

The integration of permaculture into a land use plan for the City of Guelph

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Permaculture was first developed in Australia by Bill Mollison and David Holmgren in 1974. Their first publication, *Permaculture One*, describes this design system as the integration of self-perpetuating plant and animal species that supply human needs (Mollison and Holmgren, 1978). Mollison (1988) states that permaculture is an ever-evolving ethical design and management system of agriculturally-productive ecosystems, integrating human settlements within the landscape and providing food sustainably.

Holmgren's recent book, *Permaculture: Principles & Pathways Beyond Sustainability* (2002), describes in detail the three ethical principles and twelve design principles of permaculture. The three ethical principles that serve to guide the design principles are: 1) to care for the earth; 2) to care for the people; and 3) to set limits on consumption, reproduction and to redistribute surplus. The twelve design principles are: 1) observe and interact; 2) catch and store energy; 3) obtain a yield; 4) apply self-regulation and accept feedback; 5) see and value renewable resources and services; 6) produce no waste; 7) design from patterns and details; 8) integrate rather than segregate; 9) use small and slow solutions; 10) use and value diversity; 11) use edges and value the marginal; and 12) creatively use and respond to change.

The seventh principle - design from patterns to details - organizes the landscape through the use of five permaculture districts, or land use designations; these districts were used to form a permaculture land use plan for the City of Guelph, as presented here. (Note: Mollison and Holmgren use the term 'permaculture zones'; this has been changed here to 'permaculture districts' to avoid confusion with planning terminology.)

These five permaculture districts are based on the energy input and the extent of land required for each land use. The intensity of energy use relates directly to the extent of land that is required for that land use. The overall goal is to create a design that uses human energy efficiently (Holmgren, 2002), and to reduce the energy input required for maximum energy output (Allen, 2002) The land use that requires the most human energy will be placed closest to the centre of the highest human activity (Whitefield, 1993).

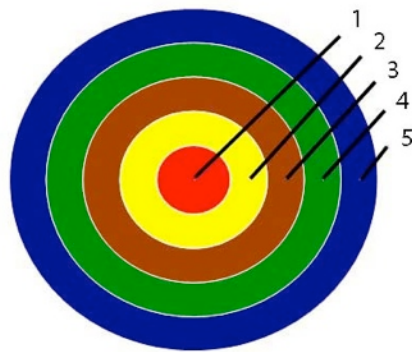


Fig. 1 Conceptual diagram for Permaculture Districts

Figure 1 demonstrates the distribution of energy and land for each district. The central circle (1) represents the area of highest energy input, whereas the outermost circle (5) requires the lowest energy input (Mars, 2005; Holmgren, 2002; Mollison and Holmgren, 1978). The central circle requires less land while the outer ring requires more land. The central circle must be located where there is high human activity, while the outer circle is located the furthest away from high human activity. This diagram is conceptual only; these districts will take any shape once the criteria for each are applied to the landscape. The notion of a district as a continuous band may not apply on the ground, as the criteria must respond to the existing, fragmented nature of the urban landscape.

To demonstrate what a permaculture land use plan might look like, the criteria for the five permaculture districts were applied to the existing land use and zoning maps for the City of Guelph. The five districts are described below, particularly as to the land uses associated with each district.

Permaculture District One (PD.1) includes private parcels with direct access to residences (R.1, R.2, and R.3) (Fig.2). PD.1 also includes private rooftop and balcony spaces, as well as intensive vegetable gardens, herb gardens, small fruit plantings and SPIN (Small Plot Intensive) farming. Mollison and Holmgren (1978) describe this district as the origin of the system, the immediate property surrounding the individual residence.

Permaculture District Two (PD.2) includes public parcels within residential areas, community parks and institutions (R.4, P.2, P.3, P.5, I.1, and I.3) (Fig.3), as well as land uses such as community gardens, community farms, market gardens, composting systems, chicken coops, community storage and preserving facilities. PD2 may also include egg and meat production, aquaculture tanks and worm farms (Mars, 2005; Whitefield, 2004). This district has the most diverse land uses of all five districts.

Permaculture District Three (PD.3) includes parcels within industrial areas and agricultural and regional parks (B, UR, and P.4) (Fig.4), as well as vineyards, orchards, cropland, large plant nurseries, bee hives, goats, turkeys and sheep. The introduction of more forest-like systems can begin in PD.3 (Allen, 2002). Due to the association with industrial areas, the opportunity for large scale roof gardens exists. This could benefit the

urban farmer and the building owner with the insulating and storm water retention factors that occur with roof garden production.

Permaculture District Four (PD.4) includes parcels within floodplains, existing forested areas and land unsuited to development (FL, UR, and P.1) (Fig.5), as well as pastureland, agro-forestry, sustainable woodlots, trails and recreation. The human influence is minor in PD.4; most of the vegetation is comprised of native species (Whitefield, 2004) and invasive species are eradicated. It would be considered to be an area of forest and open pasture for grazing animals (Mollison and Holmgren, 1978).

Permaculture District Five (PD.5) contains wetlands, riparian zones, floodplains, and conservation lands that contribute to wildlife corridors, and any other land unsuited to development (FL and WL) (Fig.6). This district is important for biodiversity, groundwater recharge, a native seed bank and wildlife habitat. PD.5 is an area where native flora and fauna have top priority (Whitefield, 2004).

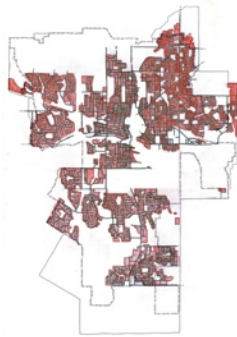


Fig.2 District 1

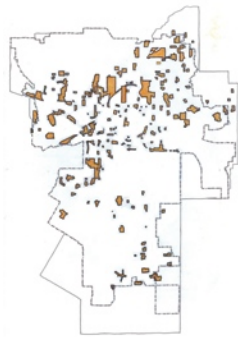


Fig.3 District 2

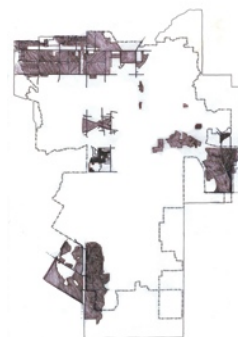


Fig.4 District 3



Fig.5 District 4



Fig.6 District 5

The criteria for 5 Permaculture Districts were applied to the City of Guelph's Official Plan, demonstrating the opportunities for permaculture in an Ontario municipality. The establishment of these districts could contribute to the development of some local food supply as well as improved environmental services within the urban landscape.

References

Allen, Jenny (2002). *Smart Permaculture Design*. Australia: New Holland Publishers.

Holmgren, David (2002). *Permaculture: Principles and pathways beyond sustainability*. Victoria, Australia: Holmgren Design Services.

Mars, Ross (2005). *The basics of permaculture design*. Hampshire, UK: Permanent Publication.

Mollison, Bill (1988). *Permaculture: A designer's manual*. Tyalgum, Australia: Tagari Publications.

Mollison, Bill and David Holmgren (1978). *Permaculture One*. Melbourne, Australia: Transworld publishers.

Whitefield, Patrick (1993). *Permaculture in a nutshell*. Hampshire, UK: Permanent Publication.

Whitefield, Patrick (2004). *The Earth Care Manual: A Permaculture handbook for Britain and other temperate climates*. Hampshire, UK: Permanent Publication.