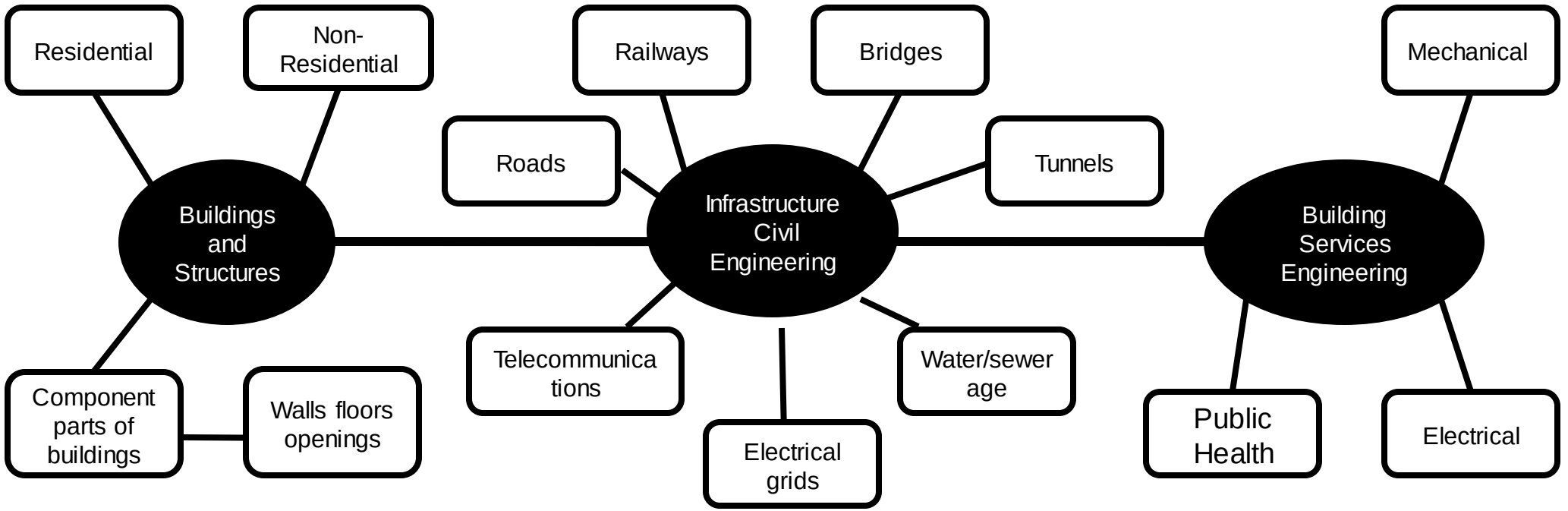
WJEC Level 1 / 2 Vocational Award in Construction and the Built Environment (Technical Award)

WJEC Vocational Award in Construction and the Built Environment (Technical Award)

Unit 1 Introduction to the built environment

1.1 The Sector



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Unit 1 Introduction to the Built Environment
1.1 The Sector
1.1.4 Professional and managerial roles

Professional and managerial role	Description of job
Designer/ Architect	Produces detailed drawings. Creates new buildings/renovations. Designs to meet Client requirements. Post design stages of project for client.
Civil /Structural Engineer	Designs, plans and manages construction projects. Solves problems. Structural solutions, design codes, building regulations. Risk assessment
Contracts Manager and site manager	Responsible for coordinating construction site activities. Progress, meetings, resources, activities, health and safety
Surveyor	Surveys land. Sets out construction works. Produces data and drawings for Architects and structural engineers.
Quantity Surveyor	Financial management. Payments to subcontractors. Final accounts. Budgets and Costs
Professional associations	CIOB, RICS RIBA

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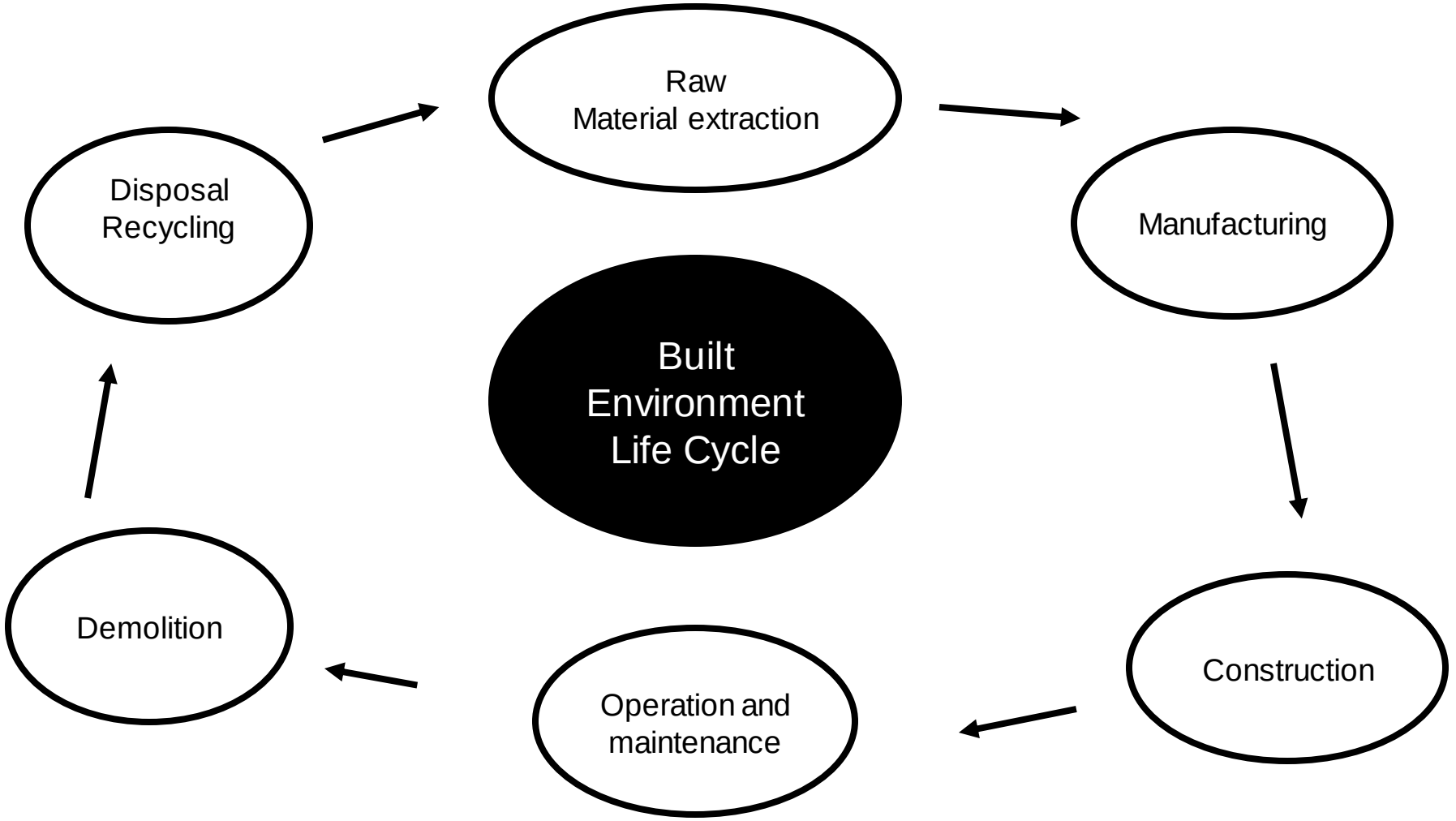
Unit 1 Introduction to the Built Environment
1.2 The Built Environment Life Cycle



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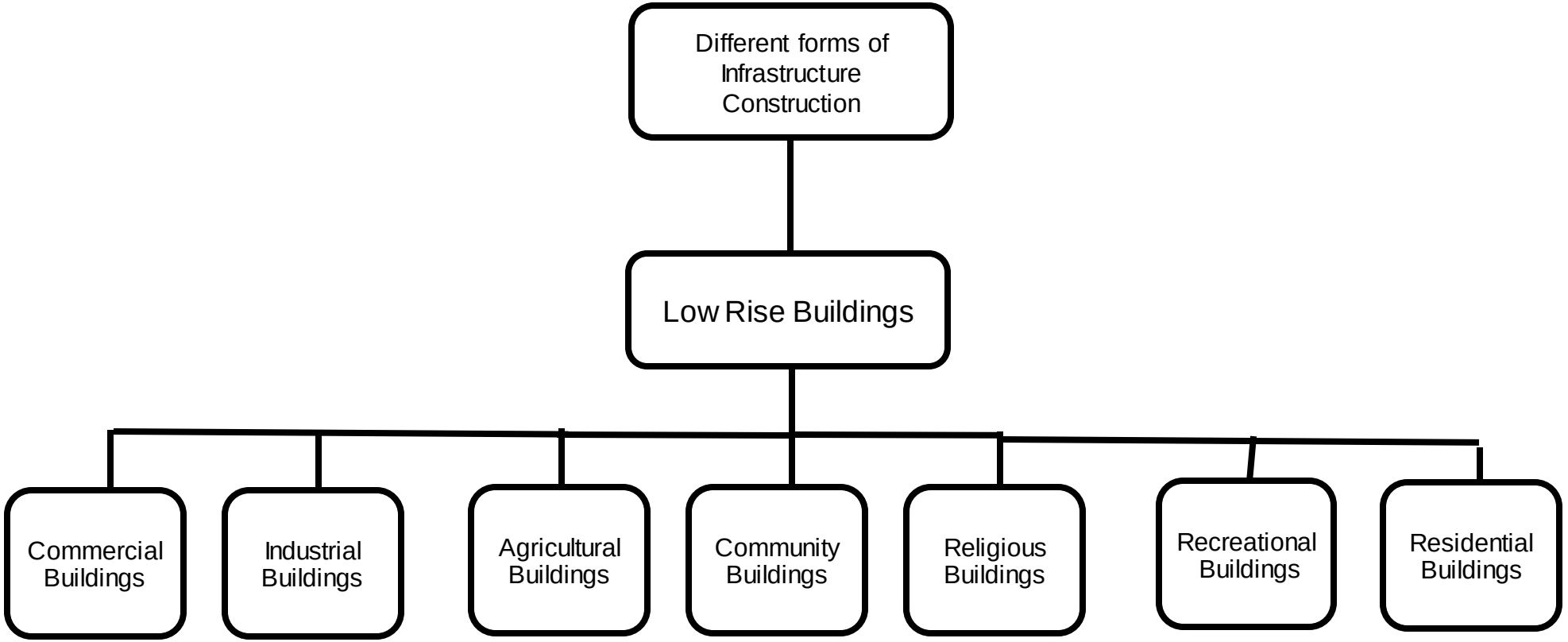
Unit 1 Introduction to the built environment
1.3 Types of Buildings and Structures



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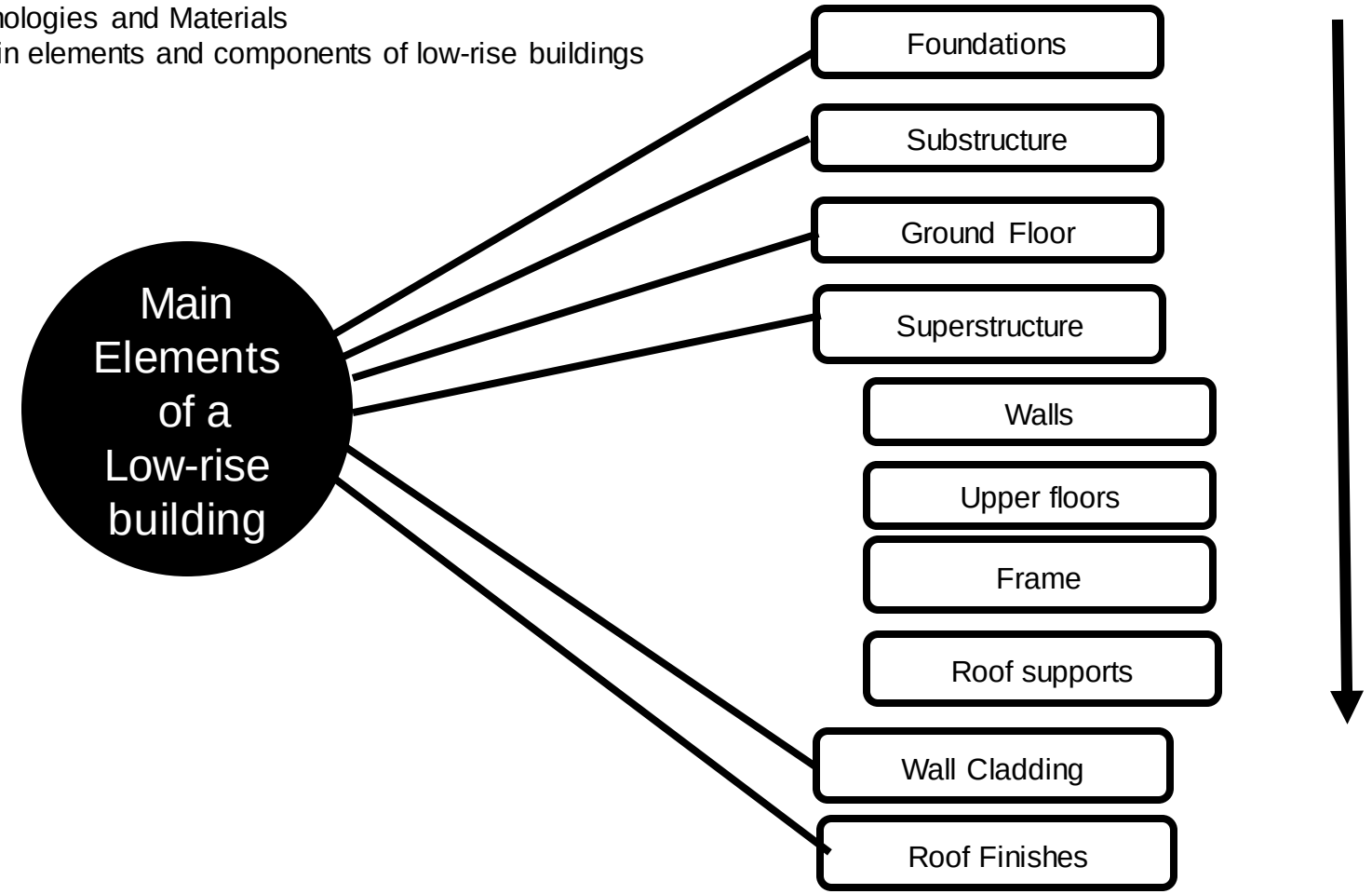
Unit 1 Introduction to the Built Environment
1.4 Technologies and Materials
1.4.1 Main elements and components of low-rise buildings



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Unit 1 Introduction to the Built Environment
1.4 Technologies and materials – Main Materials

Main Materials involved in constructing walls, installing building services, fitting roofs and finishing interiors	Materials and components
Exterior walls	Structural element, load bearing masonry (insulating blockwork)structural frame (steel or timber)structural insulated panels Insulation, mineral fiber rolls, sprayed foam, rigid foam slabs. Exterior cladding, brick and rendered blockwork, steel sheeting, aluminum faced insulated panels, curtain walling
Internal walls and floors	Block or stud (timber or steel) partitions Timber, concrete or steel floor joists
Secondary structures	Steel lintels, joists and timber trussed rafters for masonry walls. Sheeting rails and purlins for steel frames
Roof finishes	Slate or concrete tiles for timber trussed roofs Steel sheeting over insulated lining trays for steel frames structures Rubber based sheeting or fibreglass for flat roofs
Internal finishes	Floor screeds and boards Plasterboard for walls and ceilings Wall and plaster decorations
Building services	Incoming services run through sub structure. Internal drainage run through external walls for connection
Building services materials	Plastic and copper pipework for plumbing and heating systems. Plastic rainwater goods and drainage systems Copper cable for electricity and communication systems.

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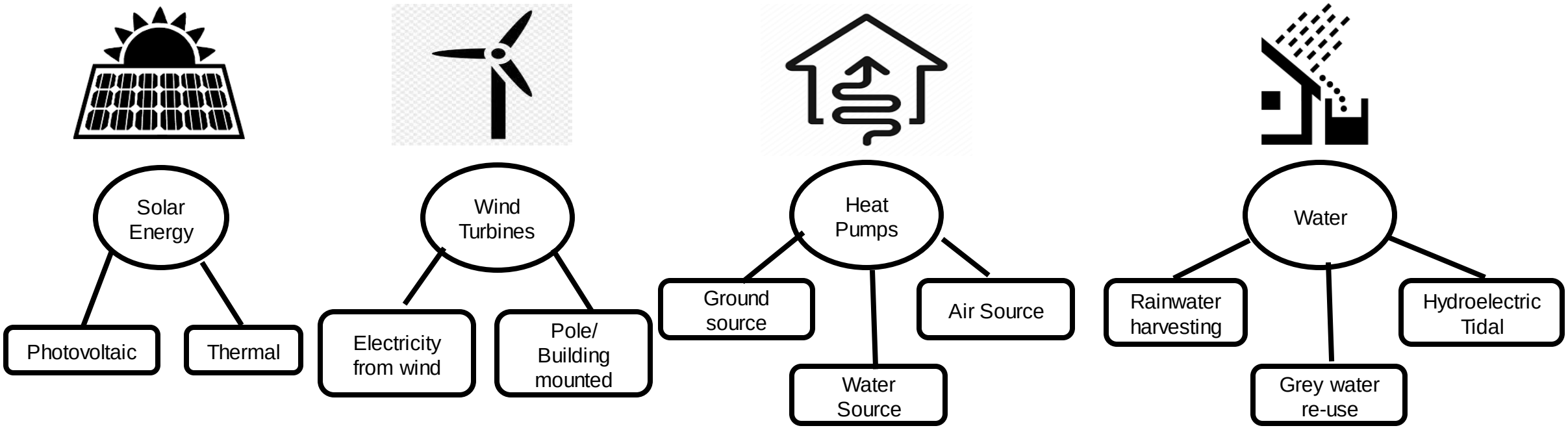
Unit 1 Introduction to the Built Environment
1.4 Technologies and Materials
1.4.3 Renewable Technologies



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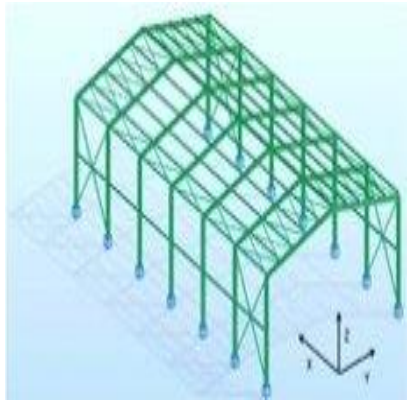
Unit 1 Introduction to the Built Environment
1.5 Building Structures and Forms



Building Structure	Form
Cellular Constructions	Load bearing walls provide the main vertical support and lateral stability for floors. External wall panels. Lift shafts used to provide stability. Bridging components supported by load bearing walls. Prefabricated modular construction.
Rectangular Frame Constructions	Weight is carried by a skeleton or framework of columns, rather than being supported by walls. Lightweight timber frame common. Steel and reinforced concrete on larger structures. Metal or glass can replace external walls.
Portal Frame Constructions	Beams or rafters are supported either end by columns. Columns are secured to pad foundations. The joints between the beams and columns are rigid so the roof can span large distances.
Heritage and Traditional Methods	Maintain the history and character of a building. Comply with planning regulations within conservation areas. Preserve our heritage for the benefit of present and future generations

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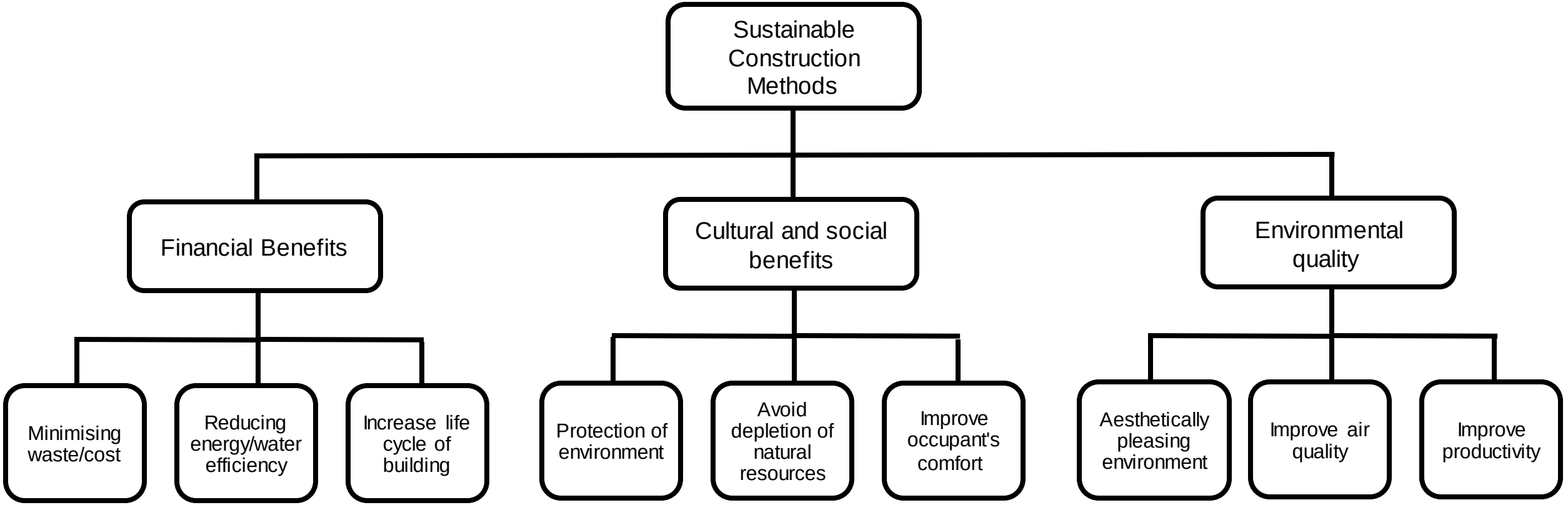
Unit 1 Introduction to the built environment
1.6 Sustainable Construction methods - Benefits



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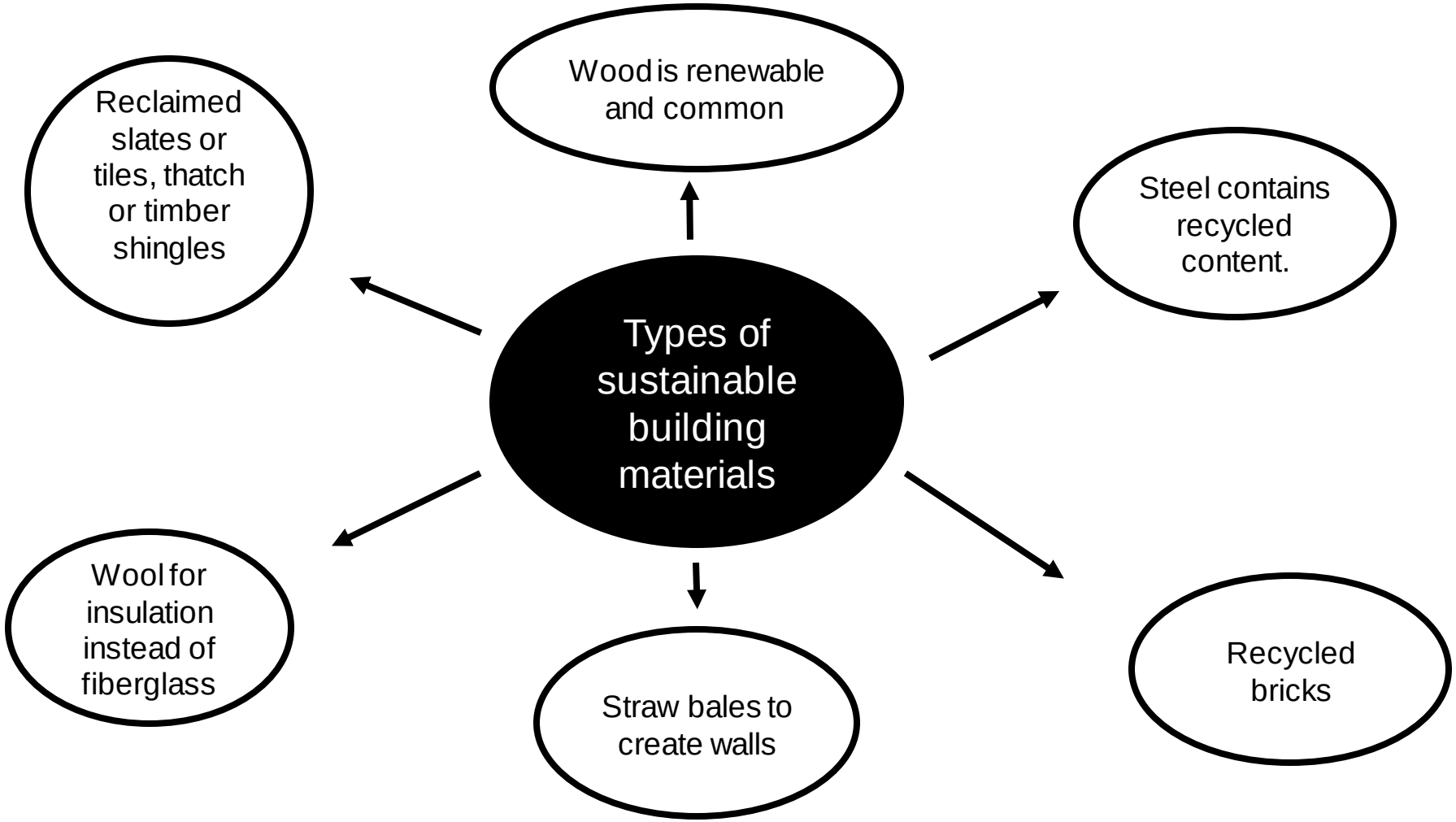
Unit 1 Introduction to the Built Environment
1.6.3 Sustainable Materials used to create building frames walls and roofs



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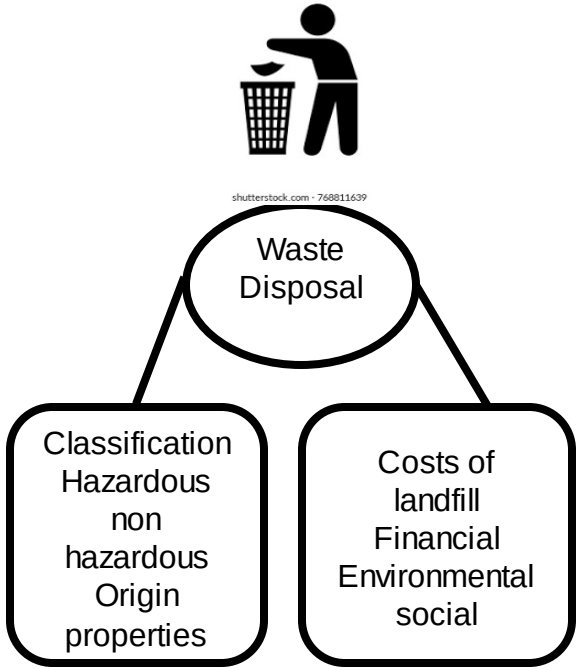
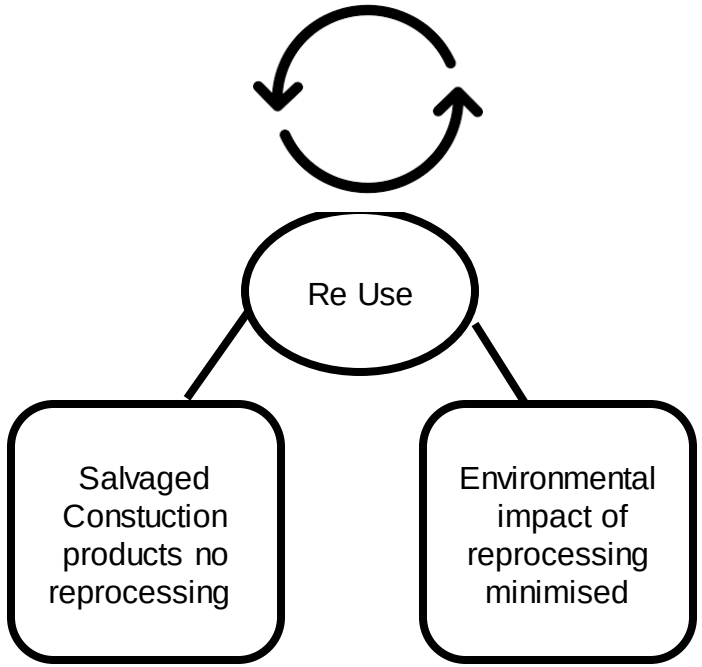
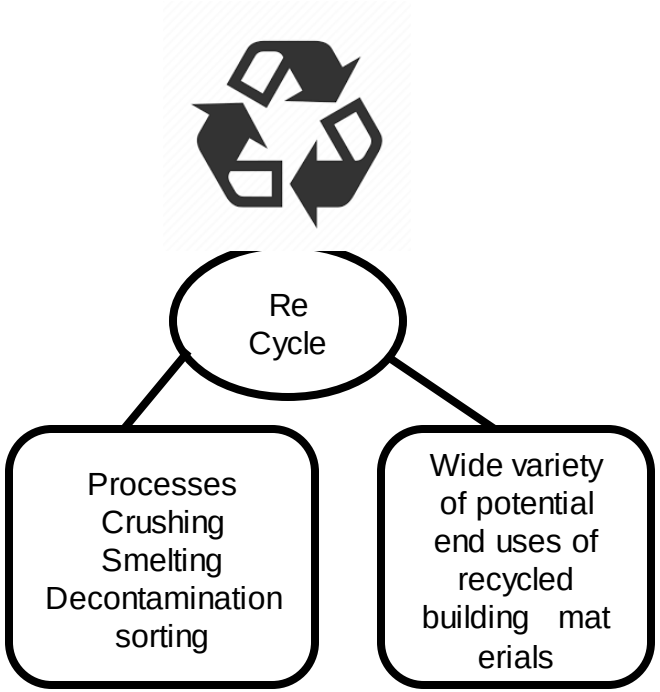
Unit 1 Introduction to the Built Environment
1.6.4 Waste Disposal, re-use and recycling







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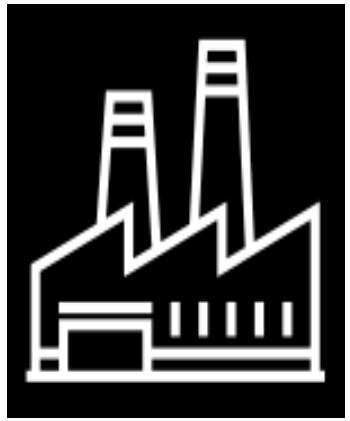
Unit 1 Introduction to the Built Environment
1.6.5 Planning Permission, Brownfield and Greenfield



Type	Definition	Benefits/Drawbacks
Planning Permission	Local planning Authorities control the development of the built environment in the area.	Legal requirement/ Cost
Brownfield sites	Land used before, disused or derelict	Existing buildings may have to be demolished with clean-up costs for decontamination. Can clean up eyesores. Access to roads and drainage may already be there
Greenfield sites	Land that has not been built on before.	Tend to be cheaper to develop. Legal and planning constraints. New roads and utilities need to be taken into account

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Unit 1 Introduction to the Built Environment
1.7 Trades Employment and Careers

Bricklaying	**Works from plans, lays mortar places bricks, checking alignment, traditional bonding methods.**
Stonemasonry	Dresses, carves and lays traditional stonework, dry- stone walling. Repairs existing stone Mouldings
Plastering	Applies wet finishes and protection on external walls. Applies plaster to internal walls, dry lines, ornamental plasterwork.
Carpentry and Joinery	Joiner joins wood in a workshop which a carpenter fixes on site, installs floor joists, floorboards, staircases, doors
Electrical Instillation	Installs, inspects and tests electrical services and equipment following safety regulations
Plumbing instillation	Installs cold and hot water, toilets, boilers, central heating, safety regulation, Gas Safe,
Painting and Decorating	Prepares and applies paint, wallpaper, and other finishes to internal and external surfaces. Follows safety regulations
Flooring and Tiling	Prepares and applies levelling compound, carpets, vinyl floor. Installs ceramic wall and floor tiles.

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Unit 1 Introduction to the Built Environment
1.8 Health and Safety
Working Safely

Type of Work	Health and Safety Considerations
Using Personal protective equipment (PPE)	Assessing the use of PPE as a control measure. Preventing exposure to dangerous environments such as heat. Cold, chemicals, biological risk by the selection of the correct PPE. Training workers in use of PPE
Safely working with gas, water and electric	Competent person only to work with gas electric, qualified and Gas Safe. Follow work practices and safety procedures. Know how to cut of the supply of Gas Water or Electricity for isolation prior to caring out work.
Working at Height	Must be planned and use appropriate method of access eg Scaffold. Take into account the weather. Use equipment that has been appropriately inspected. Control risk from fragile surfaces and falling objects
Working in enclosed spaces	Exposure to fumes, reduced oxygen levels, flooding/drowning, the risk of fire and explosive atmospheres, entrapment in machinery.

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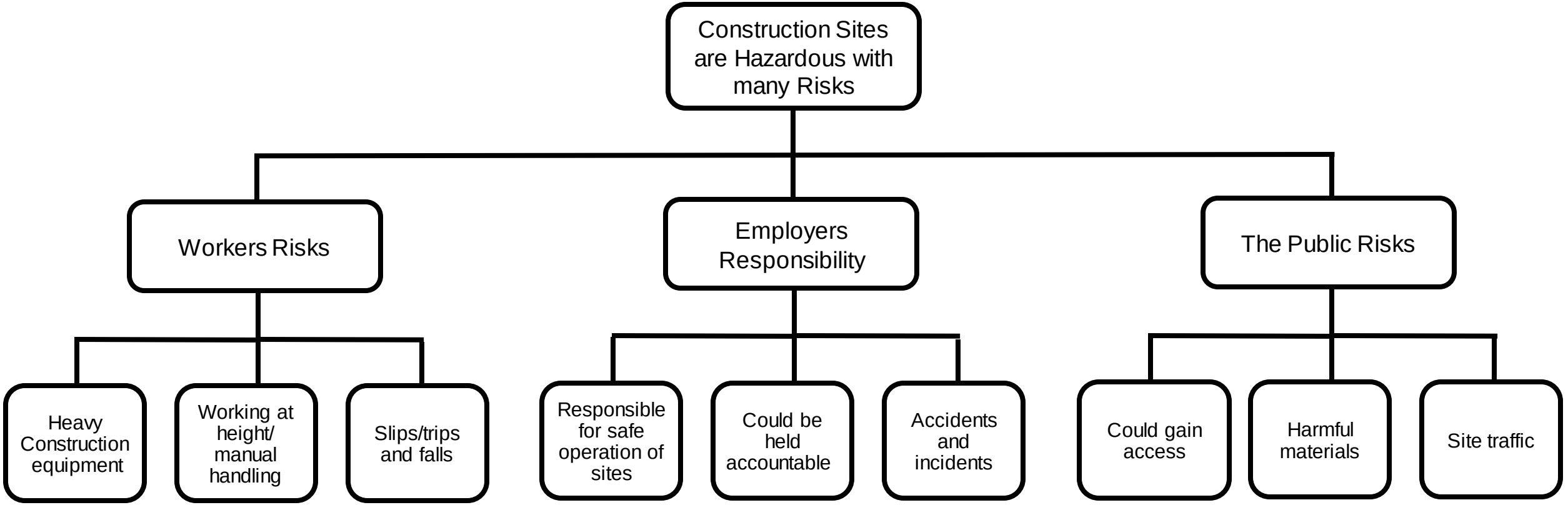
Unit 1 Introduction to the built environment
1.8 Health and Safety - Risk



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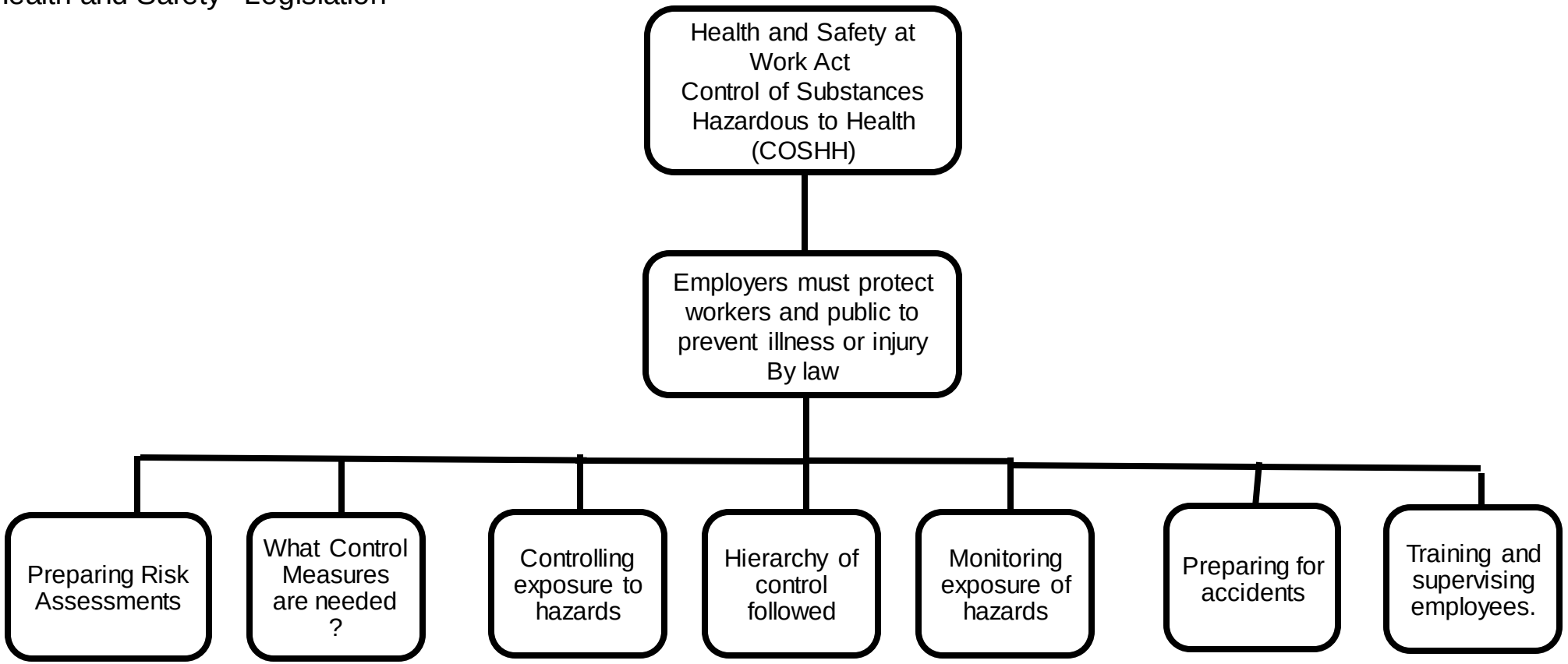
Unit 1 Introduction to the built environment
1.8 Health and Safety - Legislation



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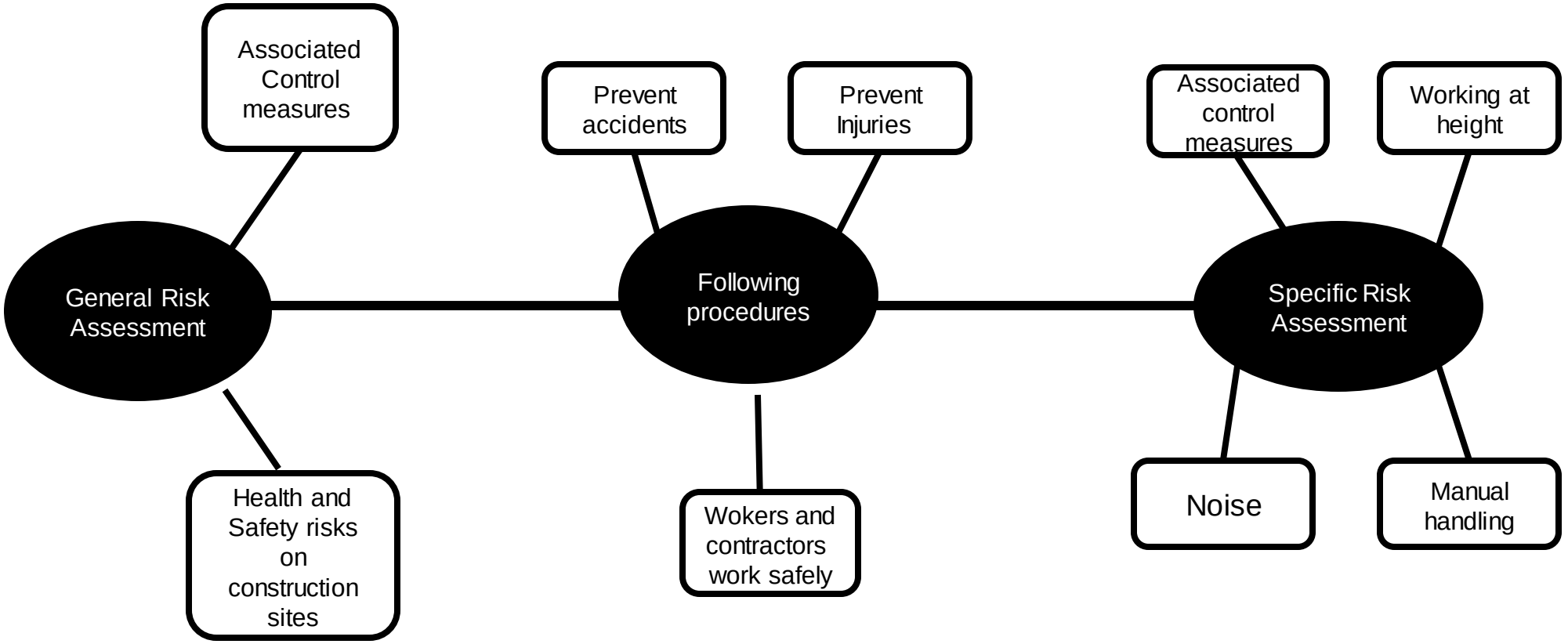
Unit 1 Introduction to the built environment

1.8 Health and Safety – Risk Assessments



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Unit 3 Constructing the Built Environment

3.1 Interpreting Technical Sources of Information.

Technical Source of Information	Amplification
Specifications	These are precise details of requirements, presented in text or diagram, using standard symbols and terminology. Must be used before construction begins. Includes, materials, scope of work, instillation process, quality
Building Regulations	Cover the construction and extension of buildings. Promotes sustainable development. Protect people's health, safety and security in and around buildings
Drawings	Drawings produced to recognised British Standards, 1;1 1;10 for construction details 1;50 and 1;100 for layout and site plans. May be 2D or 3D
Design Briefs	Is developed by the project designer, outlines deliverables and the scope of the project.

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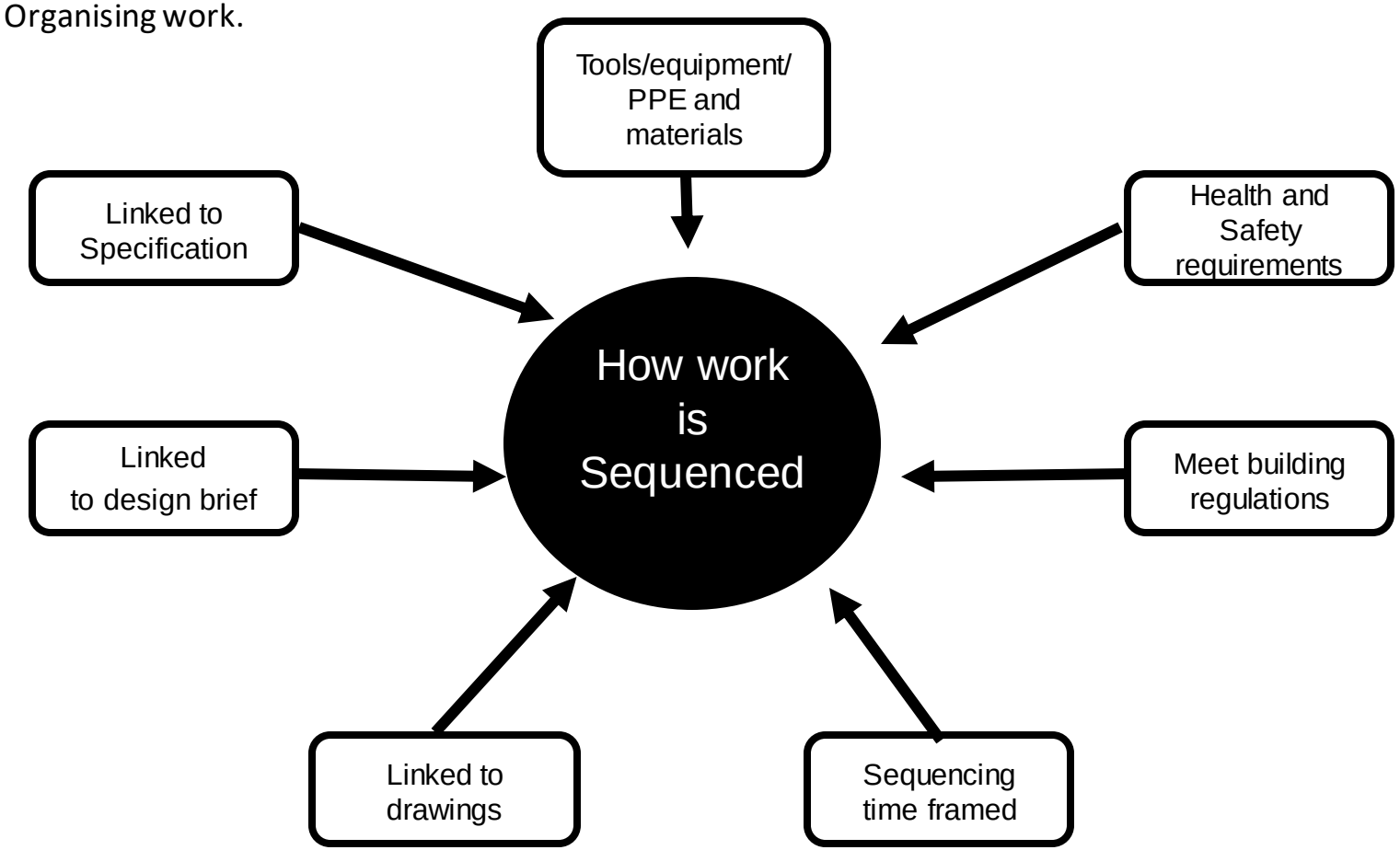
Unit 3 Constructing the Built Environment

3.2 Planning and Organising work.



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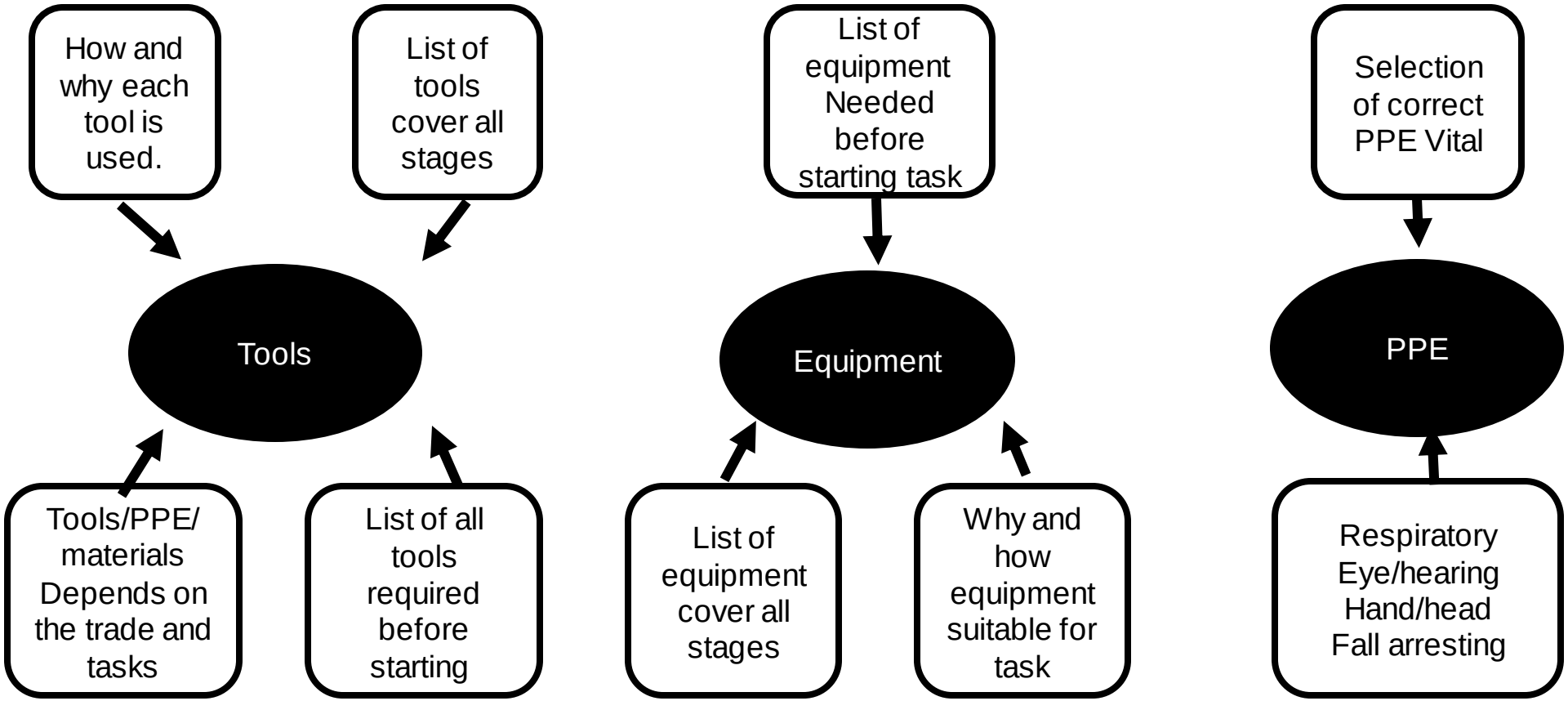
Unit 3 Constructing the Built Environment

3.3 Identifying Resource Requirements. Tools, Equipment and PPE



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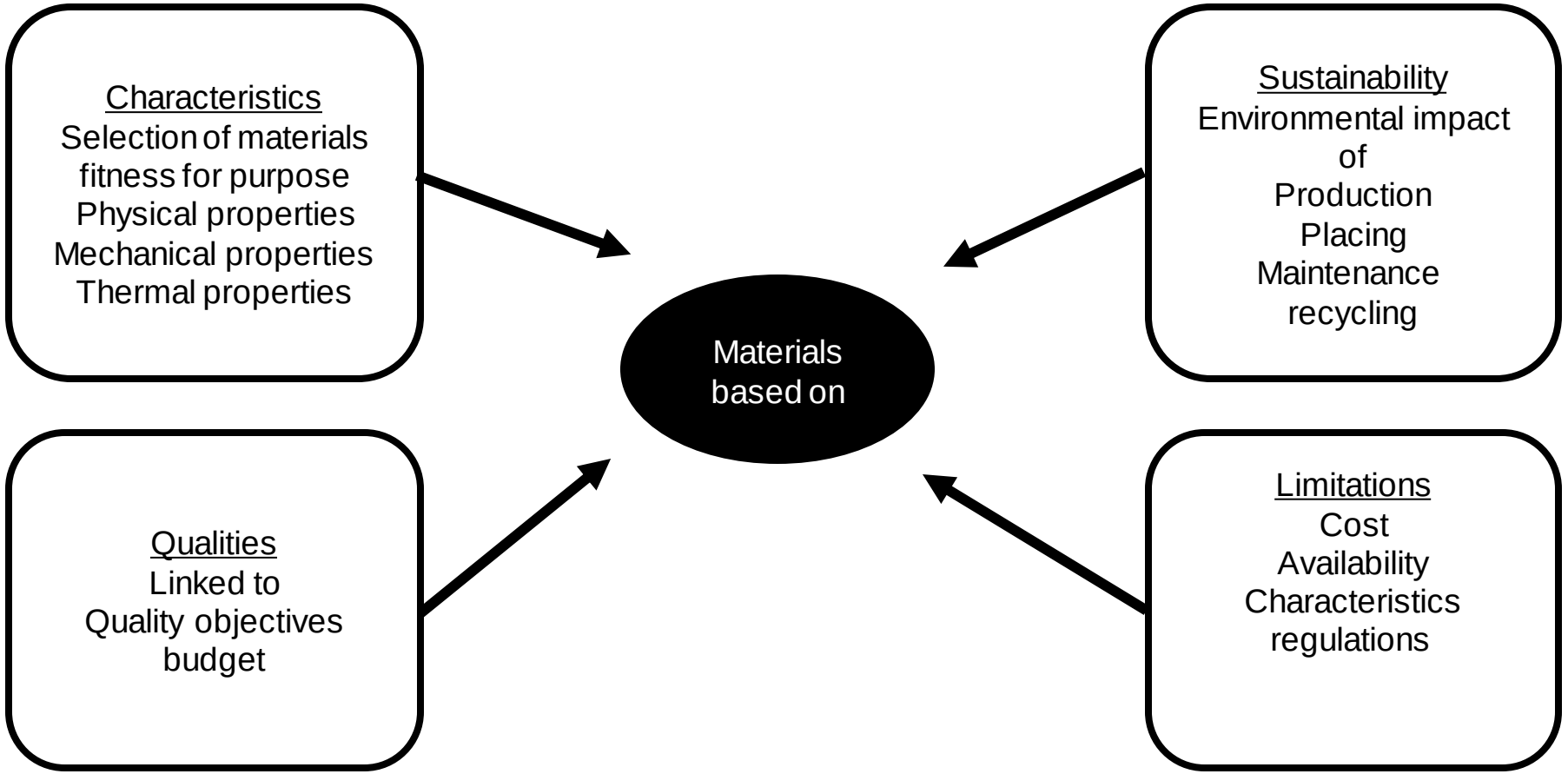
Unit 3 Constructing the Built Environment

3.3 Identifying Resource Requirements. Materials



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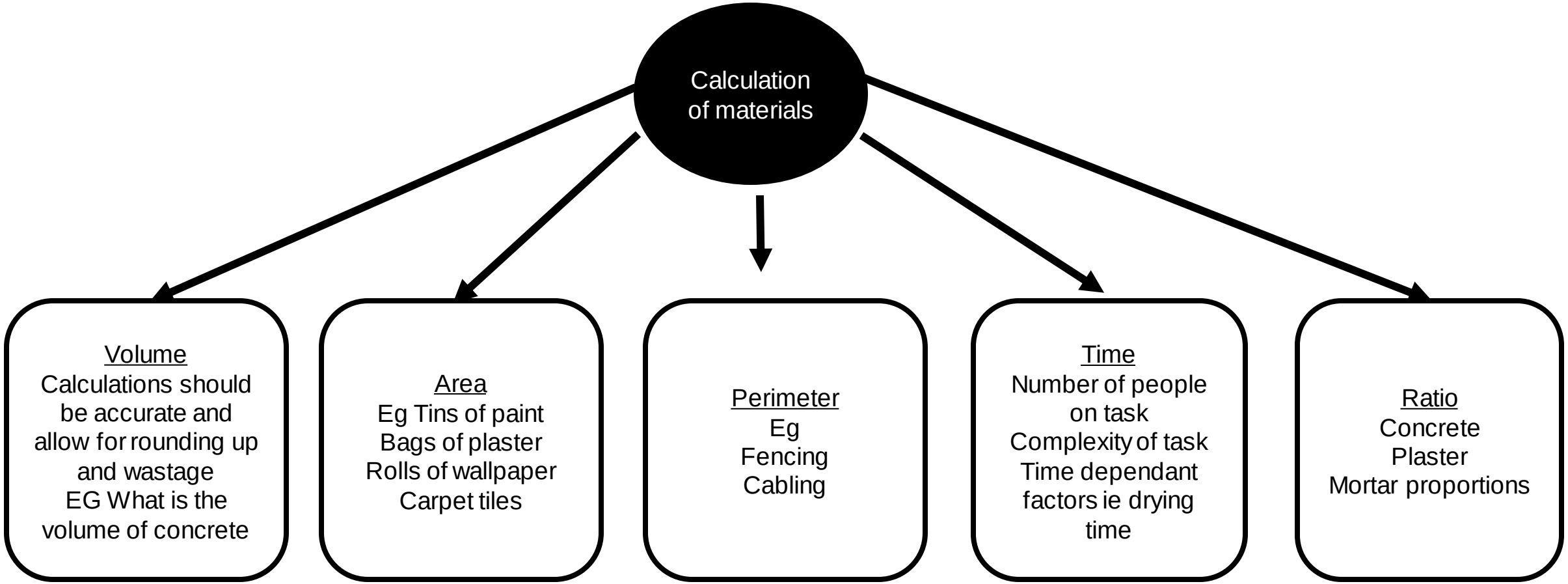
Unit 3 Constructing the Built Environment

3.4 Calculating the Materials Required.



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Unit 3 Constructing the Built Environment

3.5 Writing and setting Success Criteria

Success Criteria	Amplification
Levels of tolerance	Increase or decrease from planned cost or time. Deviations from quality and scope. Allowable variations of dimensions, strength, stability mix and performance.
Timescales	Critical success factor for a project is the deadline. Set realistic timescales, Gantt charts, Critical path analysis, resource allocation, millstones, contingencies
Quality	Balance between cost time and quality. Quality defined by, reference to standards, specification of attributes, nominating suppliers.

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Unit 3 Constructing the Built Environment

Prepare for construction tasks	Carry out techniques	Removing and disposing of materials	Health and Safety	Evaluating Construction tasks
Undertake preparatory work	Measuring	Aim to minimise waste	Ensure cleanliness and safety of work area	Requirements of the brief
Select and organise materials	marking	Waste reused or recycled	Correct PPE	Improvements?
Check for quality	cutting	No reusable waste handled stored and disposed of properly	Free of hazards	Challenging parts Of project
Check for defects	joining	Shelf life considered	First aid ?	Personally - set success criteria
Measuring/marking out	shaping		Area safe ?	Timescale? Quality?
cutting	assembling			Needs of end user including their safety
Setting out	Mixing/finishing applying surface treatments			