also mentioned by two respondents, of which one asserted that funding is too focused on the construction sector, perhaps in view of the need for gaining various cards to work on-site and the plethora of training provision for that purpose.

Ornamental Plant Production – cause of not using funding for external training

Of 78 businesses, 15 were not aware of any funding sources for external training, while five confirmed paying for the external training themselves. Another six rely on internal training. A further 14 respondents said that they do not need external training. Of this group, two respondents (one of which is a family business) confirmed that they do not employ apprentices, and therefore in their view do not have a need for training. The remainder did not provide further details. One respondent had tried to obtain funding for refresher courses but had discovered that no funding had been available.

Appendix 5 – Affiliation with professional and trade bodies

Survey participants were asked to name any affiliations with professional bodies and trade bodies. The results are presented below by sub-sector. These examples only list affiliations that are relevant to ornamental horticulture and this survey.

Arboriculture

Out of 125 businesses, 102 confirmed an affiliation. Prominent of these was the Arboricultural Association (93 businesses). A few businesses confirmed that they are a member of BALI (4), HTA (1) and the International Society of Arboriculture (1). Another business is a member of the Chiswick Horticultural and Allotments Society (CHAS).

Landscaping

Of 359 businesses, 194 confirmed an affiliation. Of these, 112 confirmed being a member of BALI. Another four said they are members of the Association of Professional Landscapers (APL). Twenty businesses are a member of the AHDB and eight of the HTA. Seven businesses are affiliated with the Marshalls Register of Accredited Landscape Contractors, while a further three BALI members are also registered with Marshalls. In addition, nine businesses are affiliated with the Society of Garden Designers (SGD), while four confirmed this for the RHS.

Ornamental Plant Production

Of 170 businesses, 71 confirmed an affiliation. Of these, 19 were affiliated with the AHDB. Twenty-five businesses were affiliated with the HTA and three businesses were members of the British Ornamental Plant Producers (BOPP), a certification scheme of the HTA. Another seven were affiliated with the RHS, while two businesses were affiliated with the AHDB and the NFU. There were also four members of BALI.

Public Gardens

Out of 268 businesses, 112 confirmed an affiliation. Of these, 71 were members of the RHS. Six businesses were members of BALI and three of the HTA. In addition, four businesses were members of the National Trust and two of the Historic Houses Association. Another three businesses were members of Botanic Gardens Conservation International (BGCI).

Garden Retail

Out of 179 businesses, 111 confirmed an affiliation. Of these, 85 were affiliated with the HTA. Amongst this group, six were also a member of the Garden Centre Association (GCA) and four were also members of the AHDB.

Other (non-HTA) affiliations included BALI (3), AHDB (7), GCA (3), the British Florist Association (2) and one member of the Country Land and Business Association (CLA).

Appendix 6 – Survey sample strategy

Broad category	SIC Code and Description		Total UK enterprises*	% mix	Rep. target	Adj. target*	Achieved
Ornamental Plant Production	01.3	Plant propagation (and seed processing for propagation 01.64)	630	2.0%	19	150	170
Arboriculture extracted from silviculture		* extracted from SIC code 0210 and from ornamental plants 01.3	865	2.7%	27	100	125
Garden Retail	47.76	Retail sale of flowers, plants, seeds, fertilisers, pet animals and pet food in specialised stores	6,525	20.1%	201	150	179
Landscape services	7111/2	Landscape architectural activities	1,975	63.8%	638	350	
	8130	Landscape service activities	18,715				
Greenspace management	6820/1	Renting and operating of Housing Association real estate	2,480	11.5%	115	250	359
Landscaping and garden design, build and maintenance	8411	General public administration activities (local authorities)	250				
	8412	Regulation of the activities of providing health care, education, cultural services and other social services, excluding social security	180				
	91.03	Operation of historical sites and buildings and similar visitor attractions	425				
	9104	Botanical & zoological gardens & nature reserve activities	385				
Total:			32,430	100%	1,000	1,000	1,101

*As agreed with the OHRG