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26th April 2016.

Dear Dr. Beardall,

Bradwell Site, Magnox Limited : Environmental Permit Application to discharge liquid wastes from Fuel Element Debris (FED) Dissolution (dissolving in nitric acid) : reference PR2TSE10760/V003 and EPR/DP3217XB/V002.

We thank you for your letter of 19th January 2016 (Appendix 3 to this present letter) which replied to our letter of 17th September 2015 to the Environment Agency's Water Quality (WQ) Team at Sheffield (our letter of 17th September is Appendix 1 to this present letter), along with our letter of 5th October 2015 to Sir Peter Dilley, then Chairman of the Environment Agency (Appendix 2 to this present letter).

We write now with reference to this foregoing correspondence, and also with reference to the letter of 9th March 2015 (Appendix 4 to this present letter) from Sir James Bevan, Chairman of the Environment Agency, which addresses matters raised by us with him concerning our letter of 17th September and your letter of 19th January.

The matter in question concerns whether the impact on the Blackwater, Crouch, Roach and Colne Estuaries Marine Conservation Zone, designated December 2013, has been properly assessed in relation to the proposed, now actual, Fuel Element Debris (FED) discharges into the Blackwater estuary from Bradwell nuclear power plant (decommissioned) by its owner, Magnox Limited. The discharge permit application has been made by the owner to the Environment Agency which is the licensing authority in this instance.

In our letter of 17th September we questioned whether the granting of this permit by the Environment Agency was legal given our perception of apparent irregularities in the Environmental Impact Assessment under the EIA Regulations, and your reply and that of Sir James Bevan have asserted that the current discharges are entirely legal.

Your reply of 19th January states that the Agency has not allowed Magnox to operate without a permit, but simply that the Agency will not enforce the expiry of the original 12 months permit which expired in June 2015.

You also state in your reply of 19th January that you are not responding to the points in our letter of 17th September concerning our questions about the lack of adequate environmental data submitted by Magnox Limited in support of their original 12 months FED discharge permit application (whose expiry is not now being enforced by the Agency, thus permitting discharges to occur) "*as we will respond to these as part of our determination process, along with other representations received. As part of our*

determination, we will make draft permits available for comment publically, prior to making any changes, and at this stage we will explain how we have taken account of comments received on the applications.”

We observe that this is a very opaque answer, for the following reasons:

Firstly, you refer to a determination process whose nature you do not define.

Secondly, the determination process has no time line, and so when it will arrive at a conclusion is unknown.

Thirdly, your explanation offers no indication of how the lack of adequate environmental data offered by the applicant in support of their original permit application – expired in June 2015, but whose expiry the Agency has not enforced – will be addressed.

Thus, **we conclude** that the Blackwater, Crouch, Roach and Colne Estuaries Marine Conservation Zone, and specifically its protected features of Native Oyster (*Ostrea edulis*) as a species, Native Oyster Beds as a specific habitat, and Intertidal Mixed Sediments as a broadscale habitat are **at risk of adverse impact** as a result of the FED discharges.

Our purpose in this present letter is to explain to you (the Environment Agency), as the licensing authority for the FED discharge permit, why and how we have arrived at this conclusion.

Protected Features of the Blackwater, Crouch, Roach and Colne Marine Conservation Zone.

The following protected features became officially protected on 12th December 2013. Therefore the question of any adverse impact upon them from the FED discharges – heavy metals, nitrates, radionuclides – should have been fully evaluated in connection with the original FED permit (issued July 2014).

The matters which were, and are, required to be evaluated in respect of each protected feature are as follows.

Native Oyster, as a species.

The population of the native oyster in the MCZ is not at present at a favourable conservation status (i.e. its survival is threatened), and its management and that of the MCZ require the recovery of the species to a favourable condition.

This requires (ref. Natural England: *Blackwater, Crouch, Roach and Colne Estuaries Marine Conservation Zone (MCZ) : Supplementary advice on conserving and restoring site features*):

- Recovery in the presence and spatial distribution of the species.
- Recovery of the population's size within the MCZ.
- Recovery in the reproductive and recruitment capability of the species.
- Reduction in the introduction and spread of non-native species and pathogens and their impacts.
- Recovery in the extent and spatial distribution of the supporting habitat : Native Oyster Beds.
- Maintenance of the natural physico-chemical properties of the water.
- Maintenance of all hydrodynamic and physical conditions such that natural water flow and sediment movement is not significantly altered or constrained.

- Reduction in aqueous contaminants to levels equating to (High / Good) Status according to Annex VIII and X of the Water Framework Directive (specifically mercury and its compounds), avoiding deterioration from existing levels.
- Maintenance of the dissolved oxygen (DO) concentration at levels equating to Good Ecological Status (specifically > 4.0 mg per litre (at 35 salinity) of 95% of the year), avoiding deterioration from existing levels.
- Recovery in the natural water quality and specifically winter dissolved inorganic nitrogen (DIN) to a concentration equating to Good Ecological Status, avoiding deterioration from existing levels.
- Maintenance of natural levels of turbidity (e.g. concentrations of suspended sediment, plankton and other material) in areas where this species is or could be present.

A number of questions arise which we wish to address to the Environment Agency, as the licensing authority, concerning the assessment of the impact on the above MCZ feature (native oyster as a species) and its management requirements as required under EIA Regulations (e.g. Scoping Report and Environmental Statement, ref. EU Circular 02/99 on Environmental Impact Assessments) and under MCZ Regulations (e.g. the procedures required by UK Statutory Nature Conservation Bodies, ref. the procedure as set out by the Marine Management Organisation and documented in our letter of 17th September 2015).

However before we address these matters, we will first record here the other protected features of the Blackwater, Crouch, Roach and Colne Estuaries MCZ which are pertinent to this permit application.

Intertidal Mixed Sediments.

This is a broadscale marine habitat within the MCZ, and its conservation objective is to maintain it in a favourable condition.

This requires (ref. Natural England: *Blackwater, Crouch, Roach and Colne Estuaries Marine Conservation Zone (MCZ) : Supplementary advice on conserving and restoring site features*):

- Restriction of the surface sediment contaminant levels to concentrations where they are not adversely impacting on the infauna of the feature.
- Maintenance of sediment transport pathways to and from the feature to ensure replenishment of habitats that are reliant on the sediment supply.
- Reduce aqueous contaminants to levels equating to [High/Good] Status according to annex VIII and X of the Water Framework Directive (specifically mercury and its compounds), avoiding deterioration from existing levels.
- Maintenance of the dissolved oxygen (DO) concentration at levels equating to Good Ecological Status (specifically > 4.0 mg per litre (at 35 salinity) for 95% of the year), avoiding deterioration from existing levels.
- Recovery of natural water quality and specifically winter dissolved inorganic nitrogen (DIN) to a concentration equating to Good Ecological Status, avoiding deterioration from existing levels.
- Maintenance of natural levels of turbidity (e.g. concentrations of suspended sediment, plankton and other material) across the habitat.

Native Oyster (*Ostrea edulis*) beds, as a marine habitat.

The habitat of the native oyster in the MCZ is not at present at a favourable conservation status (i.e. its condition is threatened), and so its management and that of the MCZ require the recovery of this habitat to a favourable condition.

This requires (ref. Natural England: *Blackwater, Crouch, Roach and Colne Estuaries Marine Conservation Zone (MCZ) : Supplementary advice on conserving and restoring site features*):

- Recovery of the total extent and spatial distribution of native oyster beds.
- Recovery of a balanced population age / size structure within the site.
- Reduction in the introduction and spread of non-native species and pathogens and their impacts.
- Recovery of the population density within the site.
- The Maintenance OR Recovery OR Restoration of the abundance of listed typical species, to enable each of them to be a viable component of the habitat.
- Recovery of the species composition of the native oyster beds community.
- Maintenance of the environmental conditions in those locations that are known, or which become known to be important for native oyster bed formation.
- Maintenance of the natural physico-chemical properties of the water.
- Maintenance of the natural rate of sediment deposition.
- Maintenance of the natural water flow velocity to the native oyster beds, to provide high levels of oxygen and food and prevent the build-up of pseudofaeces.
- Reduction of aqueous contaminants to levels equating to (High/Good) Status (according to Annex VIII and X of the Water Framework Directive), (specifically mercury and its compounds), avoiding deterioration from existing levels.
- Maintenance of the dissolved oxygen (DO) concentration at levels equating to Good Ecological Status (specifically >4.0 mg per litre (at 35 salinity) for 95% of the year), avoiding deterioration from existing levels.
- Recovery of the natural water quality and specifically dissolved inorganic nitrogen (DIN) to a concentration equating to Good Ecological Status, avoiding deterioration from existing levels.
- Maintenance of natural levels of turbidity (e.g. concentrations of suspended sediment, plankton and other material) across the habitat.

Issues surrounding the EIA and its assessment of the impact of a FED discharge permit on the MCZ.

The Blackwater, Crouch, Roach and Colne estuaries MCZ was established in December 2013.

In terms of existing environmental conditions in these estuaries (i.e. prior to the Fuel Element Debris discharge application, and the subsequent permit issued July 2014), it was known that:

- Heavy metals, particularly mercury, existed in the intertidal sediments above natural background levels and that grab surveys had shown them to be above the Effects Range Low (ERL) threshold which ‘often causes adverse effects in marine organisms’. Such contaminants can interfere with the reproductive ability of the native oyster, and other marine species within its intertidal habitat.
- High concentrations of nutrients in the water column can cause phytoplankton and opportunistic macroalgae blooms, leading to reduced dissolved oxygen availability; and, long-term or high levels of organic enrichment may have adverse effects, such as increased turbidity, increased suspended sediment, and increased risk of deoxygenation due to algal blooms; and, native oysters have been reported to suffer

mortality due to algal blooms. In the context of the foregoing, it is noted that the water quality of the Crouch and Blackwater outer waterbodies were of good status in 2009/2010, but that the Blackwater waterbody failed the Water Framework Directive for opportunistic macroalgae in 2014, and had done so repeatedly for 4 years. As a result, a Water Framework Directive “restore” target had been set. Also, algal blooms can be implicated in a causal relationship with increased turbidity and suspended sediment, and that an increase in suspended sediment may have longer term effects on the native oyster by inhibiting spatfall.

- Radionuclides, some of which are transuranic, exist throughout the tidal sediments of the MCZ estuaries and in the biological body of marine life in these estuaries due to historic discharges from Bradwell nuclear power plant and elsewhere. Most of these radionuclides are xenobiotic (foreign to the natural biology of the area and its related ecosystem) and, due to their radioactive and chemical nature, are injurious to marine species.

The FED discharge permit application, and any subsequently issued discharge permit, would result in the discharge into the Blackwater estuary of heavy metals, nitrates and radionuclides.

Accordingly under the EIA Regulations and the UK Marine and Coastal Access Act, it is a legal requirement that the applicant for the FED discharge permit, Magnox Limited, should undertake in conjunction with the licensing authority, the Environment Agency, the following:

- First, a Scoping Report which should establish the full nature of the Environmental Impact Assessment that would be required, and that this requirement would include the full range of issues to be assessed along with the provision of a full record of background environmental data against which any likely future impact could be measured and assessed e.g. historic data on water quality, historic data on the presence of heavy metals present in marine sediments and its associated biota (including oysters), and historic data on the presence of radionuclides in marine sediments and its associated biota (including oysters). Additionally, full data as to the nature, quantity and frequency of the future discharges (e.g. the precise nature of the radionuclides to be discharged, the quantity of each radionuclide to be discharged, and the frequency of each discharge, along with the location of these discharges and their likely interaction and absorption within the estuary – Note: discharges of radionuclides are often “reconcentrated” in marine sediments making them available in terms of exposure to marine species in a manner different from their impact at the moment or time directly following their discharge. The impact of the discharges on local oyster fishermen and consumers would also require assessment. Also, the heavy metals and nitrates in the discharge would each display a similar complex relationship in their interaction with the estuary and thus the MCZ, and would need to be identified in the Scoping Report as matters requiring research, documentation and evaluation.
- Second, an Environmental Impact Assessment (Environmental Statement) prepared by **the applicant** would need to be presented to the licensing authority, the Environment Agency, in order to enable the licensing authority to undertake its statutory legal duties in determining whether the permit should be issued or refused. This Environmental Impact Assessment (Environmental Statement) would need to conform fully with all the parameters and issues identified in the Scoping Report. This Environmental Impact Assessment prepared by the applicant would be entirely distinct and separate from, both in practical and legal terms, from any advice or assessment sought by the licensing authority (the Environment Agency) from Statutory Nature Conservation Bodies, such as Natural England. Advice from Statutory Nature Conservation Bodies (e.g. Natural England) would, in practical and legal terms, be merely **supplementary** to the Environmental Impact Assessment prepared and submitted by the applicant, and could not be regarded or used in any way other than supplementary by the applicant or the licensing authority in the process for the permit application’s determination.

Accordingly, we make the following observation and request:

Observation: A Scoping Report and an Environmental Impact Assessment – as required by the regulatory process detailed above – should exist for the assessment of the FED discharge permit application in respect of the Blackwater, Crouch, Roach and Colne Estuaries MCZ. Note: the designation of the MCZ predates the determination of the permit application.

Request: We request a copy, in full, of the Scoping Report and Environmental Impact Assessment – as required by the regulatory process – in respect of the FED discharge permit application and its impact on the Blackwater, Crouch, Roach and Colne Estuaries MCZ.

The Environment Agency has informed us in its letters of 17th January 2016 and in its letter of 9th March 2016 that the FED discharge permit which it issued to Magnox Limited in July 2014, and the expiry of which in June 2015 it has decided not to enforce thus allowing discharges to continue, is entirely legal.

To evidence this legality, we require and request the Scoping Report and Environmental Impact Assessment for the Blackwater, Crouch, Roach and Colne Estuaries Marine Conservation Zone in the full format as detailed above.

Yours sincerely

S. D. Eades
Marinet Limited.

Appendix 1: Marinet Limited to Environment Agency, dated 17th September 2015.

Appendix 2: Marinet Limited to Environment Agency, dated 5th October 2015.

Appendix 3: Environment Agency to Marinet Limited, dated 19th January 2016.

Appendix 4: Environment Agency to Marinet Limited, dated 9th March 2016.