

Habitats Directive: Form for recording likely significant effect (Stage 2)	 Environment Agency										
For consultation											
<p>Part A Permitting officer to complete this section in consultation with Conservation/Ecology section and Natural England/Countryside Council for Wales (CCW)</p> <table border="1"> <tr> <td>Type of permission/activity:</td> <td>Discharge Consents</td> </tr> <tr> <td>Environment Agency reference no:</td> <td>EPR/DP3127XB/A001</td> </tr> <tr> <td>National grid reference:</td> <td>TL9965009150</td> </tr> <tr> <td>Site description:</td> <td>Trade Effluent Discharge from Bradwell Site Magnox Ltd</td> </tr> <tr> <td>Brief description of proposal:</td> <td> <p>Bradwell Nuclear site is in the process of being decommissioned. During the current phase, most of the plant and buildings on the site are to be dismantled. The application is for the discharge of dissolved Fuel Element Debris into the Blackwater Estuary. The FED comprises the protruding parts of the outer casing which housed the nuclear fuel and which were consequently cut off to improve packing efficiency when the spent nuclear fuel was transported to Sellafield. The FED will be dissolved in a dilute nitric acid solution which will then be neutralised. Solids then precipitate out of the solution and effluent is filtered to remove suspended solids. After this adsorption and ion exchange techniques will be used to take out heavy metals and remove radioactive substances from the liquid. The batches of treated effluent will then be held in a tank for sampling and analysis prior to discharge. Each day a total of approximately 10-30m³ (for the purpose of the permit, 30m³/day max is assumed) of effluent will be produced. The effluent will be discharged over a 30minute period into a carrier flow of seawater during the first 90minutes of the ebb tide to ensure that the discharge exits the outfall tunnel and maximum dispersion out into the estuary. The carrier flow of seawater dilutes the effluent by about 50:1 prior to the discharge to the estuary. Two stages of assessment were carried out. In the first stage assessment before the effluent is discharged the listed metal levels in the effluent were compared to only 1% of the EQS to ensure that any additional metals from the discharge have an insignificant impact upon the water quality of the estuary. The second stage assessment looked at the final effluent once it had reached the estuary using the 10% no deterioration policy. The discharge is time limited. It will start on the 1st March 2012 and will be surrendered in 2014.</p> <p>Please note that the radioactive substances are separately regulated under a radioactive substances activity permit number EPR/ZP3492SQ</p> </td> </tr> </table>		Type of permission/activity:	Discharge Consents	Environment Agency reference no:	EPR/DP3127XB/A001	National grid reference:	TL9965009150	Site description:	Trade Effluent Discharge from Bradwell Site Magnox Ltd	Brief description of proposal:	<p>Bradwell Nuclear site is in the process of being decommissioned. During the current phase, most of the plant and buildings on the site are to be dismantled. The application is for the discharge of dissolved Fuel Element Debris into the Blackwater Estuary. The FED comprises the protruding parts of the outer casing which housed the nuclear fuel and which were consequently cut off to improve packing efficiency when the spent nuclear fuel was transported to Sellafield. The FED will be dissolved in a dilute nitric acid solution which will then be neutralised. Solids then precipitate out of the solution and effluent is filtered to remove suspended solids. After this adsorption and ion exchange techniques will be used to take out heavy metals and remove radioactive substances from the liquid. The batches of treated effluent will then be held in a tank for sampling and analysis prior to discharge. Each day a total of approximately 10-30m³ (for the purpose of the permit, 30m³/day max is assumed) of effluent will be produced. The effluent will be discharged over a 30minute period into a carrier flow of seawater during the first 90minutes of the ebb tide to ensure that the discharge exits the outfall tunnel and maximum dispersion out into the estuary. The carrier flow of seawater dilutes the effluent by about 50:1 prior to the discharge to the estuary. Two stages of assessment were carried out. In the first stage assessment before the effluent is discharged the listed metal levels in the effluent were compared to only 1% of the EQS to ensure that any additional metals from the discharge have an insignificant impact upon the water quality of the estuary. The second stage assessment looked at the final effluent once it had reached the estuary using the 10% no deterioration policy. The discharge is time limited. It will start on the 1st March 2012 and will be surrendered in 2014.</p> <p>Please note that the radioactive substances are separately regulated under a radioactive substances activity permit number EPR/ZP3492SQ</p>
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European site name(s) and status:	Blackwater Estuary (Mid-Essex Coast Phase 4) Ramsar Ramsar Blackwater Estuary (Mid-Essex Coast Phase 4) SPA SPA (or proposed SPA) Colne Estuary (Mid Essex Coast Phase 3) SPA SPA (or proposed SPA) Colne Estuary (Mid-Essex Coast Phase 2) Ramsar Ramsar Dengie (Mid-Essex Coast Phase 1) Ramsar Ramsar Dengie (Mid-Essex Coast Phase 3) SPA SPA (or proposed SPA) Essex Estuaries SAC SAC
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List of interest features (relevant to this type of permission):	<p>Blackwater Estuary (Mid-Essex Coast Phase 4) Ramsar 3.4 Birds of lowland wet grasslands (Black-tailed godwit (3.4), Brent goose (3.4), Dunlin (3.4), Grey plover (3.4) 3.6 Birds of lowland freshwaters and their margins (Waterfowl(>20, 000) (3.6) 3.8 Birds of coastal habitats (Black-tailed godwit (3.8), Brent goose (3.8), Dunlin (3.8), Grey plover (3.8), Waterfowl(>20, 000) (3.8) 3.9 Birds of estuarine habitats (Black-tailed godwit (3.9), Brent goose (3.9), Dunlin (3.9), Grey plover (3.9), Waterfowl(>20, 000) (3.9)) Blackwater Estuary (Mid-Essex Coast Phase 4) SPA 3.10 Birds of open sea and offshore rocks (Little tern (3.10) 3.4 Birds of lowland wet grasslands (Brent goose (3.4) 3.6 Birds of lowland freshwaters and their margins (Pochard (3.6) 3.8 Birds of coastal habitats (Pochard (3.8) 3.9 Birds of estuarine habitats (Black-tailed godwit (3.9), Dunlin (3.9), Grey plover (3.9), Hen harrier (3.9), Pochard (3.9), Ringed plover (3.9)) Colne Estuary (Mid Essex Coast Phase 3) SPA 3.8 Birds of coastal habitats (Brent goose (3.8), Hen harrier (3.8), Little tern (3.8), Pochard (3.8), Redshank (3.8), Ringed plover (3.8), Seabirds (>20, 000) (3.8) 3.9 Birds of estuarine habitats (Brent goose (3.9), Hen harrier (3.9), Little tern (3.9), Pochard (3.9), Redshank (3.9), Ringed plover (3.9), Seabirds (>20, 000) (3.9)) Colne Estuary (Mid-Essex Coast Phase 2) Ramsar 3.4 Birds of lowland wet grasslands (Brent goose (3.4), Redshank (3.4) 3.6 Birds of lowland freshwaters and their margins (Waterfowl(>20, 000) (3.6) 3.8 Birds of coastal habitats (Brent goose (3.8), Redshank (3.8), Waterfowl(>20, 000) (3.8) 3.9 Birds of estuarine habitats (Brent goose (3.9), Redshank (3.9), Waterfowl(>20, 000) (3.9)) Dengie (Mid-Essex Coast Phase 1) Ramsar 3.4 Birds of lowland wet grasslands (Brent goose (3.4), Grey plover (3.4), Knot (3.4) 3.6 Birds of lowland freshwaters and their margins (Waterfowl(>20, 000) (3.6) 3.8 Birds of coastal habitats (Brent goose (3.8), Grey plover (3.8), Knot (3.8), Waterfowl(>20, 000) (3.8) 3.9 Birds of estuarine habitats (Brent goose (3.9), Grey plover (3.9), Knot (3.9), Waterfowl(>20, 000) (3.9)) Dengie (Mid-Essex Coast Phase 3) SPA 3.4 Birds of lowland wet grasslands (Brent goose (3.4), Grey plover (3.4), Hen Harrier (3.4), Knot (3.4) 3.6 Birds of lowland freshwaters and their margins (Hen Harrier (3.6), Waterfowl(>20, 000) (3.6) 3.8 Birds of coastal habitats (Brent goose (3.8), Hen harrier (3.8), Knot (3.8) 3.9 Birds of estuarine habitats (Brent goose (3.9), Hen harrier (3.9), Knot (3.9)) Essex Estuaries SAC 1.10 Coastal Habitats (Mediterranean and thermo-Atlantic halophilous scrubs 1.12 Estuarine & intertidal habitats (Atlantic salt meadows, Estuaries, Mudflats and sandflats not covered by seawater at low tide, Salicornia and other annuals colonising mud and sand, Spartina swards 1.13 Submerged marine habitats (Sandbanks that are slightly covered by sea water all the time.)</p>
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Is this application necessary to manage the site for nature conservation?	No	
What potential hazards are likely to affect the interest features (relevant to this type of permission?)		
Sensitive interest feature:	Potential hazard:	Potential exposure to hazard and mechanism of effect/impact if known:

3.4 Birds of lowland wet grasslands (Black-tailed godwit (3.4), Brent goose (3.4), Dunlin (3.4), Grey plover (3.4))	Toxic contamination	Results from the modelling show that the level of metals in the discharge are below their EQS at the point of discharge or within 100m of the discharge point. Silver exceeds the 1% EQS target outside the 100m at between 4.8 and 7.8% of the AA EQS for spring and neap tides respectively and between 3 and 4.3% of the MAC EQS for spring and neap tides respectively. Our 10% no deterioration policy however is met and therefore proposed levels are acceptable.
3.6 Birds of lowland freshwaters and their margins (Waterfowl(>20, 000) (3.6))	Changes in thermal regime	The dissolution process is exothermic. The effluent thermal assessment concludes that there will be a 0.2°C temperature increase in summer and a 0.3°C increase in winter. The temperature effect is negligible and the discharge is short term and considered therefore not a hazard to the interest feature..
	Nutrient Enrichment	Long term modelling of inorganic nitrogen loading was carried out. The discharge represents 6 % of the existing inorganic loading to the Blackwater and Colne Estuary. The Blackwater Action Plan2009 concluded that the presence of algal mats as a result of excessive nutrients is not a hazard to the interest feature and given that the discharge is for a year nutrient loading will be short term and will not cause excessive algal mat growth. The interest feature will not be impacted upon.
	Salinity	No planned changes in salinity. Exposure to hazard is low.

	Toxic contamination	Results from the modelling show that the level of metals in the discharge are below their EQS at the point of discharge or within 100m of the discharge point. Silver exceeds the 1% EQS targets outside the 100m at between 4.8 and 7.8% of the AA EQS for spring and neap tides respectively and between 3 and 4.3% of the MAC EQS for spring and neap tides respectively. Our 10% no deterioration policy is met and therefore proposed levels are acceptable.
	Turbidity	During the treatment process solids will precipitate out of the solution and the effluent will be filtered. After neutralisation the effluent will pass through a media filter to provide efficient solids capture . No increase in suspended solids expected from the discharge, therefore no significant alteration in turbidity.
	pH	The dissolution liquors are acidic and require neutralising before discharge. A neutralising agent is metered into the dissolution vessels as a powder until a final pH of 6-8 is achieved.
3.8 Birds of coastal habitats (Black-tailed godwit (3.8), Brent goose (3.8), Dunlin (3.8), Grey plover (3.8), Waterfowl(>20,000) (3.8))	Changes in thermal regime	The dissolution process is exothermic. The effluent thermal assessment concludes that there will be a 0.2°C temperature increase in summer and a 0.3°C increase in winter. The temperature effect is negligible and the discharge is short term and considered therefore not a hazard to the interest feature.

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	Physical Damage	The rate of the discharge should not result in any physical damage due to controlled rate and nature of the discharge. Exposure to hazard likely to be very low
	Salinity	No planned changes in salinity. Exposure to hazard is low.
	Siltation	Due to the nature of the discharge there will be no significant increase in suspended solids. Exposure to hazard likely to be very low.

	Toxic contamination	Results from the modelling show that the level of metals in the discharge are below their EQS at the point of discharge or within 100m of the discharge point. Silver exceeds the 1% EQS targets outside the 100m at between 4.8 and 7.8% of the AA EQS for spring and neap tides respectively and between 3 and 4.3% of the MAC EQS for spring and neap tides respectively. Our 10% no deterioration policy however is met and therefore proposed levels are acceptable.
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	pH	The dissolution liquors are acidic and require neutralising before discharge. A neutralising agent is metered into the dissolution vessels as a powder until a final pH of 6-8 is achieved.
3.8 Birds of coastal habitats (Pochard (3.8))	Changes in thermal regime	The dissolution process is exothermic. The effluent thermal assessment concludes that there will be a 0.2°C temperature increase in summer and a 0.3°C increase in winter. The temperature effect is negligible and the discharge is short term and considered therefore not a hazard to the interest feature.

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3.9 Birds of estuarine habitats (Black-tailed godwit (3.9), Dunlin (3.9), Grey plover (3.9), Hen harrier (3.9), Pochard (3.9), Ringed plover (3.9))	Changes in thermal regime	The dissolution process is exothermic. The effluent thermal assessment concludes that there will be a 0.2°C temperature increase in summer and a 0.3°C increase in winter. The temperature effect is negligible and the discharge is short term and considered therefore not a hazard to the interest feature.
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	Physical Damage	The rate of the discharge should not result in any physical damage due to controlled rate and nature of the discharge. Exposure to hazard likely to be very low
	Salinity	No planned changes in salinity. Exposure to hazard is low.
	Siltation	Due to the nature of the discharge there will be no significant increase in suspended solids. Exposure to hazard likely to be very low.

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	Physical Damage	The rate of the discharge should not result in any physical damage due to controlled rate and nature of the discharge. Exposure to hazard likely to be very low
	Salinity	No planned changes in salinity. Exposure to hazard is low.
	Siltation	Due to the nature of the discharge there will be no significant increase in suspended solids. Exposure to hazard likely to be very low.

	Toxic contamination	Results from the modelling show that the level of metals in the discharge are below their EQS at the point of discharge or within 100m of the discharge point. Silver exceeds the 1% EQS targets outside the 100m at between 4.8 and 7.8% of the AA EQS for spring and neap tides respectively and between 3 and 4.3% of the MAC EQS for spring and neap tides respectively. Our 10% no deterioration policy however is met and therefore proposed levels are acceptable.
	Turbidity	During the treatment process solids will precipitate out of the solution and the effluent will be filtered. After neutralisation the effluent will pass through a media filter to provide efficient solids capture . No increase in suspended solids expected from the discharge, therefore no significant alteration in turbidity.
3.4 Birds of lowland wet grasslands (Brent goose (3.4), Grey plover (3.4), Knot (3.4))	Toxic contamination	Results from the modelling show that the level of metals in the discharge are below their EQS at the point of discharge or within 100m of the discharge point. Silver exceeds the 1% EQS targets outside the 100m at between 4.8 and 7.8% of the AA EQS for spring and neap tides respectively and between 3 and 4.3% of the MAC EQS for spring and neap tides respectively. Our 10% no deterioration policy however is met and therefore proposed levels are acceptable.
3.6 Birds of lowland freshwaters and their margins (Waterfowl(>20, 000) (3.6))	Changes in thermal regime	The dissolution process is exothermic. The effluent thermal assessment concludes that there will be a 0.2°C temperature increase in summer and a 0.3°C increase in winter. The temperature effect is negligible and the discharge is short term and considered therefore not a hazard to the interest feature.

	Nutrient Enrichment	Long term modelling of inorganic nitrogen loading was carried out. The discharge represents 6 % of the existing inorganic loading to the Blackwater and Colne Estuary. The Blackwater Action Plan2009 concluded that the presence of algal mats as a result of excessive nutrients is not a hazard to the interest feature and given that the discharge is for a year nutrient loading will be short term and will not cause excessive algal mat growth. The interest feature will not be impacted upon.
	Salinity	No planned changes in salinity. Exposure to hazard is low.
	Toxic contamination	Results from the modelling show that the level of metals in the discharge are below their EQS at the point of discharge or within 100m of the discharge point. Silver exceeds the 1% EQS targets outside the 100m at between 4.8 and 7.8% of the AA EQS for spring and neap tides respectively and between 3 and 4.3% of the MAC EQS for spring and neap tides respectively. Our 10% no deterioration policy however is met and therefore proposed levels are acceptable.
	Turbidity	During the treatment process solids will precipitate out of the solution and the effluent will be filtered. After neutralisation the effluent will pass through a media filter to provide efficient solids capture . No increase in suspended solids expected from the discharge, therefore no significant alteration in turbidity.
	pH	The dissolution liquors are acidic and require neutralising before discharge. A neutralising agent is metered into the dissolution vessels as a powder until a final pH of 6-8 is achieved.

3.8 Birds of coastal habitats (Brent goose (3.8), Grey plover (3.8), Knot (3.8), Waterfowl(>20, 000) (3.8))	Changes in thermal regime	The dissolution process is exothermic. The effluent thermal assessment concludes that there will be a 0.2°C temperature increase in summer and a 0.3°C increase in winter. The temperature effect is negligible and the discharge is short term and considered therefore not a hazard to the interest feature.
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	Salinity	No planned changes in salinity. Exposure to hazard is low.
	Toxic contamination	Results from the modelling show that the level of metals in the discharge are below their EQS at the point of discharge or within 100m of the discharge point. Silver exceeds the 1% EQS targets outside the 100m at between 4.8 and 7.8% of the AA EQS for spring and neap tides respectively and between 3 and 4.3% of the MAC EQS for spring and neap tides respectively. Our 10% no deterioration policy is met and therefore proposed levels are acceptable.

	Turbidity	During the treatment process solids will precipitate out of the solution and the effluent will be filtered. After neutralisation the effluent will pass through a media filter to provide efficient solids capture . No increase in suspended solids expected from the discharge, therefore no significant alteration in turbidity.
3.9 Birds of estuarine habitats (Brent goose (3.9), Grey plover (3.9), Knot (3.9), Waterfowl(>20, 000) (3.9))	Changes in thermal regime	The dissolution process is exothermic. The effluent thermal assessment concludes that there will be a 0.2°C temperature increase in summer and a 0.3°C increase in winter. The temperature effect is negligible and the discharge is short term and considered therefore not a hazard to the interest feature.
	Nutrient Enrichment	Long term modelling of inorganic nitrogen loading was carried out. The discharge represents 6 % of the existing inorganic loading to the Blackwater and Colne Estuary. The Blackwater Action Plan2009 concluded that the presence of algal mats as a result of excessive nutrients is not a hazard to the interest feature and given that the discharge is for a year nutrient loading will be short term and will not cause excessive algal mat growth. The interest feature will not be impacted upon.
	Physical Damage	The rate of the discharge should not result in any physical damage due to controlled rate and nature of the discharge. Exposure to hazard likely to be very low
	Salinity	No planned changes in salinity. Exposure to hazard is low.
	Siltation	Due to the nature of the discharge there will be no significant increase in suspended solids. Exposure to hazard likely to be very low.

	Toxic contamination	Results from the modelling show that the level of metals in the discharge are below their EQS at the point of discharge or within 100m of the discharge point. Silver exceeds the 1% EQS targets outside the 100m at between 4.8 and 7.8% of the AA EQS for spring and neap tides respectively and between 3 and 4.3% of the MAC EQS for spring and neap tides respectively. Our 10% no deterioration policy however is met and therefore proposed levels are acceptable.
	Turbidity	During the treatment process solids will precipitate out of the solution and the effluent will be filtered. After neutralisation the effluent will pass through a media filter to provide efficient solids capture . No increase in suspended solids expected from the discharge, therefore no significant alteration in turbidity.
3.4 Birds of lowland wet grasslands (Brent goose (3.4), Grey plover (3.4), Hen Harrier (3.4), Knot (3.4))	Toxic contamination	Results from the modelling show that the level of metals in the discharge are below their EQS at the point of discharge or within 100m of the discharge point. Silver exceeds the 1% EQS targets outside the 100m at between 4.8 and 7.8% of the AA EQS for spring and neap tides respectively and between 3 and 4.3% of the MAC EQS for spring and neap tides respectively. Our 10% no deterioration policy however is met and therefore proposed levels are acceptable.
3.6 Birds of lowland freshwaters and their margins (Hen Harrier (3.6), Waterfowl(>20, 000) (3.6))	Changes in thermal regime	The dissolution process is exothermic. The effluent thermal assessment concludes that there will be a 0.2°C temperature increase in summer and a 0.3°C increase in winter. The temperature effect is negligible and the discharge is short term and considered therefore not a hazard to the interest feature.

	Nutrient Enrichment	Long term modelling of inorganic nitrogen loading was carried out. The discharge represents 6 % of the existing inorganic loading to the Blackwater and Colne Estuary. The Blackwater Action Plan2009 concluded that the presence of algal mats as a result of excessive nutrients is not a hazard to the interest feature and given that the discharge is for a year nutrient loading will be short term and will not cause excessive algal mat growth. The interest feature will not be impacted upon.
	Salinity	No planned changes in salinity. Exposure to hazard is low.
	Toxic contamination	Results from the modelling show that the level of metals in the discharge are below their EQS at the point of discharge or within 100m of the discharge point. Silver exceeds the 1% EQS targets outside the 100m at between 4.8 and 7.8% of the AA EQS for spring and neap tides respectively and between 3 and 4.3% of the MAC EQS for spring and neap tides respectively. Our 10% no deterioration policy however is met and therefore proposed levels are acceptable.
	Turbidity	During the treatment process solids will precipitate out of the solution and the effluent will be filtered. After neutralisation the effluent will pass through a media filter to provide efficient solids capture . No increase in suspended solids expected from the discharge, therefore no significant alteration in turbidity.
	pH	The dissolution liquors are acidic and require neutralising before discharge. A neutralising agent is metered into the dissolution vessels as a powder until a final pH of 6-8 is achieved.

3.8 Birds of coastal habitats (Brent goose (3.8), Hen harrier (3.8), Knot (3.8))	Changes in thermal regime	The dissolution process is exothermic. The effluent thermal assessment concludes that there will be a 0.2°C temperature increase in summer and a 0.3°C increase in winter. The temperature effect is negligible and the discharge is short term and considered therefore not a hazard to the interest feature.
	Nutrient Enrichment	Long term modelling of inorganic nitrogen loading was carried out. The discharge represents 6 % of the existing inorganic loading to the Blackwater and Colne Estuary. The Blackwater Action Plan2009 concluded that the presence of algal mats as a result of excessive nutrients is not a hazard to the interest feature and given that the discharge is for a year nutrient loading will be short term and will not cause excessive algal mat growth. The interest feature will not be impacted upon.
	Salinity	No planned changes in salinity. Exposure to hazard is low.
	Toxic contamination	Results from the modelling show that the level of metals in the discharge are below their EQS at the point of discharge or within 100m of the discharge point. Silver exceeds the 1% EQS targets outside the 100m at between 4.8 and 7.8% of the AA EQS for spring and neap tides respectively and between 3 and 4.3% of the MAC EQS for spring and neap tides respectively. Our 10% no deterioration policy however is met and therefore proposed levels are acceptable.

	Turbidity	During the treatment process solids will precipitate out of the solution and the effluent will be filtered. After neutralisation the effluent will pass through a media filter to provide efficient solids capture . No increase in suspended solids expected from the discharge, therefore no significant alteration in turbidity.
3.9 Birds of estuarine habitats (Brent goose (3.9), Hen harrier (3.9), Knot (3.9))	Changes in thermal regime	The dissolution process is exothermic. The effluent thermal assessment concludes that there will be a 0.2°C temperature increase in summer and a 0.3°C increase in winter. The temperature effect is negligible and the discharge is short term and considered therefore not a hazard to the interest feature.
	Nutrient Enrichment	Long term modelling of inorganic nitrogen loading was carried out. The discharge represents 6 % of the existing inorganic loading to the Blackwater and Colne Estuary. The Blackwater Action Plan2009 concluded that the presence of algal mats as a result of excessive nutrients is not a hazard to the interest feature and given that the discharge is for a year nutrient loading will be short term and will not cause excessive algal mat growth. The interest feature will not be impacted upon.
	Physical Damage	The rate of the discharge should not result in any physical damage due to controlled rate and nature of the discharge. Exposure to hazard likely to be very low
	Salinity	No planned changes in salinity. Exposure to hazard is low.
	Siltation	Due to the nature of the discharge there will be no significant increase in suspended solids. Exposure to hazard likely to be very low.

	Toxic contamination	Results from the modelling show that the level of metals in the discharge are below their EQS at the point of discharge or within 100m of the discharge point. Silver exceeds the 1% EQS targets outside the 100m at between 4.8 and 7.8% of the AA EQS for spring and neap tides respectively and between 3 and 4.3% of the MAC EQS for spring and neap tides respectively. Our 10% no deterioration policy however is met and therefore proposed levels are acceptable.
	Turbidity	During the treatment process solids will precipitate out of the solution and the effluent will be filtered. After neutralisation the effluent will pass through a media filter to provide efficient solids capture . No increase in suspended solids expected from the discharge, therefore no significant alteration in turbidity.
1.10 Coastal Habitats (Mediterranean and thermo-Atlantic halophilous scrubs)	Nutrient Enrichment	Long term modelling of inorganic nitrogen loading was carried out. The discharge represents 6 % of the existing inorganic loading to the Blackwater and Colne Estuary. The Blackwater Action Plan2009 concluded that the presence of algal mats as a result of excessive nutrients is not a hazard to the interest feature and given that the discharge is for a year nutrient loading will be short term and will not cause excessive algal mat growth. The interest feature will not be impacted upon.
	Physical Damage	The rate of the discharge should not result in any physical damage due to controlled rate and nature of the discharge. Exposure to hazard likely to be very low
	Salinity	No planned changes in salinity. Exposure to hazard is low.

	Toxic contamination	Results from the modelling show that the level of metals in the discharge are below their EQS at the point of discharge or within 100m of the discharge point. Silver exceeds the 1% EQS targets outside the 100m at between 4.8 and 7.8% of the AA EQS for spring and neap tides respectively and between 3 and 4.3% of the MAC EQS for spring and neap tides respectively. Our 10% no deterioration policy is met and therefore proposed levels are acceptable.
	pH	The dissolution liquors are acidic and require neutralising before discharge. A neutralising agent is metered into the dissolution vessels as a powder until a final pH of 6-8 is achieved.
1.12 Estuarine & intertidal habitats (Atlantic salt meadows, Estuaries, Mudflats and sandflats not covered by seawater at low tide, Salicornia and other annuals colonising mud and sand, Spartina swards)	Changes in thermal regime	The dissolution process is exothermic. The effluent thermal assessment concludes that there will be a 0.2°C temperature increase in summer and a 0.3°C increase in winter. The temperature effect is negligible and the discharge is short term and considered therefore not a hazard to the interest feature.
	Nutrient Enrichment	Long term modelling of inorganic nitrogen loading was carried out. The discharge represents 6 % of the existing inorganic loading to the Blackwater and Colne Estuary. The Blackwater Action Plan2009 concluded that the presence of algal mats as a result of excessive nutrients is not a hazard to the interest feature and given that the discharge is for a year nutrient loading will be short term and will not cause excessive algal mat growth. The interest feature will not be impacted upon.

	Physical Damage	The rate of the discharge should not result in any physical damage due to controlled rate and nature of the discharge. Exposure to hazard likely to be very low
	Salinity	No planned changes in salinity. Exposure to hazard is low.
	Siltation	Due to the nature of the discharge there will be no significant increase in suspended solids. Exposure to hazard likely to be very low.
	Toxic contamination	Results from the modelling show that the level of metals in the discharge are below their EQS at the point of discharge or within 100m of the discharge point. Silver exceeds the 1% EQS targets outside the 100m at between 4.8 and 7.8% of the AA EQS for spring and neap tides respectively and between 3 and 4.3% of the MAC EQS for spring and neap tides respectively. Our 10% no deterioration policy however is met and therefore proposed levels are acceptable.
	Turbidity	During the treatment process solids will precipitate out of the solution and the effluent will be filtered. After neutralisation the effluent will pass through a media filter to provide efficient solids capture . No increase in suspended solids expected from the discharge, therefore no significant alteration in turbidity.
1.13 Submerged marine habitats (Sandbanks that are slightly covered by sea water all the time.)	Changes in thermal regime	The dissolution process is exothermic. The effluent thermal assessment concludes that there will be a 0.2°C temperature increase in summer and a 0.3°C increase in winter. The temperature effect is negligible and the discharge is short term and considered therefore not a hazard to the interest feature.

	Nutrient Enrichment	Long term modelling of inorganic nitrogen loading was carried out. The discharge represents 6 % of the existing inorganic loading to the Blackwater and Colne Estuary. The Blackwater Action Plan2009 concluded that the presence of algal mats as a result of excessive nutrients is not a hazard to the interest feature and given that the discharge is for a year nutrient loading will be short term and will not cause excessive algal mat growth. The interest feature will not be impacted upon.
	Salinity	No planned changes in salinity. Exposure to hazard is low.
	Siltation	Due to the nature of the discharge there will be no significant increase in suspended solids. Exposure to hazard likely to be very low.
	Toxic contamination	Results from the modelling show that the level of metals in the discharge are below their EQS at the point of discharge or within 100m of the discharge point. Silver exceeds the 1% EQS targets outside the 100m at between 4.8 and 7.8% of the AA EQS for spring and neap tides respectively and between 3 and 4.3% of the MAC EQS for spring and neap tides respectively. Our 10% no deterioration policy however is met and therefore proposed levels are acceptable.
	Turbidity	During the treatment process solids will precipitate out of the solution and the effluent will be filtered. After neutralisation the effluent will pass through a media filter to provide efficient solids capture . No increase in suspended solids expected from the discharge, therefore no significant alteration in turbidity.

Is the potential scale or magnitude of any effect likely to be significant?	
Alone?	No. The discharge is of a relatively small volume and will only discharge for 30minutes each day for a year. The effluent is diluted 50:1 with a carrier flow of seawater prior to discharge on the ebb tide. Results from the modelling show that all metals will be below their EQS at the point of discharge or within 100m of the discharge point, with the exception of silver (at 1% of the EQS) but it did meet the 10% 'no deterioration' policy.
In combination with other Environment Agency permissions, plans or projects?	No. Based on the 2008 BAP plan, algal mats caused by increased nutrients were the principal issue to take into consideration due to the effect the presence of these might have on the SPA features especially for feeding. The discharge from Bradwell will represent about 6% of the existing inorganic nitrogen loading to the Blackwater and Colne estuaries and therefore may increase the risk of algal mat growth. However, the concentrations of inorganic nitrogen are not increased by more than 10% over most of the estuary. Only short term exceedances of this target occur in the mid and outer estuary. Algal mats within the estuaries are only present during the summer and the majority of the SPA bird species feeding on the invertebrates are present predominantly over the winter with the exception of the Ringed Plover. The Ringed Plover is present during the summer but there was no evidence to suggest that Plover's were or were not affected by the presence of algal mats. The BAP also concluded that there was no specific evidence of the benthic invertebrate community (which the water fowl feed on) being compromised in either distribution or extent as a consequence of different algal mat cover or biomass. The discharge from Bradwell is short term and will only occur for one year. Dilution within the carrier pipe and after discharge into the estuary is very large. Nutrient loading is not considered to be significant in the context of increased risk of eutrophication long term.
In combination with permissions, plans or projects with competent authorities? ! Important Use 202_04_Habitats_Directive_ Standard letter for consulting about new PPP for consulting about new PPP.	As a result of this risk assessment, the Environment Agency can conclude that: i) No Likely Significant Effect - this application could act in combination with permissions and/or plans/projects of other competent authorities, consultation has been undertaken and our conclusion is as follows Given the nature of the discharge, the available dilution within the carrier pipe, further dilution within the Blackwater Estuary after discharge and the compliance with EQS limits, it is considered to have no likely significant effect in combination. Nutrient levels will increase for a short term but this is not considered to be significant in the context of increased risk of eutrophication long term.
Conclusion: Is there likely to be a significant effect 'alone and/or in combination' on a European site?	Overall it can be concluded that there will be no likely significant effect, alone or in combination from this discharge.
EA Officer:	Katrin Raynor
	Date: 27/10/11

Natural England/CCW comment on assessment:	Natural England has reviewed the information as submitted and is disappointed that the Outer Thames Marine SPA has not been considered as part of this assessment. Given that likely significant effects have been ruled out in closer proximities to the discharge point, we are confident that the further dissolution that will have occurred by the time the discharge reaches this site means that a conclusion of no likely significant effect will be valid here as well, however it is an omission in the document. Given the stated intention for discharge to occur for 30 minutes per day into an ebb tide we are satisfied that sufficient mixing, and therefore dilution is occurring to minimise any impacts upon the designated sites. We will expect to see baseline monitoring throughout the year period in which discharge is occurring to ensure dilutions are occurring as anticipated. To conclude, we are satisfied with the conclusion of 'no likely significant effect' subject to the inclusion of the above recommendations.	
Natural England/CCW Officer:	Catherine Whitehead	Date: 24/11/11
If there is a likely significant effect, an appropriate assessment will be required (see part B for suggested scope).		

Part B Suggested scope of the EA appropriate assessment:**Add details to following framework**

- Other competent authorities involved
- Characterise the site in relation to the qualifying features and their conservation objectives;
 - existing information
 - additional surveys
 - management/unauthorised impacts
- Detailed description of plan/project
- Assess each likely impact on the interest features;
 - compare with historical data
 - predict impacts
 - compare with impact from management/unauthorised activities
- Determine the extent to which each possible impact can be avoided.

Natural England/CCW comment on scope of EA appropriate assessment:**Natural England/CCW Officer:****Date:**

Site plan

