8.0 Materials

8.1 Introduction

8.1.1 Developments can improve their environmental performance by using building and construction materials that have a lower environmental impact over their life cycle. There are a range of factors that need to be taken into account in choosing the most appropriate materials for a development and it is recommended that consideration is given to this early in the design process. Some of the key factors for consideration are identified below.

8.2 Low-Impact Materials

8.2.1 Re-used and recycled materials should be used in preference to virgin materials. Materials from renewable sources, such as timber, should also be chosen ahead of those from non-renewable sources, such as plastics, where possible.

8.2.2 Another important consideration is the embodied energy of a material. This is typically described as the energy used in the extraction, production and transportation of that material. There is considerable variation in the embodied energy of materials. For instance, aluminium, concrete, glass and plastics require energy intensive production processes, while timber and straw bales come from low energy, natural sources that have the added advantage of storing carbon.

8.2.3 In general, developments should limit the use of high embodied energy materials as much as possible. There can however be instances where the use of high embodied energy materials is integral to the design of the scheme, such as the use of concrete in building designs which seek to maximise solar gain. Here it is possible for the energy saved over the operational life of the development to offset the high levels of energy embodied in the building material.

8.3 Responsible Sourcing

8.3.1 Materials should be selected from a sustainably managed source. In particular, any timber used should carry Forest Stewardship Council (FSC) certification in order to have the confidence that the development is not contributing to the destruction of the world's forests. FSC is an international, non-governmental organisation dedicated to managing the world's forests to the highest environmental, social and economic standards. Harvested trees are replanted or allowed to regenerate naturally and due respect is given to the wildlife and the people who live and work in them.

8.4 Local Materials

8.4.1 The transportation of materials can have a number of environmental impacts, including the

consumption of non-renewable energy and the emission of greenhouse gases. These impacts can be reduced by sourcing materials from as close to a site as possible (see Figure 8.1).

Figure 8.1 Pembrokeshire larch cladding used on the Larch House, the Works Site, Ebbw Vale.

8.4.2 Local materials have traditionally contributed to the distinctiveness and sense of place of an area. The use of local materials can therefore contribute to preserving local character as well as helping support the local economy.