

## **Appendix B – Extract of relevant policies from the Submission Draft Cambridge Local Plan 2014**

### **Policy 31: Integrated water management and the water cycle**

Development will be permitted provided that:

- a. surface water is managed close to its source and on the surface where reasonably practicable to do so;
- b. priority is given to the use of nature services<sup>1</sup>;
- c. water is seen as a resource and is re-used where practicable, offsetting potable water demand, and that a water sensitive approach is taken to the design of the development;
- d. the features that manage surface water are commensurate with the design of the development in terms of size, form and materials and make an active contribution to making places for people;
- e. surface water management features are multi-functional wherever possible in their land use;
- f. any flat roof is a green or brown roof, providing that it is acceptable in terms of its context in the historic environment of Cambridge (see Policy 62: Conservation and Enhancement of Cambridge's Historic Environment) and the structural capacity of the roof if it is a refurbishment. Green or brown roofs should be widely used in large-scale new communities;
- g. there is no discharge from the developed site for rainfall depths up to 5 mm of any rainfall event;
- h. the run-off from all hard surfaces shall receive an appropriate level of treatment in accordance with Sustainable Drainage Systems guidelines, SUDS Manual (CIRIA C697), to minimise the risk of pollution;
- i. development adjacent to a water body actively seeks to enhance the water body in terms of its hydromorphology, biodiversity potential and setting;
- j. watercourses are not culverted and any opportunity to remove culverts is taken; and
- k. all hard surfaces are permeable surfaces where reasonably practicable.

### **Supporting Text:**

- 4.25 The Surface Water Management Plan<sup>2</sup> and Strategic Flood Risk Assessment for Cambridge<sup>3</sup> have found there is little or no capacity in our rivers and watercourses that eventually receive surface water run-off from Cambridge and that it needs to be adequately managed so that flood risk is not increased elsewhere. The appropriate

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<sup>1</sup>Nature services are defined by the National Planning Policy Framework as: 'The benefits people obtain from ecosystems such as, food, water, flood and disease control and recreation'. These are also known as ecosystem services.

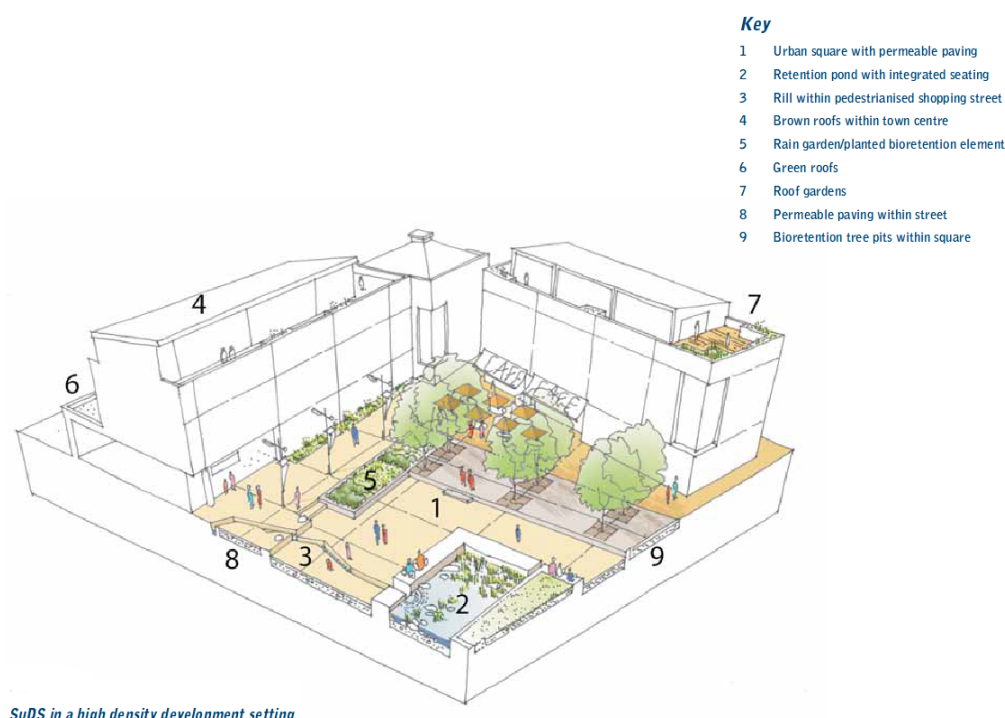
<sup>2</sup> <https://www.cambridge.gov.uk/background-documents>

<sup>3</sup> <https://www.cambridge.gov.uk/strategic-flood-risk-assessment>

application of sustainable drainage systems to manage surface water within a development is the approach recommended within the technical guidance to the National Planning Policy Framework<sup>4</sup> (NPPF) as a way of managing this risk.

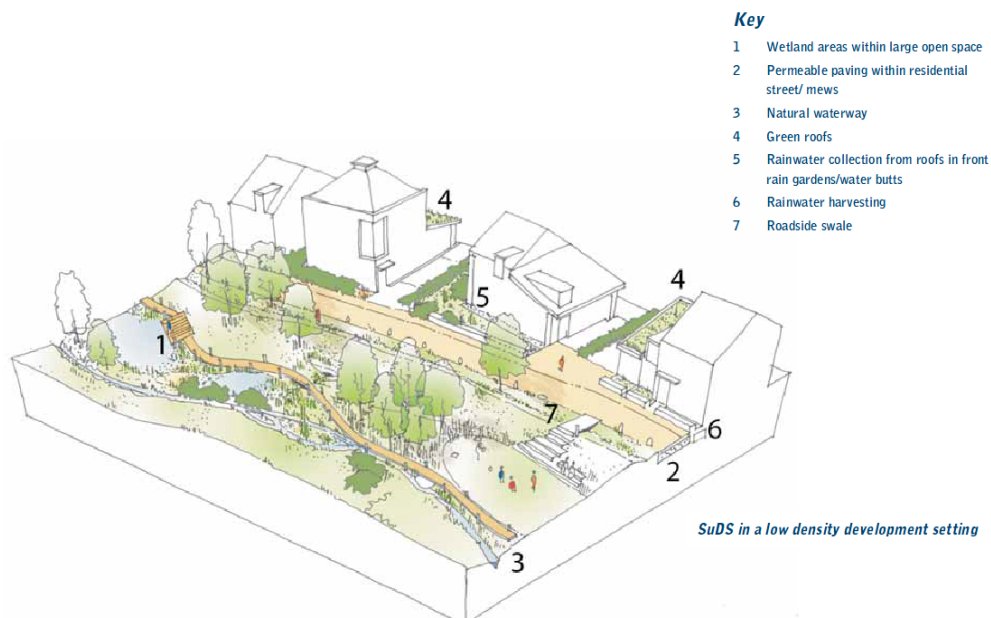
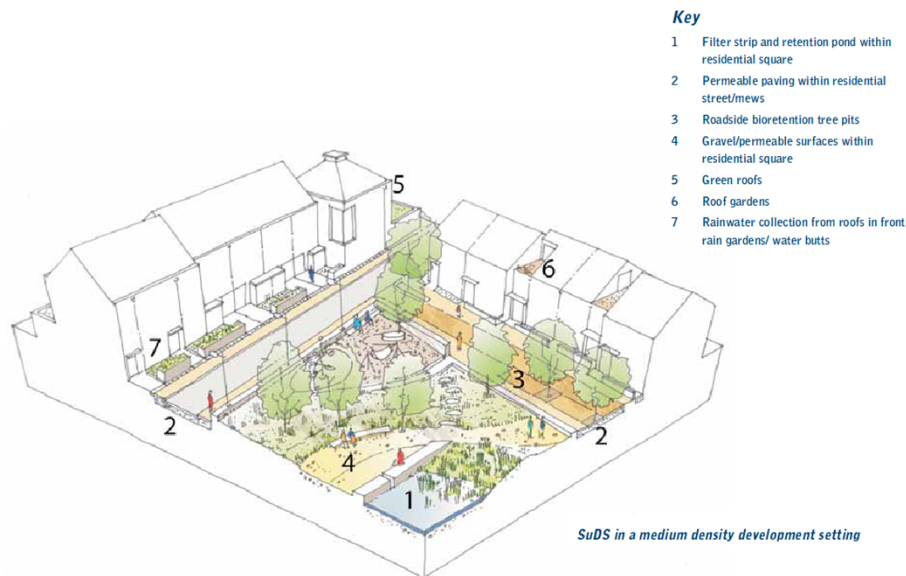
- 4.26 Current best practice guidance such as the SUDS Manual and Planning for SUDS (CIRIA C697 and C687) should be followed in the design of developments of all sizes, with design principles that are important to Cambridge set out in this policy. Smaller, more resilient features distributed throughout a development should be used, instead of one large management feature. Figure 4.4 provides examples of how to successfully integrate SuDS into a range of developments.
- 4.27 Managing water close to where it falls and on the surface is often the most cost-effective way to manage surface water. Early consideration in the design process helps achieve this. Managing water on the surface is an opportunity to celebrate water and create developments distinctive to Cambridge.
- 4.28 Climate change will in future see times of too much water and times of too little water more frequently than now. The design of new developments should reflect this change and value water as a resource than can be stored in times of plenty for re-use in times of deficit.

**Figure 4.4: Examples of integrating SuDS into developments<sup>5</sup>**



<sup>4</sup> <https://www.gov.uk/government/publications/national-planning-policy-framework-technical-guidance>

<sup>5</sup> Source: Dickie, S, McKay, G, Ions, L, Shaffer, P (2010) Planning for SUDS - Making it happen, CIRIA, C687, London (ISBN: 978-0-86017-687-9) Go to: [www.ciria.org](http://www.ciria.org)



4.29 Green and brown roofs are a key measure in terms of Cambridge's climate change adaptation policy. They offer multiple benefits for a comparatively small additional construction cost, including forming part of an effective sustainable drainage solution, reducing the amounts of storm water run-off and attenuating peak flow rates. In the summer, a green roof can typically retain 70-80 per cent of rainfall run-off. Predicted climate change means that Cambridge will experience increasing risks of flooding, overheating and drought, manifested through hotter drier summers and warmer wetter winters. Living roofs can reduce the negative effects of climate change, for example by improving a building's energy balance and reducing carbon emissions. The use of vegetation on a roof surface ameliorates the negative thermal effects of conventional roof surfaces through the cooling effect of evapotranspiration, which can also help ameliorate the urban heat island effect (UHI). It can also provide benefit in the form of insulation, helping to reduce the internal cooling load of buildings, thereby reducing energy use and associated

carbon emissions. The biodiversity benefits of green roofs are manifold, supporting rare and interesting types of plant, which in turn can host a variety of rare and interesting fauna. Accessible roof space can also provide outdoor living space, particularly in high-density developments. As such, accessible roof space should be viewed as an integral element of a well-designed, high-quality, high-density, more efficient, attractive and liveable city.

- 4.30 Green/brown roofs can be more cost effective than a traditional roof over the lifetime of a development. A flat roof is defined as a roof with a pitch of between 0° and 10°.
- 4.31 The EU Water Framework Directive and the associated River Basin Management Plan for the Anglian region<sup>6</sup> require public bodies to have a positive impact on the quality of lakes, rivers and groundwater, collectively called water bodies. The water bodies in Cambridge are currently failing to achieve the required status of 'good'. Quality refers to the quality of the water body in terms of the quality of the water itself, the quality of the shape and form of the water body, and the quality of its biodiversity.
- 4.32 This policy seeks to ensure all surface water that is discharged to ground or into rivers, watercourses and sewers has an appropriate level of treatment to reduce the risk of diffuse pollution.
- 4.33 The policy also recognises that development adjacent to a water body provides an opportunity for both the development and the water body and that they should complement and enhance each other.

### **Policy 32: Flood risk**

#### **Potential flood risk from the development**

Development will be permitted providing it is demonstrated that:

- a. the peak rate of run-off over the lifetime of the development, allowing for climate change, is no greater for the developed site than it was for the undeveloped site;
- b. the post-development volume of run-off, allowing for climate change over the development lifetime, is no greater than it would have been for the undeveloped site. If this cannot be achieved then the limiting discharge is 2 litre/s/ha for all events up to the 100-year return period event<sup>7</sup>;

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<sup>6</sup> Environment Agency (2009). Water for life and livelihoods. River Basin Management Plan – Anglian River Basin District

<sup>7</sup> Where the pre-development peak rate of run-off for the site would result in a requirement for the post-development flow rate to be less than 5 litre/s at a discharge point, a flow rate of up to 5 litre/s may be used where required to reduce the risk of blockage. If discharge is to be pumped then this allowance does not apply.

- c. the development is designed so that the flooding of property in and adjacent to the development would not occur for a 1 in 100 year event, plus an allowance for climate change and in the event of local drainage system failure;
- d. the discharge locations have the capacity to receive all foul and surface water flows from the development, including discharge by infiltration, into water bodies and into sewers;
- e. there is a management and maintenance plan for the lifetime of the development, which shall include the arrangements for adoption by any public authority or statutory undertaker and any other arrangements to secure the operation of the scheme throughout its lifetime; and
- f. the destination of the discharge obeys the following priority order:
  - firstly, to ground via infiltration;
  - then, to a water body;
  - then, to a surface water sewer.

Discharge to a foul water or combined sewer is unacceptable.

#### **Potential flood risk to the development**

Development will be permitted if an assessment of the flood risk is undertaken following the principles of the National Planning Policy Framework and additionally:

##### **For an undeveloped site:**

- g. if it is not located within the Environment Agency's flood zone 3b, unless it is a water-compatible development and does not increase flood risk elsewhere by either displacement of flood water or interruption of flood flow routes and employs flood resilient and resistant construction, including appropriate boundary treatment and has a safe means of evacuation; and
- h. if it is not located within the Environment Agency's flood zone 3a, unless it is a water compatible development or minor development when the principles in a) above apply; and
- i. if it is located within the Environment Agency's flood zone 2 or a surface water wetspot and employs flood resilient and resistant construction as appropriate; and
- j. floor levels are 300mm above the 1-in-100-years flood level, plus an allowance for climate change where appropriate and/or 300mm above adjacent highway levels where appropriate.

##### **For a previously developed site:**

Opportunities should be taken to reduce the existing flood risk by the positioning of any development so that it does not increase flood risk elsewhere by either displacement of flood water or interruption of flood flow routes, and it employs flood resilient and resistant construction including appropriate boundary treatment and has a safe means of evacuation.

**Supporting Text:**

- 4.34 Both the [Strategic Flood Risk Assessment](#)<sup>8</sup> and [Surface Water Management Plan for Cambridge](#)<sup>9</sup> have found that without the mitigation measures outlined in this policy, developments could increase flood risk elsewhere. Flood risk assessments should make reference to the latest version of these studies. There is also an opportunity to reduce the overall flood risk in Cambridge through redevelopment. This policy seeks to address this with the same design standards applied to new developments on previously developed sites as undeveloped sites, as this refers to the site in its natural state prior to any development taking place.
- 4.35 The rivers, watercourses, sewers and ground conditions throughout Cambridge have varying amounts of capacity for flow from new developments and an adequate assessment of this capacity must be undertaken to support any development proposals. This policy builds upon the standards currently being achieved in the major growth sites on the fringes of Cambridge.
- 4.36 The appropriate responsible bodies including the Environment Agency, Anglian Water and Cambridgeshire County Council should be consulted, as appropriate, during the initial design process for any new development or redevelopment. The policies map also shows the area of the city covered by the Environment Agency's flood zones<sup>10</sup> (note that this relates to fluvial flooding only).
- 4.37 The [Great Ouse Catchment Flood Management Plan](#)<sup>11</sup> has assessed how an increase in the flow of water in rivers and watercourses due to climate change will affect Cambridge. It has concluded that flood zones will be inundated more frequently and for longer. This seeks to clarify what development would be acceptable in which flood zones. The findings of the Surface Water Management Plan for Cambridge highlights the importance of a careful consideration of the levels within a development such that if extreme events occur or there is a maintenance issue that causes the drainage system to stop working, properties will not flood as a result of surface water flooding (pluvial).
- 4.38 In the Environment Agency's flood zone 3, water may be flowing in the general direction of the river and interruption of these flows can increase flood risk to adjacent developments. Careful consideration must be given to the positioning of development on the site so there is no interruption of these flows. This should also include the consideration of boundary treatments to enable floodwater to flow with a minimum of hindrance to the flow.
- 4.39 Discharge of surface water to a foul or combined sewer is unacceptable.

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<sup>8</sup> <https://www.cambridge.gov.uk/strategic-flood-risk-assessment>

<sup>9</sup> <https://www.cambridge.gov.uk/background-documents>

<sup>10</sup> For further information on the flood zones please see the Environment Agency's website [www.environment-agency.gov.uk](http://www.environment-agency.gov.uk)

<sup>11</sup> <http://www.environment-agency.gov.uk/research/planning/114303.aspx>