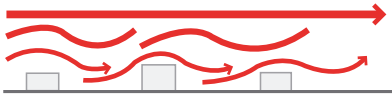




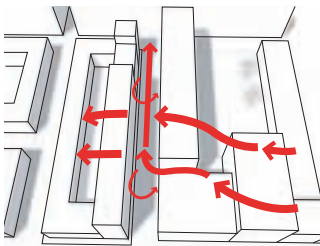
A highly integrated street pattern encourages high levels of air movement. Winds are 'smoothed' over low, densely built areas.



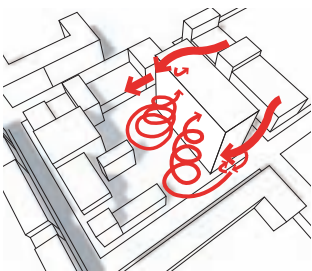
With greater spacing winds are forced down to make open spaces potentially uncomfortable



This is intensified by tall freestanding buildings, creating eddies that also result in building heat loss (adapted from Gehl, 1987)



Building form can also affect the quality of public space by channelling wind along streets ...



... or creating vortexes in plazas in front of tall buildings (from Lang, 1994)

3.4.4 WIND

Work with the wind

Wind is both a friend and foe. In the summer mild breezes ventilate buildings and improve comfort whereas in the winter winds increase heat loss. Harness the potential of the wind for natural ventilation and as a possible energy source. Design and position buildings to minimise funnelling and the creation of uncomfortable microclimates. Landscape also has a role to play in influencing wind patterns (see 3.5.6).

Throughout the year at suitable sites wind energy can even provide a source of electricity. Normally such sites will be in more exposed areas. Surprising as it may seem, it may be possible to use the wind even in urban situations, as indicated by the audacious roof top wind turbine in Dublin.

3.4.5 WASTE

Do more with less

How to do more with less is the basic issue. Either through design or by the way we live. But less what? Here we're interested in less land (see 3.3), less energy, less water and fewer materials so that we can minimise demands on the environment. Designs can be made more energy and resource efficient by:

- 1 **Landscape** – minimising the use of water or fertiliser.
- 2 **Infrastructure** – reducing the demand on site lessens the amount of infrastructure needed. Reducing the building energy demands can reduce gas main sizes and using rainwater on site minimises surface water drainage pipes.
- 3 **The buildings** – minimising demands on resources in terms of:
 - space and water heating (eg. insulation, double-glazing);
 - electricity / fuel;
 - water;
 - construction materials.

Consider reed beds

If there is sufficient land available, consider reducing the load on the sewage infrastructure by using reed bed filtration systems, which treat grey water run-off. These can form attractive landscape features. For housing, the approximate land requirement is 1-2 m² per resident.

Waste not, want not

Waste may be considered simply as what we have not found a use for. Look at ways of reusing resources within the site. This can range from composting organic materials through to re-using building materials and recycling rainwater. Re-use of excavated material on site avoids the costs and resource consumption of transporting off site. Use of prefabricated elements can reduce site construction waste. Recycling facilities should be provided for materials that need centralised processing, such as paper, glass and metals.

Think CHP

It may be possible to add new infrastructures to reduce energy demands. For example, in compact areas where the patterns of electricity and heat demand are right, it may be cost effective to use a CHP (Combined Heat and Power) plant or District Heating System. These are electricity generators run on gas or other fuels. The 'waste' heat they give off is used to heat water for space and domestic hot water heating.