

## National Occupational Standards



# Design and construct Vertical Garden

Unit Code: AGR/N0856

Version: 1.0

NSQF Level: 4

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### Description

This OS unit is about planning, designing and construction of vertical gardens

### Scope

The scope covers the following :

- Plan and Design vertical garden
- Plan and construct vertical garden
- Perform waste management

### Elements and Performance Criteria

#### *Plan and Design vertical garden*

To be competent, the user/individual on the job must be able to:

- PC1.** Establish purpose, functions, benefits and risks associated with vertical gardens
- PC2.** Identify environmental and energy efficiency impacts of green infrastructure design
- PC3.** Identify factors that will impact vertical garden
- PC4.** Consult with client to clarify type, purpose and preference of vertical garden and design features and requirements
- PC5.** examine the building for feasibility to complete site analysis
- PC6.** Confirm structural principles relating to vertical garden with relevant specialists
- PC7.** Acquire construction plans from the client to identify type of vertical garden best suited for building type and required outcomes
- PC8.** Determine location, aspect and dimensions of vertical garden
- PC9.** determine growing media characteristics and functionality, and select plants based on location conditions and maintenance requirements
- PC10.** Document specifications for waterproofing, irrigation and drainage systems and/or lighting, including recommended suppliers
- PC11.** Calculate total weight of vertical garden materials and fixing fastening system in consultation with suppliers, green infrastructure and/or building professionals to ensure total weight complies with parameters
- PC12.** Prepare design plans, specifications, maintenance plan and estimated costs for vertical garden and present to client

#### *Plan and construct vertical garden*

To be competent, the user/individual on the job must be able to:

- PC13.** Calculate material and component quantities and check material availability with suppliers
- PC14.** Schedule delivery and discuss site access and method of locating material onsite with appropriate persons
- PC15.** Select plant, equipment and tools, check for serviceability and rectify and report any faults, and confirm required operator certifications, if applicable
- PC16.** Select, correctly fit personal protective equipment (PPE)
- PC17.** Check delivered materials and components for conformity, and report any discrepancies or damage to supplier/appropriate person

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- PC18.** Set out and mark position, levels and fixing points appropriate for the selected vertical garden configuration
- PC19.** Confirm waterproofing installation to the specified area by water proofer using approved materials and methods has been inspected and certified
- PC20.** Install irrigation and drip tray system, and check for leaks
- PC21.** Install lighting and/or air flow equipment according to specifications
- PC22.** Fix vertical garden panels according to manufacturers' specifications
- PC23.** Install and finish growing media to specified levels
- PC24.** Plant specified vegetation to meet design patterns according to designer and/or supplier establishment information

### *Perform waste management*

To be competent, the user/individual on the job must be able to:

- PC25.** segregate waste into different categories
- PC26.** dispose the non-recyclable waste appropriately
- PC27.** deposit the recyclable and reusable material at the identified location

## Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** professional practice requirements in vertical garden design
- KU2.** factors influencing vertical gardens and design for existing and new buildings
- KU3.** recirculating and non-recirculating/flood-drain vertical garden systems
- KU4.** site analysis
- KU5.** climatic factors of wind, temperature, sunlight, rainfall and irrigation
- KU6.** site access for construction and installation and ongoing maintenance
- KU7.** features, benefits and risks of vertical gardens
- KU8.** characteristics, properties and limitations of materials used for vertical gardens
- KU9.** drainage and irrigation systems, storing and recycling water systems
- KU10.** types of vertical garden
- KU11.** types of vertical garden
- KU12.** project cost estimations and planning
- KU13.** techniques for installing vertical garden
- KU14.** components of vertical garden
- KU15.** risks associated with construction of vertical gardens
- KU16.** planting methods that comply with the growing requirements of individual plant species and cultivars
- KU17.** current and relevant work health and safety and environmental requirements relevant to vertical garden
- KU18.** plant, equipment, hand and power tools, and operator certification requirements for operation, for construction of vertical garden
- KU19.** maintenance requirements of green infrastructure

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**KU20.** infrastructure decay or damage

**KU21.** sensor devices and equipment, data collection and analysis

### Generic Skills (GS)

User/individual on the job needs to know how to:

**GS1.** make work-related notes

**GS2.** read the relevant literature to get the latest updates and information about new technologies

**GS3.** communicate professionally with clients and co-workers as per the business code of conduct

**GS4.** listen attentively to understand the information/ instructions being given by the speaker

**GS5.** plan and schedule tasks to ensure timely completion

**GS6.** identify possible disruptions to work and take preventive measures

**GS7.** apply domain knowledge and experience to suggest appropriate solutions to customers

**GS8.** take quick decisions in case of any emergencies/ accidents



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### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Plan and Design vertical garden</i>	<b>15</b>	<b>10</b>	-	<b>15</b>
<b>PC1.</b> Establish purpose, functions, benefits and risks associated with vertical gardens	-	-	-	-
<b>PC2.</b> Identify environmental and energy efficiency impacts of green infrastructure design	-	-	-	-
<b>PC3.</b> Identify factors that will impact vertical garden	-	-	-	-
<b>PC4.</b> Consult with client to clarify type, purpose and preference of vertical garden and design features and requirements	-	-	-	-
<b>PC5.</b> examine the building for feasibility to complete site analysis	-	-	-	-
<b>PC6.</b> Confirm structural principles relating to vertical garden with relevant specialists	-	-	-	-
<b>PC7.</b> Acquire construction plans from the client to identify type of vertical garden best suited for building type and required outcomes	-	-	-	-
<b>PC8.</b> Determine location, aspect and dimensions of vertical garden	-	-	-	-
<b>PC9.</b> determine growing media characteristics and functionality, and select plants based on location conditions and maintenance requirements	-	-	-	-
<b>PC10.</b> Document specifications for waterproofing, irrigation and drainage systems and/or lighting, including recommended suppliers	-	-	-	-
<b>PC11.</b> Calculate total weight of vertical garden materials and fixing fastening system in consultation with suppliers, green infrastructure and/or building professionals to ensure total weight complies with parameters	-	-	-	-
<b>PC12.</b> Prepare design plans, specifications, maintenance plan and estimated costs for vertical garden and present to client	-	-	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Plan and construct vertical garden</i>	<b>15</b>	<b>15</b>	-	<b>15</b>
<b>PC13.</b> Calculate material and component quantities and check material availability with suppliers	-	-	-	-
<b>PC14.</b> Schedule delivery and discuss site access and method of locating material onsite with appropriate persons	-	-	-	-
<b>PC15.</b> Select plant, equipment and tools, check for serviceability and rectify and report any faults, and confirm required operator certifications, if applicable	-	-	-	-
<b>PC16.</b> Select, correctly fit personal protective equipment (PPE)	-	-	-	-
<b>PC17.</b> Check delivered materials and components for conformity, and report any discrepancies or damage to supplier/appropriate person	-	-	-	-
<b>PC18.</b> Set out and mark position, levels and fixing points appropriate for the selected vertical garden configuration	-	-	-	-
<b>PC19.</b> Confirm waterproofing installation to the specified area by water proofer using approved materials and methods has been inspected and certified	-	-	-	-
<b>PC20.</b> Install irrigation and drip tray system, and check for leaks	-	-	-	-
<b>PC21.</b> Install lighting and/or air flow equipment according to specifications	-	-	-	-
<b>PC22.</b> Fix vertical garden panels according to manufacturers' specifications	-	-	-	-
<b>PC23.</b> Install and finish growing media to specified levels	-	-	-	-
<b>PC24.</b> Plant specified vegetation to meet design patterns according to designer and/or supplier establishment information	-	-	-	-
<i>Perform waste management</i>	<b>5</b>	<b>5</b>	-	<b>5</b>

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC25.</b> segregate waste into different categories	-	-	-	-
<b>PC26.</b> dispose the non-recyclable waste appropriately	-	-	-	-
<b>PC27.</b> deposit the recyclable and reusable material at the identified location	-	-	-	-
<b>NOS Total</b>	<b>35</b>	<b>30</b>	-	<b>35</b>

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### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	AGR/N0856
<b>NOS Name</b>	Design and construct Vertical Garden
<b>Sector</b>	Agriculture
<b>Sub-Sector</b>	
<b>Occupation</b>	Landscaping, Gardening and Urban Farming
<b>NSQF Level</b>	4
<b>Credits</b>	1.25
<b>Minimum Educational Qualification &amp; Experience</b>	12th grade Pass (or equivalent) OR Pursuing 2nd year of 3-year regular Diploma (after 10th) (in Agriculture/Horticulture/Forestry/Agriculture Engineering) OR Previous relevant Qualification of NSQF Level (3.5) OR Previous relevant Qualification of NSQF Level (3) with 3 Years of experience of relevant experience in Agriculture and allied sectors
<b>Version</b>	1.0
<b>Last Reviewed Date</b>	30/05/2024
<b>Next Review Date</b>	30/08/2027
<b>NSQC Clearance Date</b>	30/05/2024
<b>Reference code on NQR</b>	NG-04-AG-02547-2024-V1-ASCI
<b>NQR Version</b>	1.0
<b>CCN Category</b>	1