

# Mark Scheme

Principal Learning

## Sample Assessment Material CB301 Construction and the Built Environment Level 3 Unit 1: Design the Built Environment: The Design Factors

Question Number	Answer	Mark
1(i)	<p><b>Availability and price of land</b></p> <ul style="list-style-type: none"> <li>• Density of development - the number of properties built on a site.</li> <li>• Use of medium and high rise construction to obtain more floor area on the same building footprint</li> <li>• Market sector - more upmarket properties will be built in locations where land is expensive.</li> <li>• Feasibility of proposed development - will the land price render the project unviable and will alternative uses have to be considered.</li> <li>• Etc</li> </ul> <p>1 mark for each appropriate description to a maximum of 2</p>	(2)
(ii)	<p><b>Employment and the local labour market</b></p> <ul style="list-style-type: none"> <li>• The existence of an educated or skilled workforce will cause businesses to locate to the areas and will stimulate demand for industrial or commercial premises.</li> <li>• Areas in need of regeneration and with high levels of unemployment will limit demand for new development.</li> <li>• The level and type of employment will influence the type, quality, size and density of residential development.</li> <li>• Etc</li> </ul> <p>1 mark for each appropriate description to a maximum of 2</p>	(2)
(iii)	<p><b>Existing infrastructure</b></p> <ul style="list-style-type: none"> <li>• Lack of utility services or capacity will limit development and the provision of new utilities will add to the cost of construction.</li> <li>• If only electricity services are available this will influence the design of heating and hot water systems.</li> <li>• Consideration of flood risk following loss of natural infiltration and increased surface run off.</li> <li>• Good road and transport networks will facilitate development.</li> <li>• Road networks will need to have the capacity to cope with the proposed increase in use.</li> <li>• Etc</li> </ul> <p>1 mark for each appropriate description to a maximum of 2</p>	(2)

(iv)	<p><b>Community consultations</b></p> <ul style="list-style-type: none"> <li>• Community opinions and objections may influence the style, height, orientation and size of the project.</li> <li>• Community requirements or facilities may have to be incorporated into the scheme.</li> <li>• The use of section 38 agreements may result in the redistribution of 'planning gain' within the community which may finance the additional facilities or amenities that could be incorporated into the scheme.</li> <li>• Etc</li> </ul> <p>1 mark for each appropriate description to a maximum of 2</p>	(2)
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Question Number	Answer	Mark
2(i)	<p><b>Affordability</b></p> <ul style="list-style-type: none"> <li>• Lower initial costs may mean higher lifecycle costs.</li> <li>• Lower specification will have an impact upon sustainability due to an increased need for maintenance.</li> <li>• Increased density of development.</li> <li>• Higher proportions of first time buyer properties including apartments etc</li> <li>• Etc</li> </ul> <p>1 mark for each appropriate description to a max of 3.</p>	(3)
(ii)	<p><b>Location</b></p> <ul style="list-style-type: none"> <li>• Cost of land influences type and quality of housing.</li> <li>• Style and housing type will need to be sympathetic to surroundings.</li> <li>• Degree of exposure and local climatic conditions will determine aspects of design and specification.</li> <li>• Surrounding buildings and infrastructure may influence design and specification eg designing properties in proximity to a railway line or motorway has specific design issues.</li> <li>• Etc</li> </ul> <p>1 mark for each appropriate description to a max of 3.</p>	(3)

Question Number	Answer	Mark
3(i)	<p><b>Sustainability issues</b></p> <ul style="list-style-type: none"> <li>• High levels of insulation.</li> <li>• Low energy appliances.</li> <li>• Indoor air quality.</li> <li>• Specification of locally sourced materials.</li> <li>• Building orientation to maximise use of natural daylight and passive solar gain.</li> <li>• Specification of materials from sustainable sources.</li> <li>• Incorporation of SUDS technologies.</li> <li>• Etc</li> </ul> <p>1 mark for appropriate identification with a description to a max of 3</p>	(3)
(ii)	<p><b>Climate</b></p> <ul style="list-style-type: none"> <li>• Heat loss in winter.</li> <li>• Heat gain in summer.</li> <li>• Use of appropriate heating and air conditioning systems.</li> <li>• Suitability of materials used for external envelope.</li> <li>• Appropriate use of glazing.</li> <li>• Use of reflective surfaces on external envelope.</li> <li>• Etc</li> </ul> <p>1 mark for appropriate identification with a description to a max of 3</p>	(3)

Question Number	Answer	Mark
4	<ul style="list-style-type: none"> <li>• Effect on property values.</li> <li>• Safety of children.</li> <li>• Traffic congestion and parking.</li> <li>• Noise and dust.</li> <li>• Timing of deliveries.</li> <li>• Increase in crime.</li> <li>• Visual amenity and aesthetics.</li> <li>• Will the new project be 'sympathetic' to the surrounding neighbourhood.</li> <li>• Loss of natural amenity if a greenfield site.</li> <li>• Etc</li> </ul> <p>2 marks for each item described to a maximum of 8 marks</p>	(8)

Question Number	Answer	Mark
5	<ul style="list-style-type: none"> <li>• Urban plan designates type of development allowed in different areas.</li> <li>• Ensures development is sympathetic to its surroundings.</li> <li>• Limits the type and colours of materials allowed for use.</li> <li>• Considers the opinion of the local community.</li> <li>• Also considers landscaping and green spaces in contextual surroundings.</li> <li>• Etc</li> </ul> <p>2 marks for each item described to a maximum of 6 marks</p>	(6)

Question Number	Answer	Mark
6	<ul style="list-style-type: none"> <li>• Access ramps to main entrance.</li> <li>• Level thresholds.</li> <li>• Ground floor facilities.</li> <li>• Provision of lifts.</li> <li>• Disabled WC provision.</li> <li>• Textured paving.</li> <li>• High level socket outlets.</li> <li>• Marking of obstacles</li> <li>• Etc</li> </ul> <p>2 marks for each item described and evaluated to a maximum of 6 marks</p>	(6)

Question Number	Answer	Mark
7	<p><u>Greenfield sites Advantages</u></p> <ul style="list-style-type: none"> <li>• More predictable ground conditions following site investigations allows appropriate initial foundation design.</li> <li>• Correct plant can be brought to site in first instance.</li> <li>• Delays less likely due to unforeseen conditions.</li> <li>• Top soil available for sale or re-use.</li> <li>• Improved safety record of such sites because no demolitions are required.</li> <li>• Site is less likely to be in an inner city area.</li> <li>• Etc</li> </ul> <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> <li>• Loss of green space possibly farmland or woodland or green belt.</li> <li>• Re-location of animal habitats is more likely to be needed.</li> <li>• Loss of natural infiltration of surface water.</li> <li>• Loss of visual amenity.</li> <li>• Impact on greenhouse gases due to reduction in plant life.</li> <li>• Land is likely to be more expensive.</li> <li>• Etc</li> </ul> <p><u>Brownfield sites Advantages</u></p> <ul style="list-style-type: none"> <li>• Land likely to be cheaper.</li> <li>• Encourages regeneration of urban areas.</li> <li>• Considered better in sustainability terms.</li> <li>• Can reduce surface water runoff if SUDS incorporated into new project.</li> <li>• Improves visual amenity and aesthetics of the area.</li> <li>• Demolition rubble could be used on site as a general fill material.</li> <li>• Etc</li> </ul> <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> <li>• There may be existing buildings on the site that require demolition</li> <li>• Cost of remediation of contaminated site</li> <li>• Hard surfaces and existing foundations may need removing.</li> <li>• There may be hidden obstructions, cellars and underground tanks and services within areas to be excavated.</li> <li>• There is a greater likelihood that ground</li> </ul>	<p>(5)</p> <p>(5)</p> <p>(5)</p>

	<p>stabilisation works will be required.</p> <ul style="list-style-type: none"><li>• Increased chances of delays to the progress of the work.</li><li>• Increased likelihood of an accident occurring on site.</li><li>• Site will be more dangerous at the outset and greater security may be needed to prevent children playing on the site.</li><li>• Asbestos may be present on the site</li><li>• Etc</li></ul> <p>1 mark for each advantage and disadvantage (up to a total of 5 per section and a total of 20 overall) incorporated into a well reasoned and balanced discussion.</p>	<p>(5)</p>
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