RHS Qualifications

RHS Level 3 Diploma in Horticulture

Qualification Specification

For first teaching September 2024

Qualification number: 610/3774/6

Contents

1. RHS Qualifications Contact Details

RHS Qualifications is the Awarding Organisation of the Royal Horticultural Society.

RHS Qualifications
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GU23 6QB
UK
Tel: 01483 226500

Email: qualifications@rhs.org.uk

RHS Website: rhs.org.uk/qualifications

2. Equality and Diversity Policy Statement

RHS Qualifications is committed to policies that will promote equal opportunities in all its operations, regardless of age, disability, ethnic origin, gender, marital status, religion, sexual orientation or any other factor.

RHS Qualifications is committed to ensuring that there is no unfair discrimination in any of its operations and will consider all current legislation in relation to the equality of opportunity.

RHS Qualifications will constantly monitor and review its policies and practices pertaining to equal opportunities, to ensure that they remain consistent with its equal opportunities objectives and continue to comply with all relevant legislation. RHS Qualifications will strive to make awareness of and respect for equality and diversity, an integral part of the culture of the organisation. A copy of the RHS Qualifications Equality and Diversity Policy is available on the RHS website.

The privacy, and security of personal data is extremely important to us. Personal information that centres provide is used for the purposes of furthering our legal obligations as an awarding body for creating qualifications and issuing of certificates. For further information and a detailed explanation, please refer to our Privacy Policy on the RHS website (rhs.org.uk/privacy).

3. RHS Level 3 Diploma in Horticulture

3.1. Introduction and context

Those involved in the field of Garden and Landscape Maintenance have to be able to apply the principles of horticultural science, seek out best practice, select techniques which are cost effective, embrace sustainability, ensure biosecurity and comply with current legislation as they develop the gardens and landscapes under their care.

These horticulturists have to apply the skills developed within the Level 2 qualification, but embrace the concepts of Garden Management Plans, Maintenance Schedules and

Garden Health Plans to enable them to manage the many different aspects which make up gardens. The horticultural industries span many disciplines, from the production of plants for planting through to the production of fruit, salads and vegetables.

An important sector of this industry is the management of gardens and designed landscapes. The horticulturists who work in such settings are involved in the scientific study of plants, the preservation of heritage, the propagation of new plant material, and the pursuit of best practice to inform their management decisions.

The World Health Organisation report *Urban Green Spaces and Health* highlights the importance of such gardens and designed landscapes in the promotion of mental health and wellness. Put simply people need plants. Plants need horticulturists.

3.2. Audience

The purpose and content of the Level 3 supports specialist / industry-specific pathways informed by the findings of the Ornamental Horticultural Round Table Group (OHRG). It is aimed at those progressing in horticultural roles or having a specialist personal interest in the supervision and development of gardens and landscapes, for example public gardens, botanical gardens, heritage gardens, private gardens, maintenance and landscaping along with community green spaces. This qualification thus meets the needs of the amateur gardeners and professional horticulturists alike.

It also provides learners the opportunity of personal development, including the changing of careers and engagement in their learning and offers an opportunity to develop transferable skills such as problem solving, implementing management plans / programmes, and communication as part of their applied learning.

3.3. Guided Learning Hours (GLH) and Total Qualification Time (TQT)

The Guided Learning Hours (GLH) represent the time that the learner spends learning under the immediate guidance and supervision of a tutor and includes assessment by the tutor, as well as invigilated exams. Guided Learning Hours are always less than total qualification time, as learners are expected to complete a certain amount of study in their own time. The Guided Learning Hours for this qualification is 280.

Total Qualification Time (TQT) includes the Guided Learning Hours and represents the notional time that an average learner could reasonably expect to take to complete the learning outcomes of the units to the standard determined by the assessment criteria, and gain the qualification. It includes all face-to-face contact with tutors as well as assessment time and unsupervised directed study, coursework and practice. The Total Qualification Time for this qualification is 450.

3.4. Teaching Pattern

The qualification is designed to be studied on a part-time basis. No particular teaching pattern is specified, and centres offering courses leading to the qualification are free to define their own teaching structure and teaching hours.

3.5. Qualification Structure

This Diploma qualification is divided into four units comprise a range of topics and elements, as follows:

RHS Level 3 Diploma in Horticulture

UNIT 1		
Topic		**Elements**
1	**Horticultural Heritage**	1. The history of horticultural space 2. Key influences on the development of horticultural space 3. The importance of horticultural heritage 4. The impact of horticultural heritage on gardens management.
2	**Plant Knowledge**	1. The role of exploration on plant diversity 2. Plant information sources 3. Applied plant knowledge 4. Managing plants within botanic and other gardens.
3	**Plant Selection and Cultivation**	1. Selecting plants for a purpose 2. Plant procurement 3. Combining plants 4. Planning plant maintenance.
4	**Plant Propagation**	1. Propagation facilities 2. Planning propagation 3. Advanced propagation techniques 4. Development of propagation protocols.

UNIT 2		
Topic		**Elements**
1	**Garden Styles and Specialist Areas**	1. Garden styles and areas 2. Planting styles 3. Hard landscaping elements 4. Management of trees.
2	**Productive Growing**	1. Growing systems 2. Selection of crops and planning cropping 3. Optimising yield 4. Research and development in productive growing.
3	**Gardens Management**	1. Managing people in a garden 2. Managing material resources in a garden 3. Planning projects and maintenance activities 4. Maintenance standards.
4	**Gardens, People and Spaces**	1. Gardens and visitors 2. Gardens and their communities 3. Wellbeing 4. Feedback and evaluation.

UNIT 3		
Topic		**Elements**
1	**Plant Knowledge**	1. The identification and requirements of plant species 2. Plant specification and sourcing 3. Plants within gardens and designed landscapes 4. Propagation techniques.
2	**Creating Planted Areas**	1. Site preparation 2. Planting schemes 3. The planting process 4. Post-planting management.
3	**Maintaining Planted Areas**	1. Maintenance of planted areas 2. Garden management plans / maintenance schedules 3. Evidence-based practice / best practice 4. Evaluation of techniques.
4	**Plant Health**	1. Biosecurity 2. Biotic and abiotic impacts on plant health 3. Integrated Pest Management 4. Planning garden health.
5	**Productive Growing**	1. Cultivation of vegetables 2. Cultivation of top fruit 3. Cultivation of soft fruit 4. Cultivation of herbs.
6	**Protected Growing**	1. Siting, design and maintenance of protected structures 2. Internal structures and equipment 3. Production of crops 4. Management of plant collections.
7	**Ecological and Sustainable Plantings**	1. Purpose of ecological and sustainable plantings 2. Species selection 3. Establishment of ecological and sustainable plantings 4. Maintenance of ecological and sustainable plantings.
8	**Landscaping Materials**	1. Inspection of existing hard landscaping features 2. Maintenance plans and schedules for landscaping materials and features 3. Planning a new hard landscaping feature 4. Selection and calculation of materials.

UNIT 4		
Topic		**Elements**
1	**Initial project proposal**	1. Project proposal 2. Plan
2	**Investigation and research**	1. Methodology 2. Sources of information 3. Analysis
3	**Project skills**	1. Project management 2. Developing arguments 3. Decision making 4. Creative thinking
4	**Content and presentation**	1. Format 2. Content 3. Presentation

These are shared units from the separate RHS Qualifications at Level 3, as follows:

Qualification	UNIT	Equivalent Qualification Unit	UNIT	QAN
RHS Level 3 Diploma in Horticulture	**1**	RHS Level 3 Certificate in Plant Growth, Garden Planning and Applied Propagation	**1**	**610/2231/7**
	2		**2**	
	3	RHS Level 3 Certificate in Practical Horticulture	**1**	**610/2232/9**
	4	RHS Level 3 Award in Horticultural Investigation	**1-4**	**610/3773/4**

4. Assessment

4.1. Assessment Outcomes

The content covered in each topic of this syllabus specification is expressed in terms of 'Assessment Outcomes' (AOs).

Assessment Outcomes define the way in which learners demonstrate their abilities under test conditions. The AOs use a 'progressive mastery' model for each topic area. This qualification has three broad categories of assessment outcomes, which are:

AO1 – knowledge recall of scientific ideas, processes, techniques, procedures, and making correct use of terms, symbols and units of measurement

AO2 – application of knowledge and understanding of concepts, theories, facts to different situations and contexts through presentation of reasoned explanations and analysis and interpretation of information and ideas

AO3 – application of knowledge and understanding in an integrated and holistic way in order to reach conclusions and make judgements and recommendations.

The relevant content (elements) for each of these AOs is included against each topic area in the specifications below. It is therefore clear what is to be covered and the nature of how it will be assessed. Each topic will start with knowledge recall (AO1), progress to application of knowledge to situations (AO2), and ultimately to making connections with other relevant topic areas i.e. holistic (AO3).

The aim is that those learners who successfully meet all these progressive demands will be able to demonstrate a wide range of skills and especially the ability to apply what they have learned in practical contexts.

4.2 Assessment methods

Unit 1 and 2

These units will be entirely assessed by a summative, unseen written examination for each unit. Therefore examination 1 will cover Unit 1 (topics 1.1-1.4) and examination 2 will cover Unit 2 (topics 2.1-2.4). In each examination, all assessment outcomes specified in the unit will be covered. Examinations must be taken with a provider approved by RHS Qualifications.

Unit 3

A range of methods will be used to assess this unit. They include formative assessment of skills by tutors at RHS Centres, and a range of summative short answer tests, professional discussions as well as direct observation by RHS Assessors.

Unit 4

This unit provides the opportunity for learners to investigate areas of personal or professional interest which provide opportunities to apply their knowledge and skills. It will be entirely assessed by the submission of an Initial Project Proposal (IPP) to reflect the work undertaken in Topic 1, a final written project to reflect the work undertaken in Topics 2, 3 and 4, and a separate professional discussion with the candidate to discuss the approach and content of the written project. Successful completion of both the Initial Project Proposal, submission of the final written project and professional discussion are mandatory for the award of this qualification.

Topic 1 should be considered as a gateway module which learners must successfully pass in order to commence work on Topics 2-4. To meet the requirements of Topic 1, the learner will be required to complete the RHS IPP form which must be discussed and agreed with their project supervisor at the centre prior to submission to RHS Qualifications for assessment and formal approval of the project.

To meet the requirements of Topics 2, 3 and 4, the learner will be required to complete their final written project of 4,000-4,500 words, with support and guidance from their project supervisor at the centre, prior to submission to RHS Qualifications for assessment, and participate in a professional discussion with a designated RHS Examiner. The final written project must be reviewed by the project supervisor to ensure that it meets the following criteria before submission to RHS Qualifications. All assessments must be conducted in accordance with the RHS requirements (see rhs.org.uk/qualifications for more details).

4.3 Grading

Each unit must be passed for the award of the diploma. The weighting of each unit is as follows:

Unit 1 20%
Unit 2 20%
Unit 3 40%
Unit 4 20%

A final grade for the overall qualification will be calculated by amalgamating the marks for each unit and expressed as a percentage. Learners will be awarded the following grades for the complete qualification:

50-64%	Pass
65-79%	Merit
80%+	Distinction

5. Learning Resources

There is a wide range of books, online material and other learning resources published which support the studies of those learning horticulture. RHS Qualifications does not recommend or endorse any specific learning resources as meeting the needs of learners studying for RHS qualifications. Learners are encouraged to seek guidance from their tutors on which learning resources will best support their studies, or to choose the most appropriate resources to support the qualification requirements and their needs from the wealth of material available.

6. Approved Centres

RHS Qualifications can only be delivered by approved centres. Further information regarding the approval process can be found at: rhs.org.uk/qualifications.

7. Learner Registration

All learners must be registered with RHS Qualifications at the commencement of this qualification through the RHS Qualifications Web Portal. More information about the registration process is available from RHS Qualifications.

8. Reasonable Adjustments and Special Consideration

RHS Qualifications is committed to ensuring fair assessment for all learners, and will facilitate access to its qualifications through reasonable adjustments to assessment arrangements for learners with an identified specific need. An example of a reasonable adjustment which could be made is the production of a modified examination paper for a learner with a visual impairment.

Special consideration is given following the examination to learners who are present for the examination but may have been disadvantaged by temporary illness, injury or adverse circumstances which arose at, or near, the time of examination**.**

Full guidance is provided in the document 'Guidance to Centres for Reasonable Adjustments and Special Consideration'. The document is available on the RHS website (rhs.org.uk/qualifications), the RHS Qualifications Approved Centre web portal, or can be obtained from RHS Qualifications.

Applications for reasonable adjustments or special consideration must be made by the Approved Centre on behalf of the learner. Application must be made within specified timescales.

9. Fees

For a full list of fees please see the RHS Qualifications Fees Notice, this document is available on the Qualifications page on the RHS website and on the RHS web portal. All fees are payable prior to confirmation of entry for any examination.

10. Enquiry about Results Service

An enquiry about results service is available from RHS Qualifications. Applications must be submitted within the specified number of working days of the results release date. Applications received after this date will not be processed. Detailed regulations about this service are available from RHS Qualifications.

11. Re-mark & Feedback

The fee for a remark and feedback can be found on the RHS Qualifications Fees Notice. If a re-mark results in an improved result, the fee paid will be refunded.

12. Appeals Procedure

An Appeals procedure exists to conduct appeals lodged by learners against decisions made by RHS Qualifications, concerning their assessment performance, the granting of an award and/or the closure of their entry to an award on academic grounds.

The procedure is also followed in instances where RHS Qualifications has imposed a penalty on a learner, tutor or invigilator, and where the Centre wishes to appeal against this decision after results are published.

A copy of the procedure is available on the RHS Qualifications web portal and on the RHS website.

13. Replacement Certificate (if lost, damaged or destroyed)

The fee for a replacement certificate can be found on the RHS Qualifications Fees Notice. Requests for a replacement certificate must be sent to the Qualifications Department.

14. Policy on Malpractice

Malpractice consists of those deliberate acts which undermine the integrity and validity of any assessment, the certification of qualifications and/or damage the authority of those responsible for conducting the assessment and certification.

RHS Qualifications does not tolerate actions or attempted actions of malpractice by learners or centres in connection with RHS qualifications. RHS Qualifications may impose penalties and/or sanctions on learners or centres where incidents, or attempted incidents, of malpractice have been proven.

A copy of the full policy is available on the RHS Qualifications web portal and on the RHS website.

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Syllabus Specification

The specific detailed content for each of the four units of the syllabus now follows on the following pages. However, learners should have regard to four overarching qualification-wide outcomes:

Qualification-wide outcomes

Health and Safety:

- Knowledge of, and compliance with, current legislation as it relates to horticulture
- The management of risk within horticulture
- The storage, care and maintenance of PPE, tools and equipment in horticultural settings.

Sustainability:

The impact of horticulture on the wider environment, with specific reference to:

- Reduction of the negative impacts of horticultural practices
- The contribution of horticulture to the three pillars of sustainability (economic viability, social equity and environmental protection)
- The concept that horticulture should be net positive, benefitting the wider environment
- The impact of horticulture on climate change
- The impact of climate change on horticulture.

Best Practice:

- Professional approaches and techniques
- Professional use of named plant species in a wide range of horticultural settings
- Horticultural practices which are professional, current, effective and sustainable
- The adoption of trials results, research and development findings.

Equality and diversity:

- Knowledge and compliance with all current legislation as it relates to horticulture
- The concepts of respect, fairness, and dignity
- Negative impacts of poor practice to include: discrimination, victimisation and harassment
- The advantages of inclusive cultures.

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UNIT 1

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Unit:	**1**
Topic:	**1**
Title:	**Horticultural Heritage**

Topic overview

The management of historic gardens and landscapes is a growing sector of horticulture. Those who are tasked with the care of these important spaces make management decisions, balancing the often-competing requirements of being custodians of the past, with the creation of garden areas that meet the needs of today's visitor.

Those working in this developing field require an underpinning knowledge of horticultural history, including the role and purpose of horticultural spaces through time.

The key influences on the development of gardens including politics, exploration and trade, colonialisation and development of empire, and the assimilation of gardening styles from different cultures are all considered.

The value of horticultural heritage to society is considered, including the economic benefits, the role of heritage gardens and designed landscapes in conservation, along with the models and techniques that are used to evaluate these important concepts.

The impact of horticultural heritage on the management of gardens and designed landscapes informs many of the decisions required in the care of these important spaces. This includes aspects such as statements of significance, prioritisation of works and spirit of place.

Element 1	The history of horticultural space	
AO1: **Knowledge**	AO2: **Application**	AO3: **Integration**
The role and purpose of horticultural spaces through history, from the 14th to the 21st Centuries, to include: • public spaces • conservation collections • private gardens • urban green space.	Key criteria for garden research to establish period and style, to include: • sources of information • establishing context • interrelationship with the wider landscape • history • philosophies • plant introductions • garden design.	The impact and importance of exploration and plant introductions on horticultural heritage.
Commentary		
AO1 considers the role and purpose of horticultural spaces, from the 14th Century to the present day. Learners develop a knowledge of the role and purpose of public spaces, conservation collections, private gardens and urban green spaces. At AO2 learners apply this knowledge by moving on to consider garden research to enable them to establish period and style. At AO3 the impact and importance of exploration and plant introductions is considered.		

Element 2	Key influences on the development of horticultural space	
AO1: **Knowledge**	AO2: **Application**	AO3: **Integration**
Key influences on the development of horticultural spaces, to include: • politics, society and common values • exploration and trade • colonialisation and the development of empire • the assimilation of gardening styles from different cultures • evolving concepts of the garden through the centuries • religion and philosophy • art and architectural styles.	Impact of key influences on garden style. The identification of garden style through the use of planting and design characteristics.	The importance of communities of practice, the role of specialist societies, the sharing of information and approaches.

Commentary

Gardens are reflections of the era in which they were designed and created, their development through time has been influenced by politics, exploration and colonialisation. These and other influences are considered in AO1.

The gardens that result from the influences explored in AO1 are identified within AO2 through their use of plantings and their design characteristics.

The process identified at AO2 is strengthened and enhanced in AO3 through the use of communities of practice, the sharing of information and approaches.

Element 3	The importance of horticultural heritage	
AO1: **Knowledge**	AO2: **Application**	AO3: **Integration**
The value of horticultural heritage to society, to include: • economic benefit • conservation • national identity • community • storytelling.	Techniques to evaluate heritage on a site.	The role of interpretation in engaging visitors.
Commentary		
The wide-ranging positive contributions of horticultural heritage are considered at AO1, with AO2 developing the key criteria that can be used to evaluate the contribution of heritage within gardens and the designed landscape. AO3 introduces the wider usage of interpretation within horticultural settings		

Element 4	The impact of horticultural heritage on gardens management	
AO1: **Knowledge**	AO2: **Application**	AO3: **Integration**
Conservation theory (as applied to horticultural spaces), to include: • significance • the prioritisation of works • spirit of place • the legislative framework. The purpose of conservation management plans for horticultural spaces.	The interpretation of conservation management plans for horticultural spaces.	The importance of heritage in the setting of management standards within gardens.
Commentary		
At AO1 the basic concepts found within conservation theory are established along with the purpose of conservation management plans which are within the public domain. At AO2 learners apply this knowledge in the purpose and interpretation of management plans. At AO3 the importance of heritage is considered within the setting of management standards.		

Unit:	**1**
Topic:	**2**
Title:	**Plant Knowledge**

Topic overview

The plants that are cultivated within both historic gardens and landscapes, and those used within wider green spaces, are the result of exploration and plant collecting. It is important that horticulturists understand the process of plant introductions. This includes historical contexts, along with the introduction of plant material that is being wild collected through current exploration.

The horticulturist who is engaged in the management of these living collections is often involved in researching various topics to inform plant husbandry. This research involves developing skills relating to the use of reliable information sources, along with a knowledge of international standards of plant nomenclature. Areas of research include; origin and natural habitat, folklore and use in medicine, biodiversity ratings and conservation status. This information is applied in the selection of species, in the management of living collections and horticultural interpretation.

The management of living collections involves the management of data, and the use of plant records to collate data and inform future management decisions.

Element 1	The role of exploration on plant diversity	
AO1: **Knowledge**	AO2: **Application**	AO3: **Integration**
The process of plant introductions to British gardens from the 16th to the 21st Centuries. The impact of plant exploration and introductions on: • world populations of people • world populations of plants • gardens in Britain.	The advantages of wild collected plant material with regard to resilience, genetic diversity and conservation. The regulation and ethical implications on the collection of plant material from the wild e.g. Convention on Biological Diversity, Convention on International Trade in Endangered Species (CITES). The impact of wild collection on biodiversity.	The impact of exploration and plant introductions on horticultural heritage.
Commentary		
AO1 allows the learner to study the process of plant introductions, along with their impact on the world and on gardens. AO2 considers horticultural practices today including the regulation and ethical considerations of wild collection. AO3 moves on to consider the impacts of exploration, and the introduction of new plant material on horticultural heritage. This includes the concept that new plant introductions contributed to the development of style within gardens. These gardens are now often considered to be heritage sites. The concept and the argument that when undergoing development work, the palette of plants should be based around plants of the period. Qualification-wide outcomes, for example sustainability and the changing climate can be applied to offer opposing concepts to determine plant selection strategies.		

Element 2	Plant information sources	
AO1: **Knowledge**	AO2: **Application**	AO3: **Integration**
Reliable sources of information about plants to include experience-based and academic sources of information. The range of organisations involved in researching, curating and disseminating information relating to plants. The role of nomenclature standards and type specimens in plant taxonomy.	The importance of RHS Plant Finder and the International Plant Names Index when researching plant names. Methodology to describe the properties of plants, to include: • trials and research • ecosystem services • hardiness ratings • colour charts • award schemes e.g. Award of Garden Merit.	The use of reliable information sources in the development of best practice in the management of plant collections and gardens.
Commentary		
Horticulture is a science requiring reliable sources of information to inform and to develop horticultural practices. AO1 introduces learners to a range of information sources and considers horticultural research and the dissemination of findings. AO2 applies the concept of reliable information sources to cover the naming of plants, and standard systems to describe the properties of plants. The use of standard systems to identify climate resilience, drought tolerance and ecosystem services. At AO3 the use of reliable information sources in the development of best practice is considered. Qualification-wide outcomes applicable to AO3 could include the use of tools to identify climatic conditions in the future to inform plant based decisions.		

Element 3	Applied plant knowledge	
AO1: **Knowledge**	AO2: **Application**	AO3: **Integration**
The research, communication and use of plant information, to include: • botanical description • origin, natural habitat geographic spread • folklore / medicinal uses • natural method of propagation • biodiversity rating • conservation status • predictive nature of scientific names • advantages of scientific names.	Horticultural applications of plant information for: • species selection • plant management • interpretation • botanical plant descriptions. The importance of taxonomic principles in the management of National Plant Collections® e.g. labelling and verification.	The impact of plant knowledge on the propagation of plant species. The application of plant knowledge to management techniques.

Commentary

Horticulturists require the ability to develop and increase their plant knowledge during their careers, or as their passion for a particular group of plants grows. At AO1 the concept of using reliable information sources to research plant information is studied along with the advantages that the use of scientific plant names afford.

At AO2 the application of plant knowledge is considered within the context of the management of National Plant Collections and in the selection and management of plant species. Areas such as botanical plant descriptions are included to allow learners to develop a basic knowledge of the concept of keys, and the ability to provide accurate plant descriptions.

At AO3 the impact of reliable plant-based knowledge is considered on the propagation of plant species or the horticultural techniques used in the management of gardens. Qualification-wide outcomes that can be applied in AO3 include the application of plant knowledge with reference to sustainability and climate resilience.

Element 4	Managing plants within botanic and other gardens	
AO1: **Knowledge**	AO2: **Application**	AO3: **Integration**
The concept of living collections. The role and benefits of plant records. The information contained within plant records.	The advantages and limitations of plant records. The use of digital tools / apps to manage plant records.	The value of plant and historical records. Methods and importance of sharing plant record information with others in professional bodies e.g. Botanic Gardens Conservation International, National Plant Collections (Plant Heritage).
Commentary		
Many gardens and designed landscapes keep records of their plant collections. The more formal the collection the more detailed such records are. AO1 explains the concept of plant records along with the information they contain. This is applied at AO2 through the study of the advantages and limitations of plant records along with the use of digital tools and apps in the management of living collections. At AO3 the value of plant and historical records in the management of gardens and designed landscapes is considered. The networks through which such information is shared are also considered.		

Unit:	**1**
Topic:	**3**
Title:	**Plant Selection and Cultivation**

Topic overview

The selection and cultivation of plants within gardens and designed landscapes is the point at which design, artistic flair and creativity meets horticultural science.

The selection of plants starts with considering the function or role they will play within the garden. The specification of plant material is critical to the ultimate quality of plantings. The horticulturist needs to be able to use technical language and apply a range of criteria to inform the specification of plants for planting.

The combination of plants to create gardens and designed landscapes involves the study of plant-based design principles.

Finally, the unit considers the important topic of the selection of plant species to fulfil a function within a garden or designed landscape. This includes the specification of plant material and the combination of such plants to create a garden. These specifications have significant practical implications on the management and the calculation of labour requirements in a garden.

Element 1	Selecting plants for a purpose	
AO1: **Knowledge**	AO2: **Application**	AO3: **Integration**
Characteristics of plants for a range of purposes, to include: • structural • productive • climate resilience • ecosystem services • focal points • aesthetics • specialist / themed areas.	Select plants for a range of purposes, to include: • structural • productive • climate resilience • ecosystem services • focal points • aesthetics • specialist / themed areas.	Plant selection considerations for heritage sites e.g. suitability to era, historic links to site.
Commentary		
AO1 allows learners to further their plant knowledge by considering the characteristics of plants to meet a range of roles within gardens and designed landscapes. The role of plant selection in biodiversity, with particular regard to ecosystem services, which include the provision of habitat and food along with other relevant criteria. This knowledge is applied at AO2 where learners select plants suitable for a range of purposes. At AO3 the suitability of plant selection to the heritage of the site are considered along with the application of the syllabus-wide outcomes.		

Element 2	Plant procurement	
AO1: **Knowledge**	AO2: **Application**	AO3: **Integration**
Terminology used in the specification of plants for planting. Tree sizes, to include: • unfeathered maiden (whip) • feathered maiden • standard • heavy standard. Production systems, to include: • bare root • rootball • undercut • airpots • containerised • container grown. Sustainability, to include: • locally grown, reduced emissions in transport • single use plastic • peat free growing media • water footprint • ethics e.g. Modern Slavery Act. Biosecurity, to include: • policies • supplier reputation • compliance with phytosanitary controls / legislation. Procurement, to include: • lead times/delivery • local production • minimum order quantities. Formal standards to include the concept of British Standards	The impact of site-based requirements on the specification of plants for planting. Tree sizes, to include: • unfeathered maiden (whip) • feathered maiden • standard • heavy standard. Production systems, to include: • bare root • rootball • undercut • airpots • containerised • container grown. Sustainability, to include: • locally grown, reduced emissions in transport • single use plastic • peat free growing media • water footprint • ethics e.g. Modern Slavery Act. Biosecurity, to include: • policies • supplier reputation • compliance with phytosanitary controls / legislation.	The importance of best practice and fact-based decision making when specifying plants for planting.
Commentary		
At AO1 learners study the terminology that is used in plant specifications. At AO2 learners apply these principles. At AO3 the importance of research, the application of best practice and fact-based decision making is considered in plant specification.		

Element 3	Combining plants	
AO1: **Knowledge**	AO2: **Application**	AO3: **Integration**
The impact of design principles on the combination of plant species, to include: • texture • proportion • scale • colour • unity • harmony • balance • rhythm • repetition.	The application of design principles in the work of prominent designers e.g. Piet Oudolf, Gertrude Jekyll.	The impacts of heritage on design.
Commentary		
At AO1 learners consider the impact of a series of design principles that inform the combination of plants. At AO2 the work of leading plant-based designers is considered to further inform this process. At AO3 allows learners to integrate this knowledge to the syllabus-wide outcomes and plant-based design.		

Element 4	Planning plant maintenance	
AO1: **Knowledge**	AO2: **Application**	AO3: **Integration**
The cultivation requirements of a range of plants.	The impact of cultivation requirements on staff resources and the development of maintenance schedules.	The importance of best practice and fact-based decision making when developing maintenance schedules.
Commentary		
At AO1 the cultivation requirements of a range of plants are considered. At AO2 learners consider the implications of plant selection on maintenance requirements and staffing, through the development of maintenance schedules. At AO3 the importance of fact-based decisions in the development of maintenance schedules is applied.		

Unit:	**1**
Topic:	**4**
Title:	**Managing Plant Propagation**

Topic overview

As part of their management of gardens and designed landscapes, horticulturists are called upon to propagate a wide range of plants. Such plants may be for planting schemes, heritage assets, plant collections or simply to produce stock for plant sales.

The propagation of plants starts with the selection of appropriate facilities laid out in a manner which allows effective working practices.

To maximise investment, propagation facilities should be fully utilised, which involves the planning of operations to meet the needs of the plant species and available space.

Many plant species require specialist propagation techniques that apply scientific knowledge to horticultural practice.

Horticultural research and development is constantly improving our understanding of plant propagation. Horticulturists must access and apply this knowledge through regular updating from trusted organisations.

Element 1	Propagation facilities	
AO1: **Knowledge**	AO2: **Application**	AO3: **Integration**
Facilities / equipment required in a seed and vegetative propagation unit, to include: • structures • benching • environmental monitoring and control • materials storage.	The factors to consider when selecting equipment for propagation facilities, to include: • structures • benching • environmental monitoring and control • renewable energy sources • the storage of materials. The factors that influence the layout of propagation facilities e.g. efficient working practices.	The impact of plant species requirements on a propagation facility. The use of horticultural research findings to inform the decision-making process when establishing propagation facilities.
Commentary		
At AO1 learners review the essential components of a propagation facility. At AO2 the factors to consider when selecting equipment to develop a propagation facility are considered. Learners also consider the layout of a facility, to include efficiency of working practices. At AO3 the impacts of plant species to be propagated is considered along with the importance and use of horticultural research findings when developing a propagation facility.		

Element 2	Planning propagation	
AO1: **Knowledge**	AO2: **Application**	AO3: **Integration**
Components of annual propagation plans, to include: • stock plant management • capacity • timings of operations • germination times • rooting times • resource requirements • labour requirements • techniques to be used • pest and disease control and hygiene.	Create an annual propagation plan, to include: • stock plant management • capacity • timings of operations • germination times • rooting times • resource requirements • labour requirements • techniques to be used • pest and disease control and hygiene.	The role of the propagation facility in meeting plant procurement requirements. The role of the propagation facility in the production of hard to source heritage-based plant material.
Commentary		
AO1 specifies the key criteria to be used in the development of propagation plans. AO2 applies these criteria as learners produce annual propagation plans to maximise the use of a small propagation facility. AO3 integrates the role of a propagation facility to other topic areas, for example the role of propagation facilities in meeting plant procurement requirements, or in the production of heritage-based plant material. Qualification-wide outcomes, including sustainability are applied within AO3.		

Element 3	Advanced propagation techniques	
AO1: **Knowledge**	AO2: **Application**	AO3: **Integration**
Advanced seed propagation to include techniques to overcome dormancy mechanisms, to include: • scarification • stratification • vernalisation • gibberellin soaks. Specialist vegetative propagation techniques relevant to the management of plant collections. Advantages of: • clonal selection • micropropagation.	The impact of the following factors when propagating plant material: • growing media • modules • rooting treatments • nutrition • temperature • relative humidity.	The use of propagation protocols to reliably produce plants that require specialist techniques.
Commentary		
At AO1 learners further their knowledge of plant propagation by considering the specialist techniques used to overcome seed dormancy. Other areas of consideration include: seed collection, layering, bulb and corm propagation, grafting and other associated techniques. At AO2 the impact of a number of factors on the management of the propagation process, (to include seed and vegetative) are considered. This concept is furthered at AO3 with a deeper analysis of the impact of plant requirements being considered.		

Element 4	Development of propagation protocols	
AO1: **Knowledge**	AO2: **Application**	AO3: **Integration**
The value of protocols in propagation. The factors that inform the development of protocols. The use of data to measure effectiveness of protocols. The measurement of outcomes, to include: • percentage germination • percentage rooting.	Develop propagation protocols.	Role of fact-based decision-making and best practice e.g. through the work of professional bodies.
Commentary		
At AO1 learners consider the management of a propagation facility, identifying key criteria and key performance indicator (KPI) measures. AO2 allows learners to develop protocols for the propagation of different genera. AO3 allows learners to apply fact-based decisions to the process, through reference to the work of professional bodies, such as the International Plant Propagator's Society. The role of communities of practice and the sharing of best practice through conferences and symposia are also considered.		

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UNIT 2

Topic		Elements
1	**Garden Styles and Specialist Areas**	1. Garden styles and areas 2. Planting styles 3. Hard landscaping elements 4. Management of trees.
2	**Productive Growing**	1. Growing systems 2. Selection of crops and planning cropping 3. Optimising yield 4. Research and development in productive growing.
3	**Gardens Management**	1. Managing people in a garden 2. Managing material resources in a garden 3. Planning projects and maintenance activities 4. Maintenance standards.
4	**Gardens, People and Spaces**	1. Gardens and visitors 2. Gardens and their communities 3. Wellbeing 4. Feedback and evaluation.

Unit:	**2**
Topic:	**1**
Title:	**Garden Styles and Specialist Areas**

Topic overview

Gardens and designed landscapes are the result of design and planting decisions, the selection of hard landscaping materials and the dominant forms of trees.

The horticulturist has to be able to determine and work with a number of different design styles, from ecological to modernist, from woodland to rock gardens.

These garden styles are created in part by the selection and style of plantings. The gardens created can benefit the wildlife and biodiversity, along with the mental health and wellbeing of garden visitors.

Hard landscaping materials, including paths, benches and plant supports, contribute to the design style and planting to create ambience.

Trees are often a strong feature in gardens due to their size and longevity. They fundamentally influence style whilst providing a range of functions for both the environment and visitors.

Element 1	Garden styles and areas	
AO1: **Knowledge**	AO2: **Application**	AO3: **Integration**
Design criteria for a range of garden styles and areas, to include: • formal gardens • woodland gardens • cottage gardens • modernist gardens • coastal gardens • prairie gardens • ecological gardens • alpine and rock gardens • water gardens • display glasshouses.	Identify the following garden styles and areas: • formal gardens • woodland gardens • cottage gardens • modernist gardens • coastal gardens • prairie gardens • ecological gardens • alpine and rock gardens • water gardens • display glasshouses.	The impact of garden styles on visitors, maintenance schedules and garden management plans. The impact of a changing climate on a range of garden styles.
Commentary		
At AO1 the design criteria for a range of garden styles and features are determined. At AO2 the design criteria from AO1 are used to identify a range of garden styles. At AO3 the wider impacts of garden styles on visitors and on the management of gardens are considered along with the impact of climate change on a range of garden styles. This can include plant selection, but also resilience to wind, drought, floods and high temperatures.		

Element 2	Planting styles	
AO1: **Knowledge**	AO2: **Application**	AO3: **Integration**
Planting styles, to include: • formal gardens • woodland gardens • cottage gardens • modernist gardens • coastal gardens • prairie plantings • ecological plantings • alpine and rock gardens • water gardens • display glasshouses.	Specify suitable plant species for a range of garden styles and areas to include: • formal gardens • woodland gardens • cottage gardens • modernist gardens • coastal gardens • prairie plantings • ecological plantings • alpine and rock gardens • water gardens • display glasshouses. The benefits of a range of planting styles and areas on wellbeing and biodiversity.	The impact of planting styles on the development of maintenance schedules and garden management plans. The impact of a changing climate on a range of planting styles.
Commentary		
At AO1 a wide range of planting styles are investigated. AO2 allows learners to match plant species to garden styles. AO3 integrates this area with garden management to consider the impacts of planting styles on garden maintenance, along with the impact of climate change on a range of garden styles. This can include resilience to wind, drought, floods and high temperatures.		

Element 3	Hard landscaping elements	
AO1: **Knowledge**	AO2: **Application**	AO3: **Integration**
Hard landscaping characteristics for a range of garden styles and areas, to include: • formal gardens • woodland gardens • cottage gardens • modernist gardens • coastal gardens • ecological gardens • alpine and rock gardens • water gardens • display glasshouses.	Sustainable implications of hard landscape material choices e.g. procurement decisions, use of repurposed / recycled materials.	The impact of hard landscaping features on visitor flow e.g. directing and restricting movement.
Commentary		
At AO1 the hard landscaping characteristics for a range of garden styles are considered. At AO2 the implications of hard landscapes on sustainability are considered, along with procurement decisions and the benefits and limitations of recycled and repurposed materials being considered. At AO3 wider implications are considered, including the impact of hard landscaping features on the flow of people through the garden.		

Element 4	Management of trees	
AO1: **Knowledge**	AO2: **Application**	AO3: **Integration**
The role of trees within a range of garden styles and areas, to include: • formal gardens • woodland gardens • cottage gardens • modernist gardens • coastal gardens • ecological • alpine and rock gardens.	The influence of garden styles and areas on tree maintenance, to include: • inspection • pruning • crown raising • pest, disease and pathogen • legislation.	The impacts of trees on neighbouring garden areas, such as productive growing areas. The impacts of trees on garden visitors e.g. the provision of shade, the filtering of rain.
Commentary		
AO1 considers the role of trees within a range of garden styles. The key considerations regarding the management of trees within a garden are considered at AO2. At AO3 the wider, and sometimes unintended impacts of trees on neighbouring garden areas are considered. Please note: the qualification-wide outcome with regard to best practice and the naming of plant species is particularly relevant in this element.		

Unit:	**2**
Topic:	**2**
Title:	**Productive Growing**

Topic overview

Productive growing within a garden setting involves the cultivation of fruit, vegetables and flowers for cutting. These areas often inspire visitors, and demonstrate sustainable food production strategies that allow members of the public to produce fruit, vegetables and flowers, which have zero food miles and a reduced carbon footprint.

Productive growing involves careful planning and scheduling of crops for continuity of supply. It also involves the selection and implementation of cropping systems and approaches.

Successful productive growing includes a number of key elements, for example, optimising soil fertility, the management of weeds and other unwanted plants, along with the application of best practice and sustainability.

A further aspect of productive growing is the application of the latest findings from horticultural research and development. This research informs the selection of crops, cultivars, and husbandry decisions.

Element 1	Growing systems	
AO1: **Knowledge**	AO2: **Application**	AO3: **Integration**
The range of systems used in productive growing, to include: • certified organic production • hydroponics • aquaponics • minimal cultivation • raised beds • traditional gardening • square foot gardening.	The advantages and disadvantages of the following growing systems: • certified organic production • minimal cultivation • raised beds • traditional gardening • square foot gardening.	The integration of growing systems into the wider management of garden areas. The role and impact of productive gardens in inspiring garden visitors to cultivate their own gardens.
Commentary		
At AO1 learners are introduced to the range of productive growing systems that are used in gardens and designed landscapes. At AO2 the advantages and disadvantages of a range of growing systems are evaluated. At AO3 this element is integrated into other topic areas to consider the integration of growing systems within the maintenance of other garden areas, along with the role of productive gardens in inspiring garden visitors to produce their own crops.		

Element 2	Selection of crops and planning cropping	
AO1: **Knowledge**	AO2: **Application**	AO3: **Integration**
Criteria for the selection of crops to be grown to include cultivar selection. Factors when planning a cropping schedule for a productive garden, to include: • space available • crop rotations • continuity of supply • Gantt charts. The impact of perennial crops on space availability and the efficacy of crop rotations. The use of protective structures e.g. cloches or fleece, for early and late cropping.	Plan the cropping schedule for a small productive growing area / allotment to meet objectives e.g. continuity of supply, crop rotation.	The impact of crop selection on community and visitor engagement. The role of volunteer gardeners in the production of crops. The setting of horticultural standards for productive growing settings.
Commentary		
At AO1 learners consider criteria for selection of a range of crops to be grown, while also studying a range of criteria used in the planning of productive growing setting. At AO2 learners apply this knowledge in the production of a cropping schedule for an allotment or small productive garden to include a range of factors, for example the continuity of cropping and crop rotation. At AO3 this element integrates with other topic areas, for example the impact of crop selection on the diversity of visitors, the role of volunteer gardeners in the production of crops, the setting of standards for productive growing settings		

Element 3	Optimising yield	
AO1: **Knowledge**	AO2: **Application**	AO3: **Integration**
Soil amelioration to optimise yield. Weed control strategies to optimise yield. Emerging weed control strategies e.g. hot foam. Implication of control measure on sustainability. The impacts of sowing / planting densities / intercropping on maintenance and yield. Irrigation strategies to optimise yield.	The advantages and limitations of different techniques to increase soil fertility. The suitability of different weed control strategies for a range of ephemeral, annual and perennial weeds. The impact of sowing / planting density / intercropping on crop yield.	The application of soil improvement and weed control strategies in the development of maintenance schedules and garden management plans for other garden areas.
Commentary		
At AO1 learners consider the strategies that can be used to optimise yield. At AO2 learners evaluate techniques to improve soil fertility and control weeds along with the impact of crop spacing on yield. At AO3 learners integrate their knowledge of soil improvement and weed control into the wider management of garden areas.		

Element 4	Research and development in productive growing	
AO1: **Knowledge**	AO2: **Application**	AO3: **Integration**
Sources of research and information on productive growing.	The application of horticultural research in informing crop selection and cultivation practices.	The importance of horticultural research and development to inform the development of garden areas along with the production of maintenance plans and schedules.
Commentary		
At AO1 learners review the sources of information relating to horticultural research and development. At AO2 learners evaluate the findings of horticultural research and development to inform crop selection and the development of cultivation practices. At AO3 learners consider the importance of the findings of horticultural research and development on wider garden maintenance schedules and plans.		

Unit:	**2**
Topic:	**3**
Title:	**Gardens Management**

Topic overview

Gardens need to be maintained and managed.

The role of the supervising horticulturist is ultimately to ensure that this maintenance is carried out in an appropriate and sustainable manner. This process includes the recruitment, induction and training of staff, the development of maintenance schedules and the management of health and safety.

Gardens are ever evolving, and so the horticulturist is also engaged in devising, implementing and managing projects within gardens.

Horticulturists, as part of their role set standards, and use IT to develop and implement maintenance schedules and garden management plans. These are useful tools in the setting of clear objectives, project delivery and the management of gardens and designed landscapes.

Element 1	Managing people in a garden	
AO1: **Knowledge**	AO2: **Application**	AO3: **Integration**
The principles of managing people, to include: • recruitment • induction • clear job roles • communication • delegation • motivation • feedback • training • evaluating performance. Sources of information and guidance e.g. Advisory, Conciliation and Arbitration Service (ACAS).	The practice of managing people, to include: • recruitment • induction • clear job roles • communication • delegation • motivation • feedback • training • evaluating performance. The role of organisational policies, procedures and standard operating policies when managing people.	The impact of managing people effectively on the development of garden areas, maintenance standards and visitor interactions.
Commentary		
At AO1 learners are introduced to the principles of managing people, sources of information and guidance. At AO2 these principles are applied to allow learners to further develop their understanding. At AO3 the impacts of the effective management of people are considered on the maintenance and development of garden areas, on garden maintenance and on visitor interactions.		

Element 2	Managing material resources in a garden	
AO1: **Knowledge**	AO2: **Application**	AO3: **Integration**
Types of material resources within a garden, to include: Built environment, to include: • buildings • paths • mains services. Tools and equipment, to include: • hand tools • powered tools • machinery • IT.	Effective resource management e.g. maintenance plans / schedules and information management.	The implications of poor resource management on the maintenance of garden areas. The role of garden management plans to identify, allocate and justify additional resources.
Commentary		
At AO1 the management of wider garden resources are considered. These material resources include buildings, tools and equipment. At AO2 the techniques that are used to effectively manage these resources are considered, for example maintenance plans and schedules, along with the role of IT in information management, for example sharing user manuals, operating procedures and maintenance regimes. The implications of poor resource management on the maintenance of garden areas are considered at AO3.		

Element 3	Planning projects and maintenance activities	
AO1: **Knowledge**	AO2: **Application**	AO3: **Integration**
The concept of project management. The main stages of a project. The role and purpose of project management tools in the maintenance and development of horticultural sites. The role of owners, stakeholders and professionals in the development of a horticultural site, to include: • permissions • approvals • workflows • budgets • specifications • professional boundaries • definitions • conflict resolution. Setting project objectives, to include: • purpose and scope of works • the costs and the benefits.	Key components of maintenance schedules, to include: • objectives • frequency • technique • timings. Key components of garden management plans, to include: • site objectives • history and significance • site survey results • audience and visitor management • project delivery / operational plans • records of plant collections.	The role of garden management plans is setting and ensuring the maintenance standards for a range of garden styles and areas.
Commentary		
Garden managers use a number of tools to aid in project planning. AO1 considers the concept of a project, the main stages of a project, the role and purpose of project management tools, the setting of objectives, and the role of owners and other stakeholders in the development of horticultural sites. AO2 allows learners to formally consider the concept of maintenance schedules and garden management plans, which has been referenced in other topic areas. AO3 considers the role of garden management plans in other topic areas, for example the production of maintenance plans for non-specialist garden areas.		

Element 4	Maintenance standards	
AO1: **Knowledge**	AO2: **Application**	AO3: **Integration**
The concept of garden managers setting their own standards within Garden Management Plans. The concept that garden managers will set differing standards depending on function, design and client expectations. The concept of method statements. The concept of formal quality standards e.g. contract specifications, British Standards Institute. The concept of working to standards and specifications without the need for formal contracts. The concept of benchmarking with other gardens	The impact of standards and specifications on the development of garden management plans. The checks that are made to ensure formal quality standards have been met, and that method statements have been applied. The benefits of benchmarking.	The role of visitor feedback in the setting and monitoring of standards.
Commentary		
Garden managers are involved in the setting and monitoring of standards. These can be informal to inform maintenance regimes, or more formal when dealing with external suppliers. This concept is introduced at AO1. AO2 considers the impact that standards and specifications have on the development of garden management plans, for example mowing frequency, permissible extension growth on hedges. AO2 also considers the checks and audits that can be made to ensure works comply to both informal and formal quality standards. AO3 considers the role of visitor feedback in the setting and monitoring of standards.		

Unit:	**2**
Topic:	**4**
Title:	**Gardens, People and Spaces**

Topic overview

Gardens that are visitor attractions are judged on the quality of their pre-arrival information, the arrival experience, the experience of wandering through plantings and garden areas, the customer care offered by team members along with the quality, range and diversity of events and exhibitions.

Horticulturists who manage gardens often work on a variety of projects to engage their communities within the garden under their care, such engagement can involve communities adopting areas of gardens and volunteering and the development of school gardens.

Gardens and gardening have also been shown to have major impacts on wellbeing. The role of gardens as places of nature-based therapy is another area which horticulturists embrace.

Garden managers must also continuously drive standards and improve their offer, often using feedback from a range of stakeholders to inform this process.

Element 1	Gardens and visitors	
AO1: **Knowledge**	AO2: **Application**	AO3: **Integration**
Key aspects of the visitor experience, to include: • pre-visit information • arrival experience • visitor flow through the garden • customer care • garden events and exhibitions • quality of the experience.	Criteria to ensure the effectiveness of: • pre-visit information • arrival experience • visitor flow through the garden • customer care • garden events and exhibitions • quality of the experience.	The identification of the key factors that create exceptional visitor experiences to include: • spirit of place • cohesion • engagement • mission and shared values.
Commentary		
At AO1 learners consider the key aspects of the visitor experience, before considering the effectiveness of these aspects at AO2. AO3 explores a wider range of factors that together create a significant impact on the visitor experience.		

Element 2	Gardens and their communities	
AO1: **Knowledge**	AO2: **Application**	AO3: **Integration**
The benefits of community engagement, to include: • greater range of perspectives • shared ownership • improved outcomes	Techniques to engage with local communities with gardens, to include: • consultations • events • community groups • community spaces • social media • inclusion and diversity.	The value of community engagement in the development of garden management plans and specialist areas.
Commentary		
At AO1 the concept that gardens can be at the heart of their local communities is introduced, with learners investigating a range of engagement tools. At AO2 the benefits of community engagement are considered. At AO3 this element integrates with other topic areas to consider the impact that community engagement can have on the development of garden management plans.		

Element 3	Wellbeing	
AO1: **Knowledge**	AO2: **Application**	AO3: **Integration**
The impacts of green space on wellbeing, to include: • reduced morbidity • psychological relaxation • stress alleviation • physical activity • noise and pollution reduction.	Range of horticultural interventions to enhance wellbeing e.g. social prescribing, horticultural therapy. The benefits of horticultural interventions on wellbeing, to include: • improved concentration • mental stimulation • increased self esteem • healthy patterns of social functioning • fitness • improved motor skills.	The design and development of garden spaces to promote health and wellbeing, to include: • specialist areas, e.g. sensory gardens • the role of volunteering • social inclusion.
Commentary		
At AO1 the impacts of green spaces on wellbeing are introduced. AO2 builds on this knowledge by first considering the range of horticultural interventions to enhance wellbeing before moving on to consider the benefits such horticultural interventions can have on wellbeing. At AO3, the impacts of wellbeing on the design and maintenance of garden areas integrates this element with other topic areas.		

Element 4	Feedback and evaluation	
AO1: **Knowledge**	AO2: **Application**	AO3: **Integration**
The concept and importance of feedback from staff, volunteers, garden users and stakeholders. Formal and informal sources of feedback. Implementing feedback. Communication with stakeholders.	Techniques to collect feedback from visitors and stakeholders. The value of benchmarking data.	The use of feedback to inform the maintenance and development of the garden.
Commentary		
At AO1 the concept and importance of feedback from a wide range of stakeholders is considered along with formal and informal sources of feedback, including online reviews, blogs and websites. At AO2 the techniques for collecting feedback are considered, along with the advantages of benchmarking data to include visitor feedback, or metrics from other gardens. At AO3 the role of feedback to inform the maintenance and development of a garden is considered, thus integrating this element with other topic areas.		

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UNIT 3

Topic		Elements
1	**Plant Knowledge**	1. The identification and requirements of plant species 2. Plant specification and sourcing 3. Plants within gardens and designed landscapes 4. Propagation techniques.
2	**Creating Planted Areas**	1. Site preparation 2. Planting schemes 3. The planting process 4. Post-planting management.
3	**Maintaining Planted Areas**	1. Maintenance of planted areas 2. Garden management plans / maintenance schedules 3. Evidence-based practice / best practice 4. Evaluation of techniques.
4	**Plant Health**	1. Biosecurity 2. Biotic and abiotic impacts on plant health 3. Integrated Pest Management 4. Planning garden health.
5	**Productive Growing**	1. Cultivation of vegetables 2. Cultivation of top fruit 3. Cultivation of soft fruit 4. Cultivation of herbs.
6	**Protected Growing**	1. Siting, design and maintenance of protected structures 2. Internal structures and equipment 3. Production of crops 4. Management of plant collections.
7	**Ecological and Sustainable Plantings**	1. Purpose of ecological and sustainable plantings 2. Species selection 3. Establishment of ecological and sustainable plantings 4. Maintenance of ecological and sustainable plantings.
8	**Landscaping Materials**	1. Inspection of existing hard landscaping features 2. Maintenance plans and schedules for landscaping materials and features 3. Planning a new hard landscaping feature 4. Selection and calculation of materials.

Topic	1
Title:	**Plant Knowledge**

Topic overview

Horticulturists are required to have an in-depth knowledge of a wide and diverse range of plants.

This knowledge includes the identification of plants, the ability to describe plants using scientific names, to specify and source plant material and to appreciate the many roles plant material plays within gardens.

The topic also includes propagation. This includes the practical propagation of a range of plant material using specialist techniques.

Element 1	The identification and requirements of plant species.	
AO1: **Knowledge**	AO2: **Application**	AO3: **Integration**
Identify and describe the following plants using scientific names. • Alpines • annual plants • aquatics • biennial plants • bulbs, corms, rhizomes and tubers • invasive plants • perennials • short-lived perennials • shrubs • trees • houseplants. Identify non-cultivated plants using common name, genus and species.	Influence of plant requirement on cultivation practices, to include: • impact of origin • impact of provenance • suitability of plant for different situations, e.g. hedging, small garden • management e.g. pruning requirement • adaptability e.g. pH range tolerated. Impact of incorrect plant selection to include: • management e.g. pruning requirement • suitability of plant for different situations, e.g. dry shade, full sun • biotic factors • abiotic factors.	Wider considerations when managing plants e.g. maintenance of plants, ecological and sustainable plantings.
Commentary		
In AO1 learners identify and describe plants using scientific names. At AO2 this plant knowledge is applied to the influence of plant requirements on cultivation practices, and the impact of geographic origin and provenance. It then moves on to consider the suitability of the plant species to the site, the management requirements of the species and how adaptable the species is with regards to site requirements. AO2 also considers the impact of incorrect plant selection, with regards to maintenance requirements, suitability to the site, along with the negative influences on the plant of a range of biotic and abiotic factors. At AO3 learners apply their plant-based knowledge across different topic areas to give an integrated knowledge of the topic.		

Element 2	Plant specification and sourcing	
AO1: **Knowledge**	AO2: **Application**	AO3: **Integration**
Terminology used in plant specifications e.g. bareroot, containerised. Criteria for plant specification, to include: • Grafted plants: rootstock, position of bud union, absence of epicormic growth • Container-grown trees: container size, height, absence of root circling, root girdling, shelf life, root flare visible on trees at surface of container. Criteria for supplier selection, to include: • biosecurity policies • quality assurance • ability to meet specification • reputation • previous experience.	Establish criteria to ensure the quality of plant material, to include: • true to type • stock size • quality • shape • branch structure • root health. Impacts of poor plant quality e.g. aesthetics, plant establishment.	Wider considerations when specifying and sourcing plants e.g. impacts on yield in productive growing, post planting management when establishing new plantings.
Commentary		
In AO1 learners develop a knowledge of plant specifications. This includes both the specification of plant material along with the criteria that should be used when selecting suppliers of plants for planting. The term grafting includes all associated practices such as budding. The criteria for plant selection should also draw on qualification-wide outcomes, for example the use of peat free growing media and whether plants are grown in heated glasshouses. AO2 applies the concepts of plant specification to include the establishment of criteria that should be used when ascertaining the quality of plants for planting. The impacts of poor plant quality are considered, both from an aesthetic perspective, but also from the influences poor quality plant material may have on establishment. AO3 integrates these concepts to consider the influences of plant quality on yield in protective growing, for example tree quality in top fruit, or on post planting management of new plantings. Qualification-wide outcomes could include the impact of size of plant (or container) on sustainability, e.g. water, growing media and plastic footprint.		

Element 3	Plants within gardens and designed landscapes

AO1: **Knowledge**	AO2: **Application**	AO3: **Integration**
The role of plants within a garden or designed landscape. The functions that plants can perform within a garden, to include: • ecosystem services • vertical barriers/hedges • windbreaks • edible plants/fruit/berries • aesthetic. The design considerations when grouping plants for display, to include: • rhythm • colour • shape • texture • movement • sound • scent. The role of plants in biodiversity e.g. nectar, berries.	Specify plant material for differing functions within a garden, to include: • ecosystem services • vertical barriers • floral displays • clipped plants/topiary • reducing noise • scent. Create plant specifications to meet site and design requirements, to include: • formal • naturalistic • prairie • herbaceous • woodland • botanical collections • Mediterranean • cottage gardens • tropical plantings.	Wider considerations when specifying plants to include ecological services e.g. use in swales and sustainable drainage schemes and in the provision of wildlife corridors in ecological and sustainable plantings.

Commentary

In AO1 the range of functions that plants can fulfil within a garden or designed landscape are considered, along with a range of design considerations, and the role that plants can have in enhancing biodiversity.

AO2 uses this knowledge to specify plant material for a range of purposes.

AO3 considers the roles of plants in the provision of ecological services, for example their role within swales, or their roles in the development of wildlife corridors, both of which are considered in the ecological and sustainable plantings topic.

Element 4	Propagation techniques	
AO1: **Knowledge**	AO2: **Application**	AO3: **Integration**

Advantages of budding and grafting in plant propagation.
 	
Principles of propagation, to include:
 	
• techniques to break seed dormancy
• bulb propagation
• corm propagation
• root cuttings
• layering
• stem cuttings to include:
  ○ wounding
  ○ heel
  ○ internodal
  ○ stem bud.
	Carry out plant propagation, to include:
	
	• techniques to break seed dormancy
	• bulb propagation
	• corm propagation
	• root cuttings
	• layering
	• stem cuttings to include:
	  ○ wounding
	  ○ heel
	  ○ internodal
	  ○ stem bud.
		Wider considerations to include the advantages of locally propagated plant material in ecological and sustainable plantings, along with the role of propagation in productive and protected growing.

Commentary		
In AO1 learners consider the advantages of budding and grafting in plant propagation, along with the principles involved in the propagation of plants. In AO2 learners develop specialist plant propagation skills in the areas specified above. Learners should be able to perform the most commonly accepted practices within each of these areas. This could include, twin scaling of bulbs, simple, air and serpentine layering, the scarification, stratification and vernalisation of seed. AO3 considers the advantages of locally propagated plant material within the context of ecological and sustainable plantings, productive growing and protected growing.		

Topic	2
Title:	**Creating Planted Areas**

Topic overview

Horticulturists create gardens and designed landscapes which improve the lives of people and help to preserve and enhance biodiversity.

Such gardens are created on a range of sites, from mountainsides to valleys. Creating planted areas requires a scientific approach to site assessment, along with a knowledge of how sites can influence plant selection and planting style.

Horticultural techniques are constantly being researched, trialled and developed and so this topic area also includes the investigation into best practice to ensure the techniques being developed are the most appropriate for the given situation.

Element 1	Site preparation	
AO1: **Knowledge**	AO2: **Application**	AO3: **Integration**
Considerations when creating planted areas, to include: • abiotic factors e.g. service locations, drainage characteristics • biotic factors e.g. soil condition, perennial weeds. Concept that site preparation should be limited to minimise negative effects on the wider environment.	Plan site preparation to embrace site characteristics prior to planting. Prepare site for planting.	The impact of plant selection on the development of site improvement plans. The impact of horticultural context on the development of horticultural sites e.g. production of fruit, management of grassed areas. The impact of sustainable horticultural practices on the development of sites.
Commentary		
AO1 introduces learners to the concept of developing sites for planting. This process starts with site improvement, taking account of the key biotic and abiotic factors that may limit the horticultural potential of a site. The principles of minimal soil amelioration, and minimal cultivation link into qualification-wide outcomes relating to current best practice and sustainability. At AO2 learners plan site preparation, to include the best practice concept of embracing site characteristics i.e. changing plant specification to suit the site, rather than the site to suit the plant characteristics. At AO3 this topic integrates with other topic areas to consider the role of site improvement plans, the impact of horticultural context and the application of sustainable practices to reduce negative environmental impacts.		

Element 2	Planting schemes	
AO1: **Knowledge**	AO2: **Application**	AO3: **Integration**
Factors that influence and inform a planting scheme to include: • function • style • site limitations • client requirement • budget.	Design a planting scheme to meet site requirements and design criteria. Produce a planting plan to indicate plant names, planting positions, numbers of plants required, suppliers, and costs.	Seasonal interest of different plant species. The application of design principles. The criteria for supplier selection. Integration of productive growing into aesthetic plantings.
Commentary		
AO1 considers the factors that influence and inform planting schemes, including the function and style of the scheme along with site-based limitations, the requirement and expectations of the client, and the concept of budget. (Nb: the level of detail with regard to budget would be limited to the cost of different sizes of plant material, or the cost of replacing annual plants when compared to the cost of perennial plants). At AO2 learners design a planting scheme to meet given site requirements and design criteria. Learners further refine and develop their skills by producing a planting plan to indicate the position of plants, the use of botanical plant names, the number of plants required, potential plant suppliers and costs. (Nb: the planting scheme and plans should be produced as working documents. Plans do not have to be presented to high professional standards, but must be clear, accurate and readable.) At AO3 other topic areas are integrated to include the application of plant knowledge to inform seasonal interest, the application of design principles. Other areas of integration include supplier selection criteria (from topic 1) and the integration of productive growing, for example the role of potagers within planting schemes.		

Element 3	The planting process	
AO1: **Knowledge**	AO2: **Application**	AO3: **Integration**
The stages of the planting process, to include: • identification of plant material • quantity checks • quality checks • health checks • quarantine requirements • set out plants • planting technique • irrigation/water management • mulching. Advantages and limitations of different plant support and plant protection products.	Implement planting scheme/plan, to include: • identification of plant material • quantity checks • quality checks • health checks • quarantine requirements • set out plants • planting technique • irrigation/water management • mulching. Specify plant support and protection products.	Impacts of poor plant specification, and planting on plant health and maintenance. Purpose and importance of good biosecurity practices when specifying / receiving plants for planting.
Commentary		
In AO1 the stages of the planting process are identified, along with the advantages and the limitations of plant support and protection products. In AO2 learners apply this process to create a planting as specified in a planting scheme or plan. AO3 integrates this element with plant health to consider the impacts of poor plant specifications on plant health and on maintenance. Learners also identify the purpose and the importance of good biosecurity practices when specifying and receiving plants for planting.		

Element 4	Post-planting management	
AO1: **Knowledge**	AO2: **Application**	AO3: **Integration**
Management requirements of new plantings for years 1, 2 and 3, to include: • health status • replacement of failed plants • water management • provide nutrition if appropriate • cultural requirements (e.g. pruning, plant supports) • weed control techniques and timings (both perennial and annual weeds).	Manage new plantings, to include: • monitoring of health status • replacement of failed plants • water management • provide nutrition if appropriate • cultural requirements (e.g. pruning, plant supports) • plan weed control techniques and timings (both perennial and annual weeds).	The impact of plant selection on the management of new plantings e.g. relating to nutrition and pruning. Best practice in post planting management.
Commentary		
In AO1 learners develop an understanding of the critical success factors involved in the management of newly planted areas, and these factors are implemented in AO2. AO3 considers the impact of plant species on the management practices with specific reference to nutrition and pruning requirements. The justification of management techniques against horticultural best practice is also considered.		

Topic	3
Title:	**Maintaining Planted Areas**

Topic overview

The management and maintenance of planted areas is a key horticultural skill.

Learners start their journey through this topic area by considering the maintenance requirements of a small garden area before moving on to develop the concept of maintenance schedules.

This concept is built upon to develop the concept of gardens management plans, which inform garden-wide maintenance decisions.

The production of such plans requires the horticulturist to consult information sources to allow the incorporation of best practice into maintenance plans.

The evaluation of techniques is further investigated through garden trials to further inform and evaluate garden management plans.

Element 1	Maintenance of planted areas	
AO1: **Knowledge**	AO2: **Application**	AO3: **Integration**
Principles to be applied when planning and prioritising the maintenance of planted areas to include: • maintenance standards • maintenance practices • ensuring the integrity of the original design concept • effectiveness of the planted area.	Identify maintenance operations for existing planted areas e.g. a rose garden or coppice, to include: • maintenance standards • maintenance practices • ensuring the integrity of the original design concept • effectiveness of the planted area.	The impact of garden maintenance techniques and scheduling on biodiversity. The scheduled maintenance of paths and other hard surfaces.
Commentary		
Horticulturists, as part of their stewardship of gardens and designed landscapes, develop formal or informal management plans. In AO1 learners identify the principles to be considered when planning and prioritising the maintenance of planted areas. At AO2 these critical success factors are applied by learners assessing the maintenance requirements of different garden areas. AO3 then considers the impact of management techniques on biodiversity.		

Element 2	Garden management plans / maintenance schedules	
AO1: **Knowledge**	AO2: **Application**	AO3: **Integration**
The role of garden management plans to inform maintenance and management decisions in gardens and designed landscapes. The role of maintenance schedules in the delivery of garden management plans.	Produce maintenance schedules for garden areas.	The impact of poor garden management on biodiversity, plant health and yield within productive growing settings.
Commentary		
At AO1 learners build on the knowledge gained in identifying maintenance requirements (element 1) for a garden area through the development of garden management plans. At AO2 learners produce a maintenance schedule for specific garden areas. At AO3 learners consider the impacts of poor garden management on biodiversity, plant health or yield within a productive garden. Learners could develop garden maintenance schedules for their own gardens, or gardens that they are closely involved in managing. Garden management plans are strategic documents that set out the direction and approach that the garden will take. Maintenance schedules include, plant maintenance, pruning, weed control and the management of plant health.		

Element 3	Evidence-based practice / best practice	
AO1: **Knowledge**	AO2: **Application**	AO3: **Integration**
Sources of reliable information on plant maintenance techniques and their suitability for different situations and species. The importance of selecting and applying horticultural practices based on evidence and reliable information sources. Finding information on new horticultural practices and techniques e.g. technologies and the advantages of staying up to date on new innovations.	The advantages of evidence-based decisions and the determination of best practice in garden management planning.	Concept of best practice. The impacts on the management of gardens and designed landscapes of not applying evidence based best practice, e.g. plant health implications.
Commentary		
In AO1 learners are asked, within a practical context, to identify the most efficient, effective and appropriate strategies to manage gardens and designed landscapes, from the use of emerging technologies, through to established techniques. The advantages of evidence-based decisions are considered at AO2, with the wider integration into all topic areas being added at AO3 where the impact of not developing this practice is considered. This element promotes reflective practice. It allows learners to develop frameworks of thinking that will help to ensure they stay abreast of new developments throughout their horticultural careers.		

Element 4	Evaluation of techniques	
AO1: **Knowledge**	AO2: **Application**	AO3: **Integration**
The value of trials to evaluate horticultural practices on site, e.g. the control of perennial weed, cultivation techniques. Procedures for running informal site-based trials.	Design and conduct site-based trials to evaluate the efficacy of horticultural practices. Interpret and apply findings of trials to the management of gardens.	Factors that might influence trial results e.g. pest infestations, plant species used.
Commentary		
AO1 introduces the concept of informal trials being used to identify the techniques which are most appropriate within a given garden or designed landscape. The procedures for running informal site-based trials are introduced to learners. AO2 applies these principles with learners designing and conducting a site-based trial to evaluate the efficacy of a horticultural practice. The findings of the trial are applied to inform the development of the garden management. At AO3 the factors that might influence trials results are considered, for example pest infestations or the use of inappropriate plant species.		

Topic	4
Title:	**Plant Health**

Topic overview

As part of the management of gardens and designed landscapes, horticulturists are responsible for ensuring plant health, a role which has become increasingly important as a result of climate change and the spread of new pests and pathogens.

Plant health is managed through a range of techniques. These start with the implementation of biosecurity protocols to limit and control the spread of organisms that can be detrimental to plant health.

The wider environmental impacts on plant health must also be managed, which includes abiotic factors such as wind and frost.

Integrated Pest Management is the model used by horticulturists to inform the control of pests, diseases and pathogens. This model is integrated into the development of garden health plans, which inform the management of all plant health impacts within a garden or designed landscape, both biotic and abiotic.

Element 1	Biosecurity	
AO1: **Knowledge**	AO2: **Application**	AO3: **Integration**
The development and role of biosecurity policies within horticulture. Techniques for identifying biosecurity weaknesses in horticultural settings e.g. application of best practice principles. Factors which affect biosecurity risk e.g. pests/pathogens present locally.	Identify areas of weakness within biosecurity policies.	Impact of sourcing policies, quarantine practices, cultivar / variety / species selection, cultivation practices and a changing climate on biosecurity.
Commentary		
At AO1 the concept of biosecurity is introduced through learners considering the development and role of biosecurity policies. This knowledge is then further developed to consider potential biosecurity weaknesses within horticultural settings, along with the factors that can affect biosecurity risk, for example the presence or absence of fireblight on local hedges. An often overlooked area of biosecurity is plant theft from gardens, which is included within the definition of biosecurity. At AO2 learners identify areas of weakness within biosecurity policies, and AO3 considers the wider contexts of biosecurity as it relates to other topic areas.		

Element 2	Biotic and abiotic impacts on plant health	
AO1: **Knowledge**	AO2: **Application**	AO3: **Integration**
Biotic factors that influence plant health, to include: • vectors e.g. aphids or wood packaging materials • diseases e.g. fungal / viral pathogens • pests e.g. adult / larval forms • the management of the plant e.g. pruning, husbandry. Abiotic factors that influence plant health, to include: • climate (humidity, water, temperature, wind, frost) • water storage • pollution • soil e.g. texture / drainage. The role of the FERA UK Plant Health Risk Register. The impact of current plant health legislation.	Protocols required to reduce the risk of pest, disease and pathogen infestations. The effect of abiotic factors e.g. temperature, humidity on pest and pathogen fecundity.	The importance of evidence-based decisions when managing pests and diseases. The impact of plant species and the horticultural setting on the management of pests, pathogens and diseases. The management of protected growing environments to promote plant health.
Commentary		
AO1 identifies the wide range of biotic and abiotic factors that can negatively impact on plant health. The impact and importance of the FERA UK Plant Health Register is considered along with the impacts of current legislation. At AO2 the protocols required to reduce the risk of pest, disease and pathogen are introduced, along with the effect of abiotic factors on pest fecundity. AO3 integrates with other topics to consider the importance of fact-based decision making, the impacts of individual horticultural settings on plant health along with the management of protected growing environments to promote plant health.		

Element 3	Integrated Pest Management	
AO1: **Knowledge**	AO2: **Application**	AO3: **Integration**
The concept of Integrated Pest Management (IPM). The steps of an IPM programme, to include: • planning • scouting (identification and monitoring) • prevention • mitigation / control (economic threshold, cultural, physical, biological, chemical) • record keeping • communication.	Create and monitor an IPM programme, to include: • planning • scouting (identification and monitoring) • prevention • mitigation / control (economic threshold, cultural, physical, biological) • record keeping • communication.	The impact of horticultural settings on IPM implementation. IPM programmes for specific horticultural settings e.g. productive growing, management of garden areas.
Commentary		
At AO1 the concept of Integrated Pest Management is considered to plan, monitor, prevent, mitigate, record and communicate plant health risks caused by pests and pathogens. At AO2 learners create and implement an IPM programme for a small garden area. At AO3 the wider impacts of horticultural settings are considered and IPM programmes are developed for specific settings, integrating this element with other topic areas.		

Element 4	Planning garden health	
AO1: **Knowledge**	AO2: **Application**	AO3: **Integration**
The theory of garden health plans, to include: • biotic factors, e.g. presence of disease within the geographic locality • abiotic factors, e.g. impact of soil types, frost pockets • IPM principles.	Create a garden health plan for a specific horticultural setting to include: • identification of all risks to plant health e.g. nutrition, pest • methods to limit or mitigate such risks e.g. wind breaks, use of micro climates.	The impacts of organic and sustainability principles on the management of garden areas.
Commentary		
AO1 covers garden health plans as holistic tools to manage all the factors (biotic and abiotic) that can affect plant health. Learners create a garden health plan within AO2. At AO3 this involves the application of organic principles along with wider sustainability implications. Garden health plans are an emerging tool to manage plant health. The plans embrace the principles of risk assessment, and risk analysis. All plant health risks are included, along with measure to mitigate these risks, which are based around the principles of IPM. Qualification-wide outcomes are applied in the development of the plan to ensure Health and Safety, Best Practice and Sustainability.		

Topic	5
Title:	**Productive Growing**

Topic overview

Productive growing within a garden setting involves the cultivation of vegetables, herbs and fruit crops for human consumption.

The production of edible crops requires a broad range of skills, including propagation, cultivation and harvesting.

Cultivation techniques include organic growing systems, container growing and the adoption of minimal cultivation, or no dig systems.

Element 1	Cultivation of vegetables	
AO1: **Knowledge**	AO2: **Application**	AO3: **Integration**
The advantages and limitations of different growing systems, to include: • certified organic production • minimal cultivation • bed systems • open ground Factors when planning a cropping schedule for the production of vegetables, to include: • space available • crop rotations • continuity of supply • Gantt charts • presence of perennial crops. Factors when harvesting crops, to include: • the stage of development for harvest • the removal of field heat • the shelf life and / or storage of the crop.	Produce a range of vegetable crops, to include: • soil amelioration • growing system • cultivar selection • sowing • planting • weed control • crop nutrition • crop support • water management • harvest • storage.	Benefits of protected structures such as cold frames and cloches. The importance of evidence-based decisions in productive growing. Apply principles of informal garden trials to productive growing. Planning and maintaining plant health in the cultivation of vegetables
Commentary		
AO1 introduces learners to a range of horticultural considerations when planning the cultivation of vegetables. AO2 then applies these principles as learners cultivate a range of vegetables in a productive setting. AO3 integrates this element to other topics, applying the concept of evidence-based decision making, the benefits of protective structures, and the application of garden health plans to the cultivation of vegetables.		

Element 2	Cultivation of top fruit	
AO1: **Knowledge**	AO2: **Application**	AO3: **Integration**
The advantages and limitations of different growing systems, to include: • wall trained • open ground • containers. Factors when planning a cropping schedule for top fruit, to include: • selection of rootstock • pollination group • cultivar • site. Factors when harvesting fruit, to include: • ripeness testing • picking • storage.	Produce a range of top fruit, to include: • tree management e.g. pruning • weed control • crop nutrition • harvest.	Impact of site on the production of top fruit. The importance of evidence-based decisions in productive growing. Manage risks to crop health. Implement findings of recent horticultural research as it applies to the cultivation of top fruit. Planning and maintaining plant health in the cultivation of top fruit
Commentary		
AO1 introduces learners to a range of horticultural considerations when planning the cultivation of top fruit, these include the growing system, the factors to consider when planning a fruit garden, (including pollination tables and current thinking on ploidy). AO2 applies these principles as learners manage a range of fruit trees. AO3 integrates this element to other topics, applying the concept of evidence-based decision making, the impact of sites, and the application of garden health plans to the cultivation of top fruit.		

Element 3	Cultivation of soft fruit	
AO1: **Knowledge**	AO2: **Application**	AO3: **Integration**
The advantages and limitations of different growing systems, to include: • protected cropping • containers • open ground. Factors when planning a cropping schedule for soft fruit, to include: • cultivar selection • continuity of supply. Harvesting techniques.	Produce a range of soft fruit, to include: • soil amelioration • growing system • cultivar selection • planting • weed control • crop nutrition • crop support • water management • protection from avian pests • harvest.	Benefits of protected structures. The importance of evidence-based decisions in productive growing. Manage risks to crop health. Implement findings of recent horticultural research as it applies to soft fruit production. Planning and maintaining plant health in the cultivation of soft fruit
Commentary		
AO1 introduces learners to a range of horticultural considerations to be reviewed when planning the cultivation of soft fruit. AO2 applies these principles as learners cultivate a range of soft fruit in a productive setting. The term containers includes tabletop systems for strawberry production. AO3 integrates this element to other topics, applying the concept of evidence-based decision making and the benefits of research findings on the cultivation of soft fruit.		

Element 4	Cultivation of herbs	
AO1: **Knowledge**	AO2: **Application**	AO3: **Integration**
The advantages and limitations of different growing systems, to include: • protected cultivation • containers • open ground. Factors when planning a herb garden, to include: • space available • cultivar / variety / species selection • containment • use.	Cultivate a range of herbs, to include: • cultivar selection • sowing • planting • weed control • crop nutrition • harvest.	Benefits of protective growing structures for the propagation of young plants. The importance of evidence-based decisions in productive growing. Implement findings of recent horticultural research as it applies to the cultivation of herbs.
Commentary		
AO1 introduces learners to a range of horticultural considerations when planning the cultivation of herbs. This area should make reference to the qualification-wide outcome of Health and Safety, as some herbs, e.g. *Ruta graveolens* are harmful to health. AO2 applies these principles as learners cultivate a range of herbs in a productive setting. AO3 integrates this element to other topics, applying the concept of evidence-based decision making, the benefits of protective structures, and the implications of recent horticultural research and development, as it can be applied to the cultivation of herbs.		

Topic	6
Title:	**Protected Growing**

Topic overview

This topic covers the principles involved in the design, selection and maintenance of protected structures. Protected growing involves the cultivation of plants in protected structures, which may include productive and ornamental spaces.

In order to produce successful crops or displays, it is important to understand the characteristics of the different structures associated with protected growing along with how growing environments influence health and productivity of plants.

The impacts that internal structures and equipment have on plant growth are considered along with the development of blueprints to produce crops and the principles involved in the management of small plant collections.

The wider impacts of protected growing on the environment are considered, as part of the qualification-wide focus on climate change and sustainability.

Element 1	Siting, design and maintenance of protected structures

AO1: **Knowledge**	AO2: **Application**	AO3: **Integration**
Range of protected structures used in horticulture, to include: • cold frames • polytunnels • conservatories • glasshouses. The orientation of the structure for maximum light. The proximity to services e.g. water, electricity. The maintenance requirements of different structures.	The advantages and limitations of materials used in protective structures e.g. wooden or aluminium structures, the use of glass or polycarbonate glazing. The benefits and limitations of polythene clad structures. Maintain a range of protective structures.	The impacts of siting, design and maintenance of protective structures is considered with reference to plant health and sustainability.

Commentary

At AO1 learners are introduced to a range of protected structures used within horticulture, along with the factors that can impact on their orientation and maintenance.

At AO2 learners consider the merits of a wide range of materials used in the construction of protected structures. Learners maintain a range of structures, which should include pre-season cleaning of structures, for example greenhouses, tunnels, cloches and cold frames.

AO3 considers the wider impacts of siting, design and maintenance, which are considered from a plant health perspective.

Element 2	Internal structures and equipment	
AO1: **Knowledge**	AO2: **Application**	AO3: **Integration**
Design of internal structures, to include: • staging • irrigation system • paths • raised beds. Environmental control systems, to include types of: • heating • ventilation • shading • lighting.	The benefits and limitations of internal structures and equipment on the growing environment e.g. reduced air circulation with capillary matting, impacts of structures on light transmission.	The specific requirements of the crop to be produced. The impacts of poorly specified, designed and constructed structures and equipment on plant health and the management of the greenhouse environment. Sustainability impacts of protected growing.
Commentary		
At AO1 the range of internal structures and environmental control systems are introduced. At AO2 learners consider these internal structures and environmental control systems by considering their benefits and limitations on the growing environment. At AO3 specific crop-based requirements are considered along with the impacts of growing in poorly specified, designed and constructed structures. For example, the impacts on cropping of poor light transmission or inadequate ventilation. The impacts of protected cultivation on the environment is considered with specific reference to energy utilisation, water and plastic.		

Element 3	Production of crops	
AO1: **Knowledge**	AO2: **Application**	AO3: **Integration**
The principles of crop production within protected structures, to include: • growing media • container • cultivar selection • propagation • environmental requirements • crop support systems • crop husbandry.	Create a blueprint and produce a crop within a protected structure e.g. cut flowers, salad vegetables to include: • growing media • container • cultivar selection • propagation • environmental requirements • crop support systems • crop husbandry. The implication of the law of limiting factors on developing blueprints for crop production.	Application of research and development e.g. the use of LED supplementary lighting.
Commentary		
At AO1 learners consider the fundamental principles involved in producing a crop within a protected structure. At AO2 these fundamental principles are applied to the creation of a blueprint to produce a crop. Learners produce a crop under protected structures, which can include traditional crops such as sweet peppers or tomatoes under glass, or the production of crops in cold frames or under cloches. The implications of the law of limiting factors is considered when producing cropping blueprints to consider the interplay between irrigation, nutrition, light and temperature. At AO3 the application of research and development is considered, for example the implementation of research into the use of LED supplementary lighting.		

Element 4	Management of plant collections	
AO1: **Knowledge**	AO2: **Application**	AO3: **Integration**
Principles of managing a plant collection, to include: • irrigation • nutrition • temperature • light • relative humidity • labelling / recording • husbandry.	Manage a plant collection, to include: • irrigation • nutrition • temperature • light • relative humidity • labelling / recording • crop husbandry.	Impact of plant collections on glasshouse management The importance of evidence-based decisions in managing small plant collections. The impacts of plant collections on sustainability.
Commentary		
As many glasshouses are used to hold permanent plant collections, AO1 identifies the key criteria in the management of plant collections. AO2 then provides learners with the opportunity to apply this knowledge to manage a plant collection. AO3 integrates this element with other topic areas considering the impact of plant collections on the management of protected cropping environments.		

Topic	7
Title:	**Ecological and sustainable plantings**

Topic overview

Ecological and sustainable plantings are growing in popularity. These plantings challenge many of the previously held rules of gardening. Those advocating this approach consider the plants selected to be part of functioning, self-supporting communities and ecosystems.

These plantings are characterised by low inputs, including no or minimal irrigation and zero fertiliser inputs. Other interventions such as staking and maintenance are kept to a minimum.

Ecological plantings are characterised by dense interplantings, the tolerance of spontaneous plants and the simplicity of design. Plant selection includes a heavy reliance on seed grown plants for genetic diversity along with the introduction of plants with ecological benefits. One concept behind such plantings is that some native plants may no longer be seen as robust and resilient as the impacts of a changing climate require the introduction of plants of wider provenance or new species.

As well as providing ecological benefits, such plantings can facilitate specific environmental services such as integrating with sustainable drainage systems (SuDS), the creation of wildlife corridors, and the demonstration of how ecological principles can be applied to the benefit of people and communities.

Element 1	Purpose of ecological and sustainable plantings	
AO1: **Knowledge**	AO2: **Application**	AO3: **Integration**
Characteristics of ecological and sustainable plantings to include: • aesthetics • ecologically functioning e.g. seeding, spreading • dense multi-layered plantings • species in dynamic competition • limited maintenance / interventions.	The benefits of ecological and sustainable plantings to include: • ecological services e.g. supporting a wide range of invertebrates, wildlife corridors • component of sustainable drainage systems e.g. plantings within swales and rain gardens • reduced maintenance • resilience to climate change	Impacts of ecological plantings on traditional horticultural techniques including creating and maintaining planted areas. Bringing people and nature together.
Commentary		
At AO1 learners develop an understanding of the key characteristics of ecological and sustainable plantings. These plantings are characterised by high aesthetic value and are ecologically functioning plant communities with species often self-seeding and spreading. The planting is dense and multi-layered, offering the widest range of invertebrate habitats. A further characteristic is low maintenance requirement once established. At AO2 learners apply this knowledge to consider the wider benefits of ecological and sustainable plantings. This includes the range of ecological services they provide, their potential role as wildlife corridors and their compatibility with sustainable drainage systems. AO3 considers the wider impacts that ecological and sustainable plantings have on traditional horticultural techniques involved in creating and maintaining planted areas.		

Element 2	Species selection	
AO1: **Knowledge**	AO2: **Application**	AO3: **Integration**
Criteria for species selection within ecological and sustainable plantings, to include: • aesthetics e.g. colour, form • ecological services e.g. habitat, food source • management e.g. nurse plants, reproductive capacity by seed.	Use current published work to inform species selection for use within ecological and sustainable plantings.	Impacts of the site on species selection. Application of plant knowledge to specify species for inclusion in ecological and sustainable plantings.
Commentary		
At AO1 the criteria for the selection of species for use within ecological and sustainable plantings are established. The selection of species is based on criteria including aesthetics, the range of ecological services the species offers, along with its management characteristics, for example a species role as a nurse species, or its capacity to reproduce by seed. At AO2 the criteria established within AO1 are used to enable learners to refer to recent publications to specify plant species that could be used within ecological and sustainable plantings. At AO3 the impacts of the site on species selection is considered along with the application of plant knowledge, thus integrating this element into other topic areas.		

Element 3	Establishment of ecological and sustainable plantings	
AO1: **Knowledge**	AO2: **Application**	AO3: **Integration**
Principles involved in the establishment of ecological and sustainable plantings, to include: • site surveys • soil amelioration • techniques to establish plantings e.g. sowing, plants for planting • planting density • ratios of different growing habits • perennial matrix style approaches.	Establish an ecological and sustainable planting to a given client brief.	Impacts of ecological plantings on traditional horticultural techniques including creating and maintaining planted areas.
Commentary		
At AO1 the principles of establishing ecological and sustainable plantings are introduced along with different models of thinking. At AO2 these principles are applied with learners establishing a planting. AO3 considers the impact that ecological plantings have on traditional plant establishment.		

Element 4	Maintenance of ecological and sustainable plantings

AO1: **Knowledge**	AO2: **Application**	AO3: **Integration**
Criteria for the maintenance of ecological and sustainable plantings, to include: • monitoring • species specific maintenance • points of intervention • annual maintenance e.g. cutting back / mowing.	Create a set of principles to inform the management of an ecological planting. Create a maintenance schedule for an ecological / sustainable planting.	The impacts of ecological and sustainable plantings on garden management plans.

Commentary

At AO1 learners consider the maintenance requirements of ecological and sustainable plantings. This includes the role of monitoring, species specific maintenance requirements, the points of intervention (in what is a dynamic ecological plant community), and the annual maintenance that may be required.

At AO2 this knowledge is applied to create a set of overriding principles for maintenance, including points of intervention and the management of spontaneous plants. Learners will develop maintenance schedules.

AO3 considers the impacts of ecological and sustainable plantings on traditional Garden Management Plans.

Topic	8
Title:	**Landscaping Materials**

Topic overview

As part of their management of gardens and designed landscapes, horticulturists manage and plan the maintenance of hard landscaping elements such as paths, terraces, non-porous and porous paved areas along with gravel and other hard surfaces.

The management of hard surfaces includes the inspection and reporting on condition, including weed control, presence of litter and broad aesthetics.

Inspections inform the maintenance and management of hard surfaces, which is often determined by wider garden management plans.

Horticulturists are often involved in planning the refurbishment of surfaces and features or the installation of new ones. These plans include the implementation of sustainable urban drainage protocols (SuDS) the specification of materials and the calculation of quantity and cost.

Element 1	Inspection of existing hard landscaping features	
AO1: **Knowledge**	AO2: **Application**	AO3: **Integration**
Criteria for the evaluation of hard landscape features, to include: • inspection intervals • presence of defects • presence of weed • presence of litter • presence of algae / organic debris.	Inspect existing hard landscape features, to include: • identifying condition • health and safety considerations • end of life removal / replacement.	The role of inspection within the management of other garden areas e.g. productive growing, protected structures and the maintenance of planted areas.
Commentary		
Hard landscape features require regular inspection to ensure they remain safe and visually appealing. This is introduced at AO1 with the key criteria for such assessments being established. At AO2 those criteria are used to inspect the condition of hard landscape features, and AO3 considers the role of inspection within the management of other garden areas.		

Element 2	Maintenance plans and schedules for landscape materials and features

AO1: **Knowledge**	AO2: **Application**	AO3: **Integration**
Importance of key components of maintenance schedule for landscape materials and features. Surfaces and features, to include: • paved areas • gravel areas • drainage systems • porous paving • non-porous paving. Maintenance, to include: • snow and ice • cleaning techniques • weed removal techniques • impacts of chemicals used (phytotoxicity).	Advantages and limitations of maintenance processes, to include: • snow and ice • cleaning techniques • weed removal techniques • impacts of chemicals used (phytotoxicity). Ecological impact of maintenance processes. Create a maintenance schedule for hard landscaped areas, to include: • surfaces and features • inspection process • maintenance techniques.	The impact on biodiversity of maintenance products / maintenance processes. Impact of hard landscape maintenance on garden management plans.

Commentary

Hard landscape features require maintenance to ensure they remain safe and visually appealing. This concept is introduced at AO1 with the key criteria for such assessments being established.

At AO2 learners consider the advantages and the limitations of a range of maintenance processes. The criteria considered in AO1 are applied to create a maintenance schedule for hard landscape features.

At AO3 the impacts that products used within AO2 can have on biodiversity are considered along with the impacts that hard landscape maintenance schedules have on overall garden management plans.

Element 3	Planning a new hard landscaping feature	
AO1: **Knowledge**	AO2: **Application**	AO3: **Integration**
Factors when planning a new hard landscape feature, to include: • accessibility • function • site limitations • levels • materials • aesthetics • maintenance • complexity of construction • cost • carbon footprint • environmental impact.	Plan the installation of a new hard landscaping feature to include consideration of: • accessibility • function • site limitations • levels • materials • aesthetics • maintenance • complexity of construction • cost • carbon footprint • environmental impact.	Assess the impact of a new hard landscape feature on other garden areas.
Commentary		
Horticulturists are often called upon to plan the installation of hard landscape features, even if they are not involved in the construction. At AO1 the decision-making process for selecting a new hard landscaping feature is considered. At AO2 the installation of a new feature is planned. AO3 considers the impact of new hard landscaping features on the wider garden, for example aesthetics, surface run-off of water and design implications.		

Element 4	Selection and calculation of materials	
AO1: **Knowledge**	AO2: **Application**	AO3: **Integration**
Materials required for the installation of a hard landscape feature e.g. a path, fence or raised bed.	Calculate quantities of materials, to include: • minimum deliveries • wastage • all fixings. Calculate costs.	Impacts of sustainable sourcing on materials selection and cost. Concept of cost benefit analysis.
Commentary		
Horticulturists have to be able to calculate the cost of new hard landscape features, to identify sustainable materials, also to ensure health and safety and deliver good value for money. At AO1 the full range of materials required to construct a feature are considered. At AO2 as a part of their calculation of cost, learners will be expected to use manufacturer / supplier websites and literature as a basis for calculations. Learners are expected to take into account the impact of minimum order quantities, wastage etc to provide accurate and realistic costings. At AO3 the impacts of sustainable sourcing on cost are identified, with the learner being introduced to the concepts of cost benefit analysis.		

RHS Level 3 Diploma in Horticulture

UNIT 4

Topic		Elements
1	**Initial project proposal**	1. Project proposal 2. Project plan
2	**Investigation and research**	1. Methodology 2. Sources of information 3. Analysis
3	**Project skills**	1. Project management 2. Developing arguments 3. Decision making 4. Creative thinking
4	**Content and presentation**	1. Format 2. Content 3. Presentation

Topic:	1
Title:	**Initial project proposal**

Topic overview

Horticulture is a fact-based discipline and horticulturists are frequently tasked with carrying out research. This could be researching the history of a garden, ascertaining the most appropriate technique to be able to complete a task, the presentation of information to a particular audience, or research into the cultivation of a genus of plants.

Research projects such as this start with the project proposal. This allows the writer the opportunity to develop a question or series of questions that the project seeks to answer. It essentially lays out what the writer plans to do. Once these questions are identified, the aims and objectives of a project can be decided upon to ensure that the project is focused and answers the original question.

Careful planning is essential to ensure that all the stages of the project are scheduled and that there is a logical development of ideas and concepts. The success of the project depends on organisational skills, these ensure each stage of the work is completed diligently and to schedule.

Element 1	Project proposal

- Identification of topic and working project title
- Purpose and statements of intent
- Outcomes to be achieved
- Audience.

Element 2	Project plan

- Background and rationale
- Initial activity plan and time schedule to include goals, achievement, and review of deadlines
- Initial approach to information management
- Overview of type of research to be undertaken and outline questions/objectives
- Initial literature review/bibliography
- Identification and justification of final presentation format (see Topic 4).

NB: Candidates must gain approval from RHS Qualifications before undertaking Topics 2 – 4.

Topic:	2
Title:	**Investigation and research**

Topic overview

Research within horticulture at this level of study involves the collection of information. This may be from a wide variety of reliable sources (e.g. from lived experience to published works) and the research may be carried out using different methods.

The horticulturist then considers (analyses) the information and applies the findings of the research.

The culmination of this activity is that the horticulturist can demonstrate an understanding of the topic being researched to their audience.

Element 1	Methodology

- Identification and justification of appropriate methodology to satisfy breadth and depth of research as applicable to the project
- Consideration of relevant theories/practitioners, including new and emerging thinking/practices
- Reflective of multiple perspectives to ensure balance and objectivity.

Element 2	Sources of information

- Identification of reliable sources of information, including technical websites and historic documents
- Identification of relevant primary sources, including visits to gardens, or reviewing published work from established figures
- Identification of relevant secondary sources, including professional books/trade magazine articles, published reports and conference papers.

Element 3	Analysis

- Criteria that can be used to arrive at conclusions
- Identification of key points and their significance.

Topic:	3
Title:	**Project skills**

Topic overview

The delivery of the project requires a range of skills. Core to the requirement are the acquisition and demonstration of project management skills including appropriate use of resources, time, and budget. The learner will also be required to develop concepts and arguments.

These essential skills are used by horticulturists in a wide range of settings, including, for example the production of cases for the investment in new equipment, or in the development of gardens and garden areas.

These skills include the ability to present and argue a case, the solution of a number of routine and non-routine problems, the ability to apply creative thought and the achievement of the planned outcomes.

Element 1	Project skills

- Time management skills including collection and review of information and achieving deadlines
- Project management skills including use of resources, time, and budget
- Developing logical arguments, testing of key ideas and concepts, reaching fact-based conclusions
- Decision making, reflective practice, resolving issues, identification of barriers/unforeseen issues, rationale, and evidence for adjusting plans and outcomes
- Demonstration of creative thinking i.e. options and their evaluation, innovation, and fresh perspectives.

Topic:	4
Title:	**Content and presentation**

Topic overview

Horticulturists, as part of their professional activities are required to produce formal, well written documents that convey their referenced information and arguments to the reader. Conventions on layout, structure and approach reflect the style of document being produced within the project.

As the reader may use the documents produced to inform maintenance and management plans, or buying decisions, the documents produced are required to be factual, with an appropriate level of detail and technical language for the audience and to contain well-reasoned arguments. Horticulturists authoring such documents are required to ensure that their findings are produced to a high professional standard.

Element 1	Format

Writing style to include:

- selection of appropriate format
- adherence to academic writing conventions
- use of technical language.

Element 2	Content

- Presentation of information appropriate to audience, to include:
  - presentation of facts
  - presentation of findings
  - logical arguments.
- Methods to reference and cite source material
- Concepts of relevance, accuracy, and bias.

Element 3	Presentation

- Development of well-written professional language, to include spelling and grammar
- Formal methods of presentation to include, illustrations, graphs, tables, and other figures.