

Environmental effects and monitoring of nuclear power projects

By Dr Gareth Beard

In order for Britain to meet the rising demand for electrical power over the coming decades while also replacing outdated power stations and reducing carbon emissions there is likely to be a requirement for new nuclear generating capacity. Dr Beard, who is responsible for monitoring the impact of a proposed 5.7gigawatt nuclear generating station at Wylfa in North Wales, outlined in his talk to the Cirencester Science & Technology Society the large number of factors that need to be considered when planning such a project.

The scale of this particular project became apparent when the speaker explained that this advanced boiling water reactor (ABWR) plant would cover a coastal area in North Wales of 1,000 acres, employ over 8,500 workers during the 6 years of construction and subsequently some 1,000 permanent employees.

For those who thought that nuclear power plant monitoring related mainly to possible radioactive contamination the speaker's detailed list of other considerations that must be taken into account was certainly an enlightenment. After a brief summary of the ABWR process Dr Beard listed the many factors that require detailed examination as part of the overall environmental impact assessment for such a project.

Clearly there is a significant socio economic impact on local employment with such a large employer locating in a relatively undeveloped part of the UK. Associated with this is the impact on public access to the coast and a major impact on local traffic and transport flows even though some of the really large project components will be delivered by sea. Noise and vibration from construction and subsequent plant operation will be felt underwater as well as on land while the massive 100 cubic metre water intake and discharge rates will have a widespread impact on the immediate geology as well as on sea temperatures and marine life. Not least is the visual impact of a project of this size with the main reactor buildings each being 90m tall and having a 3,600 square metre footprint.

Dr Beard assured the audience that the plant's radioactive emissions at a planned maximum of 29 microsieverts would be well within the generally acceptable safety limits for human health.