Introduction to Hinkley Point C and the Cooling Water System

Hinkley Point C nuclear power station is a project to construct a new 3,200 MWe nuclear power station and is the first to be built in a generation (since Sizewell B in 1995). The two EPR[1] reactors aim to provide the UK with low-carbon electricity for around six million homes over its 60 year expected life span.

The Hinkley Point site is located near Bridgwater, Somerset. The site on the coast of the Bristol Channel, an area known as Bridgwater Bay (*Figure 1*).

Figure 1 - Hinkley Point Power Station site location

In 2013 the Environment Agency (EA) granted Environmental Permit EPR/HP3228XT allowing NNB Generation Company (HPC) Limited (the Appellant) to operate certain water discharge activities (WDAs) at the proposed Hinkley Point C nuclear power station (HPC).

The permit regulates discharges of trade effluent, including cooling water, into the Bristol Channel. Three mitigation measures were included in the original permit, which would work together to reduce the environmental impact of this WDA. These were an Acoustic Fish Deterrent (AFD) system, Low Velocity Side Entry (LVSE) intake heads, and a Fish Recovery & Return (FRR) system.

During 2013 the Appellant also acquired a Development Consent Order (DCO) made by the Secretary of State (The Hinkley Point C (Nuclear Generating Station) Order 2013: S.I. 2013:248 (as amended)), authorising construction of HPC, and a marine licence covering construction of components of the cooling water system (CWS) lying below Mean High Water Springs (MHWS) (licence number L201300178/4). Both also stipulate the requirement for the three mitigation measures described above.

[1] The EPR is a third generation pressurised water reactor design. In Europe this reactor design was called European Pressurised Reactor, and the internationalised name was Evolutionary Power Reactor, but it is now simply named EPR.

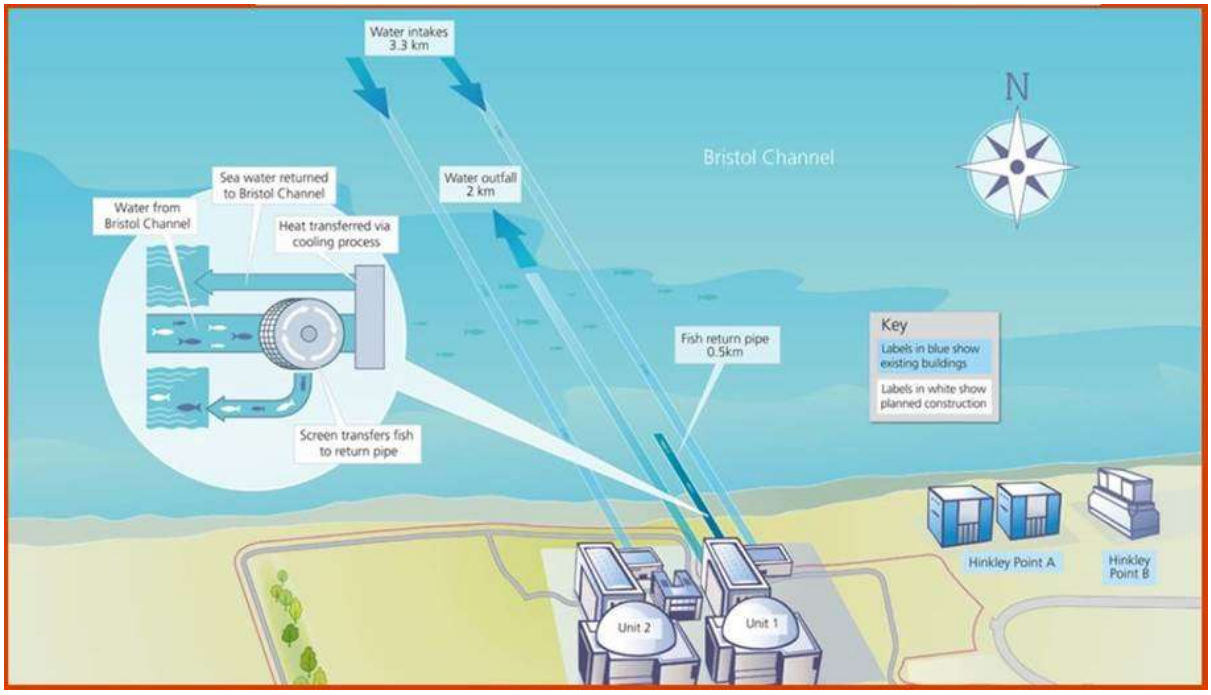

Figure 2 - Summary of HPC cooling water abstraction and FRR system

To protect the power station's cooling water system (by reducing risks of blockage/bio-fouling), the water abstracted from the Bristol Channel will pass through a series of screens. Any debris and biota larger than the screen mesh size will be trapped and removed, 'impinged'. The impinged biota will be returned to the Bristol Channel via the FRR system ('Fish return pipe' - *Figure 2*). Only very small particles and biota will pass through the screens or be 'entrained'; passing back to the Bristol Channel in the cooling water discharge ('Water outfall' - *Figure 2*).

The sum total of impingement and entrainment is called entrapment. Both routes have a degree of mortality associated with them, which varies according to the species of biota passing through. This mortality poses the greatest potential (non-nuclear) risk of impact to the environment from the operation of the power station.