Introduction

Background & Purpose

Radiality was discovered during creativity exercises to identify sustainable technology. This report summarises the details of the idea with the aim to provide a basis for communicating and verifying the principles.

Often, these exercises produce conflicting information which may come in this report. Experience has shown however that the solutions produced by this type of exercise contain deep intuitive insights which are a) valuable despite conflicts and b) looking into the conflicting information often reveals further insights.

What is Radiality?

Radiality is a discipline of urban planning. It works to minimise the ecological footprint of the city whilst ensuring a sustainable, health promoting urban environment.

Radiality Principles

- Everything is close to everything else
- Minimise dependence on non-renewable source transport
- Walking is natural transport medium

To minimise the impact of the city on the environment, transport driven by non-renewable energy sources needs to be kept to a minimum.

Therefore, the guiding principle is “everything is close to everything else”.
By close, the dimensions are based on what is a natural daily walking distance for the human 18-65.

We already know that inactivity is not good for health. And walking is both a natural form of exercise and transport. Therefore, radiality utilises walking as the main form of transport.

The design of the “everything close to everything else” means also that transport associated with goods and services is reduced. The largest transport need to human society is food and water. Therefore radiality calls for urban environments to be as self-sufficient as possible in food and water. Food production is carried out throughout the city, and especially a separate area in the centre produces both food and clean water.

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Radiality solutions

Multi-functionality

Firstly, to make the city as efficient as possible, population density is kept high. For the area to provide comfort and convenience requires the multiple use of land: multi-functionality.

This is manifested in several ways, for example all green areas are available both for recreation and growing food. Wetland areas are used for water treatment as well.

There is also the separation of technology and the natural environment. The central part of the city is separated from the effects of technology, thereby allowing the natural environment to, in an uncontaminated way, produce food and cleanse water.

For natural water circulation, run-off and cleansing to function with minimum contamination and obstruction, automobiles and trucks are removed and paved, asphalted roads and paths are replaced with gravel.

For walking to be facilitated as far as possible, buildings are stilted so people can walk under them.

Outer circular canal.

Water-born transport is effective for heavy loads, one solution to bringing goods to residential areas is to use barges sailing through a peripheral canal.

Circular and Cross-town train

A system of trains both circular and cross-town provide fast transport to all urban areas from all urban areas. Again, supporting “everything close to everything else”.

Revolving circular building complex.

In our exercise, we encountered a solution where a circular building complex runs on rails. Work is carried out partly from the home, again following the multi functionality principle. The central building complex functions as a communal meeting and work area.

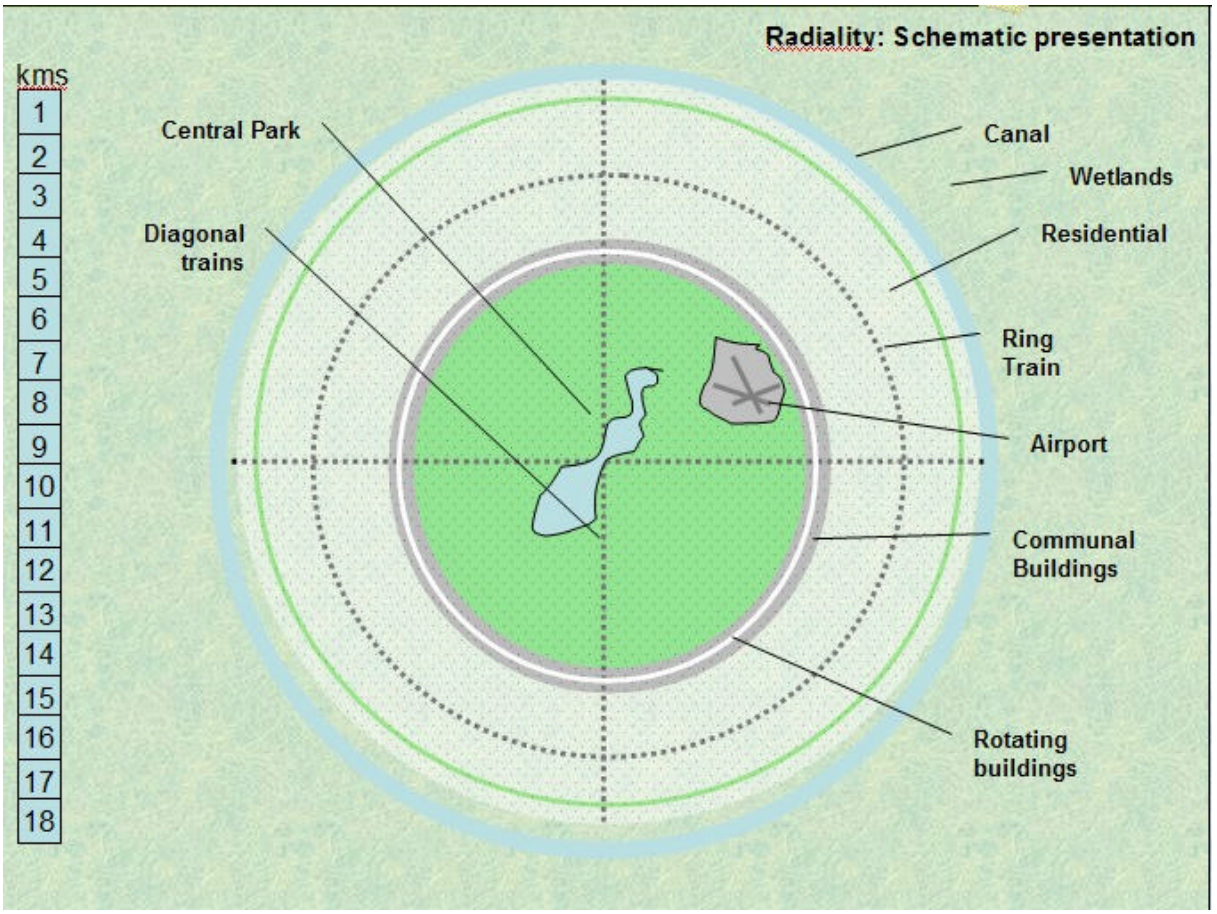
Example PORENA

In our creative exercise we encountered a population of nearly one million was supported.

The radius is 9 kms.
This gives an area of
$9 \times \pi R^2 = 254 \text{ km}^2$

The population density is therefore
3937 per km.

The farthest from a train line is 2kms in residential areas



The Circular rotating building complex has a radius of 5km.

The circumference:
Circumference = 2p R,
=31.4kms
Speed of rotation, 6kms/hr
One full revolution takes 5.2 hrs at 6km/h
And 6.3 hrs at 5km/h

Appendix

Key numbers and terms

Population density

London inner city 14,000 per km2

London outer city 5,000 per km2

Walking

Speeds

Brisk 5 km/hr

Normal 4 km/hr

Minutes per day

60

Glossary

Circumference = $2\pi R$
Area = πR^2
Speed = distance/time