

Chapter 9 Development Principle 6: Maximising energy efficiency

DRC Energy Targets

- *Sustainable, energy efficient design and solutions*

Energy efficiency is part of the foundation of a sustainable community. Devonport provides a significant opportunity to achieve higher standards for reducing energy consumption, reducing utility bills for residents, alleviating 'fuel poverty' and using innovative methods of construction to deliver these standards. Alternative energy sources should be integrated from the outset to further Devonport's credentials as one of the UK's leading examples of sustainable regeneration. Figure 26 highlights some of the key issues.

Detailed standards will be established in development briefs and/or codes. Developers should be strongly encouraged to achieve a 'very good' or 'excellent' standard of environmental design with regard to the Building Research Establishment Environmental Assessment Method (BREEAM) across the entire development. This requires:

- reducing CO2 emissions, with solar efficient layouts that maximise solar gain to principal habitable rooms and highly insulated buildings;
- using sustainable materials, such as well-managed timber or other non-polluting materials and minimising the waste from construction;
- water conservation, including use of storm run-off water management systems and water saving appliances;
- promoting more recycling and making provision for storage at neighbourhood hubs and for individual buildings.



9.1 Opportunities for alternative energy provision

It is recommended that the development partners prepare an energy strategy that determines how the DRC objective to achieve "sustainable, energy efficient design and solutions" is to be achieved. This should seek to explore and accommodate a variety of alternative energy systems. Three in particular are highlighted below where action is known to be feasible. It is important to recognise that each is complementary, rather than mutually exclusive.

1. Passive solar design

In establishing the proposed layout of development blocks and buildings, the tendency for the existing historical grid to face south-easterly and south-westerly can be capitalised on. It is proposed that wherever possible building footprints are orientated to turn within 30 degrees of due south - with glazing designed to capitalise on this sunny aspect - and that undue overshadowing is avoided. Care needs to be taken to ensure that such solar design is compatible with other urban principles such as a tight urban form, mixed use and clear fronts and backs.

High building insulation standards will be applied and more 'active' solar design, such as the use of photovoltaic panels, should be given serious consideration.

2. Combined Heat and Power (CHP)

This is a highly efficient energy-production plant. Opportunities are currently being explored to incorporate a potentially community-run CHP system with the £2.15m grant award made under the Government's Community Energy Programme. There are two interrelated aspects to this:

- a) new and refurbished buildings are designed to high energy efficiency standards. This includes attention to building ventilation, as the movement of air has a significant impact on energy consumption. Refurbishment of Marlborough House and the three tower blocks is to lead the way in applying such standards.
- b) Increasing power generation and introducing a community heat distribution system within South Yard (shown indicatively in Figure 26). This would involve potentially using existing boilers as the site for generation plants, which would in the first instance be run on natural gas, but be capable of being retrofitted later to use renewable sources (eg. wood chip). Properties within South Yard could consume the cheaper electricity provided and then produce heat generated as a by-product of industrial processes for the community heating system.

There are several benefits to such a system:

- reduced energy use and the level of CO2 emissions
- reduced fuel bills to residents and local businesses (including DML and its tenants) - eliminating 'fuel poverty'
- more healthy and comfortable living conditions - particularly for children and the elderly
- improved sustainability of housing stock
- more efficient, comfortable community buildings that are more economic to run

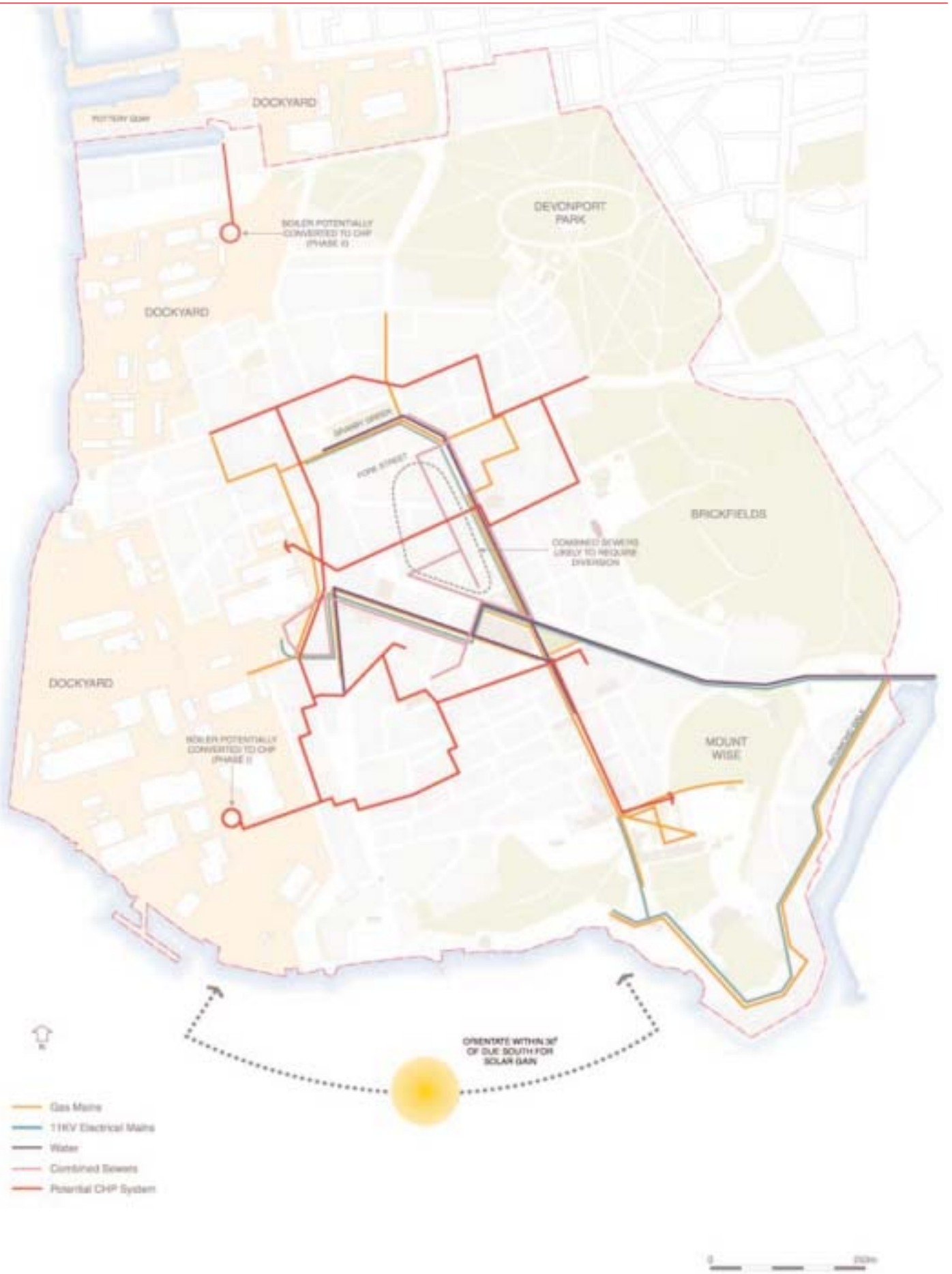


Figure 26 Energy

3. Environmental water management

A series of opportunities exist for integrating sustainable water systems into plans. Drinking water is a scarce and expensive resource. Conservation measures that will be considered include:

- 'Rainwater harvesting' or treated greywater should be considered - which can involve collecting rainwater from roofs for activities such as toilet flushing and irrigation.
- Reducing water demand through using low-flow fittings in new or refurbished buildings such as spray taps and low flush toilets.

4. Waste recycling

The Devonport sustainability credentials can be boosted further by introducing a community waste recycling programme that will involve the inclusion of waste sorting bins in new or refurbished buildings and recycling points throughout the community for collection.

9.2 The Utilities Network

Planning for utilities provision also involves identifying the constraints posed by existing services. Figure 25 highlights the principal utilities network in relation to the two MoD sites. The following lines are shown:

- Western Power Distribution (electricity supply) - a substantial local network of low and high voltage lines. There are unlikely to be problems in connecting in to the existing network, though proposals for specific land uses such as a supermarket and sports centre should be discussed with Western Power Distribution.
- South West Water (water supply and drainage) - covering public sewers (foul, surface and combined) and main water distribution mains. Most distribution and sewage collection pipes run along the existing road network, though a combined sewer is shown to run beneath buildings in the Storage Enclave and is likely to require partial relocation. This is unlikely to provide a barrier to development, both in terms of technical feasibility and cost. Although there are unlikely to be problems in connecting any new developments to the existing network, South West Water should be consulted, particularly in connection with any proposals that may require a high water usage.
- Transco (gas supply) - Mains generally route within road corridors and would not pose a constraint.
- British Telecom (telecommunications) - It is not anticipated that there would be any problems connecting into the existing telecommunications network.
- Steam Mains - an existing steam mains runs within South Yard. Heat is generated by a central boiler and then pumped around the MoD site using a network of underground pipes. This distribution network would need to be partially remodelled prior to the transfer of the Storage Enclave - potentially in conjunction with the CHP system. Care will need to be taken as it is understood that this includes asbestos lagging. The asbestos-lagged MoD heating system will need to be removed prior to development.

Priority Actions for Applying Principle 6

- *Undertake a strategic review of Devonport's energy needs and give serious consideration to joint funding a Phase I Combined Heat and Power scheme*
- *Undertake further detailed work on the potential to partially re-locate the combined sewer running through the Storage Enclave*