

Habitats Regulations Assessment

In accordance with Regulation 43(1) of the Conservation (Natural Habitats, etc) (Northern Ireland) 1995 (as amended), NIEA has considered whether the application or the application (not being directly connected with or necessary to the management of the site) is likely to have a significant effect on the Natura 2000 site.

As part of that consideration, NIEA has:-

- a) Taken into account the mitigation measures contained in each application, along with all legally enforceable obligations designed to avoid environmental effects; and
- b) Applied the precautionary approach set out in Commission Guidance: Managing Natura 2000 Sites and as required by the European Court of Justice in C 127/02 (Waddenzee).

Stage 1: Test of Likely Significance (Screening)

Screening Matrix

Name of Project or Plan:	Omagh Minerals Ltd – Underground mining
Planning reference:	K/2012/0373/F
File number:	CB19612
Name and location of Natura 2000 site:	River Foyle and Tributaries SAC
Natura 2000 site features:	<p>The River Foyle and Tributaries was declared an SAC due to the presence of the following features:</p> <ul style="list-style-type: none"> • Atlantic Salmon <i>Salmo salar</i> • Water courses of plain to montane levels with the <i>Ranunculus fluitans</i> and Callitricho-Batrachion vegetation • Otter <i>Lutra lutra</i>
<p>Description of the Project or Plan</p> <ul style="list-style-type: none"> • Size and scale; • Land-take; • Distance from Natura 2000 site or key features of the site; • Resource requirements (water abstraction etc); • Emission (disposal to land, water or air); • Excavation requirements; • Transportation requirements; • Duration of construction, operation, de-commissioning etc; • Other. 	<p><u>Size and scale:</u> The proposed mine will be within the confines of an existing mine and will be subterranean. The works will involve the formation of a 2.5 m diameter, 350 m deep vertical ventilation and emergency egress/access shaft from ground level. The shaft is to be lined with a grouted-in rolled steel tube lining welded in sections or by spraying fibre shotcrete. A spiral decline providing access to the horizontal drifts at 35 metre intervals (in depth) each being 675 m long. Access with an opening located at the base of the existing open pit at an elevation of around 120 m AOD. Tailings generated as a result of the proposed works will be around 3,161,800 m³.</p> <p><u>Land-take:</u> Land take from any Natura 2000 site will not occur.</p> <p><u>Distance from Natura 2000 site or key features of the site:</u> The application site is completely outside the boundary of the River Foyle and Tributaries SAC/ASSI. A number of watercourses arising either onsite or in the immediate vicinity and include the Kerr Burn, Creevan Burn, Botera Burn and Boyle's Burn. The Creevan Burn flows from the southern boundary of the site and is known to contain a</p>

	<p>population of Atlantic salmon. Habitat in the adjacent stretch of the river includes grade 3 nursery and areas of grade 3 spawning, as mapped by Loughs Agency. Grade 2 spawning habitat is located approximately 2.7 km downstream of the southern boundary of the site.</p> <p><u>Resource requirements (water abstraction etc)</u> Water will be sourced from the mains system.</p> <p><u>Emission (disposal to land, water or air)</u> Discharge from the site will be made from the polishing pond. The eastern settlement lagoon receives water from the open pit sump and the western lagoon receives water from the tailings management facility.</p> <p><u>Excavation requirements:</u> The proposal is for mining and will require significant excavation.</p> <p><u>Transportation requirements:</u> Transport will be via existing roads.</p> <p><u>Duration of construction, operation, decommissioning etc:</u> The majority of the works are expected to be completed within 5 years of commencement.</p> <p><u>Other:</u> Consent to discharge will be required under The Water (Northern Ireland) Order 1999 for discharge of surface water onsite.</p> <p>An abstraction and impoundment license is likely to be required.</p>
<p>Is the Project or Plan directly connected with or necessary to the management of the site (provide details)?</p> <p>If yes proceed no further.</p>	<p>No – the proposed development is for the extension of an existing mine and bears no relation to the management of any Natura 2000 site.</p>
<p>Describe the individual elements of the project (either alone or in combination with other plans or projects) likely to give rise to effects on the Natura 2000 site.</p>	<p>Potential effects as a result of the following:</p> <ol style="list-style-type: none"> 1. Effects on water table in the area leading to reduced basal flow within headwaters of the designated site. 2. Pollution due to emission containing suspended solids, metals, ore processing additives and fuel oils. 3. Sale and subsequent use of aggregate leading to acid leaching of rocks and contamination of watercourses.

N2K Feature affected (all features to be assessed at this stage):	Describe any likely direct, indirect effects to the N2K features arising as a result of: Reduction of habitat area; disturbance; Habitat or species fragmentation; Reduction in species density; Changes in key indicators of conservation value (e.g. water quality, climate change).	*Effect Significant/Not Significant? Explain why.
Atlantic salmon <i>Salmo salar</i>	Potential effects as a result of the following: <ol style="list-style-type: none"> 1. Effects on water table in the area leading to reduced basal flow within headwaters of the designated site. 2. Pollution due to emission containing suspended solids, metals, ore processing additives and fuel oils. 3. Sale and subsequent use of aggregate leading to acid leaching of rocks and contamination of watercourses. 	The following information was previously requested to inform a full assessment: <p>A fully independent geotechnical engineering report indicating the likely effectiveness of the proposed mitigation of groundwater inflow;</p> <p>Details relating to how the groundwater/basal stream interactions will be maintained upon closure, bearing in mind the proposed use of granular infill during closure/restoration works;</p> <p>The proportion of waste rock/tailings proposed for sale as aggregate.</p> <p>Following discussions with the applicant and receipt of further information in the form of an addendum to the original ES in addition to further responses, adequate information is now available to undertake an assessment.</p> <p>The existing mine currently extends below groundwater level by approximately 40 meters. Groundwater ingress to the mine workings is noted as 145m³/day. The proposed mine workings will extend further below the level of groundwater onsite potentially leading to increased groundwater ingress to the mine cavity. This is forecast to occur mainly at the interface between superficial deposits and the Dalradian bedrock. The applicant has acknowledged that dewatering associated with the proposal has the potential to result in a decrease in groundwater levels of around 1 metre around 1 km from the mine and up to 10 metres in the immediate vicinity of the mine void. The applicant has indicated that the existing drainage system is to be</p>

		<p>used onsite, including the existing ponds. Modelling/calculation of the required capacity of the ponds has not been provided, however NIEA Water Management Unit has not highlighted concern regarding this aspect of the development. As the relevant government expert in the area of water management CDP would defer to this judgement. Effects resulting from the 'cone of depression' around the working site are therefore not considered as likely to be significant.</p> <p>Mitigation for effects resulting from excessive dewatering of the site includes pressure grouting of large water inflows in the underground workings. The grouting is expected to result in a reduction in water pumped from the mine and therefore discharged to surface watercourses. Pumping capacity onsite is currently 1,400 m³/day with an additional 1,400 m³/day proposed. Groundwater inflow is currently at a rate of 1,290 m³/day. Reduction in discharge from the site is expected to help prevent potential surface flooding in local streams. Should groundwater pumping be necessary it will be pumped to the surface and treated prior to discharge. In addition, should discharge of large volumes of water to surface watercourses be required, the volume of water will be distributed between Botera Burn, Boyles Burn and Kerr Burn to prevent surface flooding, where practical to do so. Flow monitoring in the Kerr Burn and Creevan Burn with additional monitoring in the Botera and Boyle's Burn will be undertaken. This will identify the seasonality in flow rates and respective baseflows. Groundwater monitoring will be undertaken to identify any downward hydraulic gradient in the Dalradian bedrock and respective effect on stream flow rates.</p> <p>Any reduction in flow of watercourses feeding the designated site has the potential to affect Atlantic salmon. This is particularly relevant given the hydrological connection of the area with the River Foyle and Tributaries ASSI. The applicant has indicated that filling of fissures will be 'considered' using</p>
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		<p>grouting methodology if dry or there is minimal water ingress. Currently only 'large' inflows are earmarked for grouting. The applicant also indicates an intention to install lining to streams in the form of an impermeable membrane where water loss is occurring. This will take the form of clay or glacial till extracted from the mining area. In addition, the applicant proposes to backfill the site with extracted rock which will be blended with cement to reduce permeability. The finished surface will be back-filled with waste rock and tailings in a 1:1 ratio with a topsoil cover comprising tailings, sand and peat. Groundwater recharge rates are considered likely to be equal to or greater than the existing conditions. While NIEA Water Management Unit has not indicated this as a concern, it should however be pointed out that the applicant has stated only an intention to consider grouting of fissures. This effect must by necessity be deemed as likely to be significant.</p> <p>Discharge onsite is made from the polishing pond. The applicant has indicated that the proposed discharge rate will remain the same as at present upon undertaking the proposed works. This receives water from the eastern and western settlement lagoons and effluent has been shown to have elevated sulphate, BOD and alkalinity than receiving surface waters. The capacity of the discharge ponds assuming a halt to discharge onsite is 20,671 m³ – enough for 7 days of storage. Under normal circumstances the residence time is 3-4 days to encourage sediment settlement with a storage capacity of 27,545 m³. Discharge is made to the Kerr Burn which becomes the Creevan Burn downstream and ultimately flows into the Strule River. The site will utilise a number of additives during ore processing. These will include an activator – copper sulphate (releases sulphate in solution); a frother – Methyl Isobutyl Carbinoll (MIBC – degrades and increases BOD of receiving waterbody); a collector – potassium amyl xanthate (PAX) and depressant – sodium silicate,</p>
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		<p>both of which are within the alkaline pH range. While no tailings thickeners are currently used onsite, consent has been obtained from the regulator to use Flopam – an industry standard thickener used as a mitigation measure during ‘unusual’ events. The applicant proposes a number of mitigation measures to prevent polluting effects from the site. All plant and machinery will be regularly maintained and inspected on a daily basis. This will be undertaken either in a bunded area or offsite. Spill kits will be provided. The site will incorporate a traffic management plan which will include speed limits, maintenance plan and refuelling in a surfaced compound or offsite. Specific concerns regarding water quality have not been highlighted by the NIEA Water Management Unit response. There is a request/requirement to undertake a degree of surface water monitoring as part of the proposal. This is necessary as the character and quality of groundwater can change throughout the duration of the works onsite. NIEA Water Management Unit has requested the following measures should be implemented as conditions:</p> <p>Baseline water level data shall be collected for a 12-month period to derive control and compliance limits for groundwater levels. Data collection shall start as soon as possible from date of commencement and suggested control and compliance limits shall be presented for agreement with NIEA before any groundwater dewatering takes place on site.</p> <p>The control and compliance limits presented for groundwater chemistry in Table 4.3 shall be reviewed in light of additional data collected between the date of commencement and end of phase 2 (further operational stage – underground mining, see Section 1.4 of Cavanacaw monitoring plan of controlled waters) before phase 3 starts (post operational – groundwater recovery stage, see Section 1.4 of Cavanacaw monitoring plan of controlled waters). The review shall</p>
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		<p>be presented and agreed with NIEA.</p> <p>Reviews of the monitoring plan shall be carried out as per section 6.3 of the document.</p> <p>CDP does not consider these measures necessary for the protection of the features of the designated site given that they depend on a request for further information. This effect is however, considered likely to be significant.</p> <p>It is expected that there will be a total volume of 1,953,000 m³ of waste rock generated as a result of the mining works and most of the workings will be completed within 5 years of commencement. It is forecast that 50% of all tailings onsite will be used for backfilling underground cavities, 11% will be disposed of in the paste cells (which will contain a basal drainage system with gravity drainage ensuring compaction and stability – low permeability till or basal liners will be used in the paste cells), 14% of the tailings will be used in developing a soil cover for landscaping. Rock will be used for backfilling during restoration, export for aggregate, use in paste cell formation and profiling (tailings disposal) and mixing with granular peat to form an artificial soil for landscaping. A concern raised during the application process is that of acid rock deposition. This is of particular concern where aggregate is exported and used in construction – e.g. for road construction adjacent to rivers. The applicant has indicated that there is no potential net acid deposition from the rocks. In agreement with NIEA Water Management Unit, CDP is not in a position to query the results and must take them at face value. Further information provided by the applicant during November 2013 indicates that laboratory testing of materials from the mine showed elevated levels of Barium, nitrate and fluorine. Arsenic was also found to be above the soil guideline value (SGV). Testing has confirmed that the rock from the site is non-net acid generating. The tailings produced onsite are considered to be inert in nature. The acid generating potential of the waste</p>
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		rock onsite is assessed as neutral, with no net acid generating capacity. Effects from acid rock deposition are not considered as likely to be significant.
Otter <i>Lutra lutra</i>	As above.	As above.
Water courses of plain to montane levels with the <i>Ranunculus fluitans</i> and Callitricho-Batrachion vegetation	As above.	As above.

***Only mitigation measures designed within the application can be considered at this stage. Any conditions that NIEA would impose must be assessed through the appropriate assessment stage.**

Describe any potential effects on the Natura 2000 site as a whole in terms of: interference with the key relationships that define the structure or function of the site	Effect considered significant/non-significant: Finding of No significant effects Matrix
<p>Potential effects as a result of the following:</p> <ol style="list-style-type: none"> 1. Effects on water table in the area leading to reduced basal flow within headwaters of the designated site. 2. Pollution due to emission containing suspended solids, metals, ore processing additives and fuel oils. 3. Sale and subsequent use of aggregate leading to acid leaching of rocks and contamination of watercourses. 	<p>The following information was previously requested to inform a full assessment:</p> <p>A fully independent geotechnical engineering report indicating the likely effectiveness of the proposed mitigation of groundwater inflow;</p> <p>Details relating to how the groundwater/basal stream interactions will be maintained upon closure, bearing in mind the proposed use of granular infill during closure/restoration works;</p> <p>The proportion of waste rock/tailings proposed for sale as aggregate.</p> <p>Following discussions with the applicant and receipt of further information in the form of an addendum to the original ES in addition to further responses, adequate information is now available to undertake an assessment.</p> <p>The existing mine currently extends below groundwater level by approximately 40 meters. Groundwater ingress to the mine workings is noted as 145m³/day. The proposed mine workings will extend further below the level of groundwater onsite potentially leading to increased groundwater ingress to the mine cavity. This is forecast to occur mainly at the interface between superficial deposits and the Dalradian bedrock. The applicant has acknowledged that dewatering associated with the proposal has the potential to result in a decrease in groundwater levels of around 1 metre around 1 km from the mine and up to 10 metres in the immediate vicinity of the mine void. The applicant has indicated that the existing drainage system is to be used onsite, including the existing ponds. Modelling/calculation of the required capacity of the ponds has not been provided, however NIEA Water</p>

Management Unit has not highlighted concern regarding this aspect of the development. As the relevant government expert in the area of water management CDP would defer to this judgement. Effects resulting from the 'cone of depression' around the working site are therefore not considered as likely to be significant.

Mitigation for effects resulting from excessive dewatering of the site includes pressure grouting of large water inflows in the underground workings. The grouting is expected to result in a reduction in water pumped from the mine and therefore discharged to surface watercourses. Pumping capacity onsite is currently 1,400 m³/day with an additional 1,400 m³/day proposed. Groundwater inflow is currently at a rate of 1,290 m³/day. Reduction in discharge from the site is expected to help prevent potential surface flooding in local streams. Should groundwater pumping be necessary it will be pumped to the surface and treated prior to discharge. In addition, should discharge of large volumes of water to surface watercourses be required, the volume of water will be distributed between Botera Burn, Boyles Burn and Kerr Burn to prevent surface flooding, where practical to do so. Flow monitoring in the Kerr Burn and Creevan Burn with additional monitoring in the Botera and Boyle's Burn will be undertaken. This will identify the seasonality in flow rates and respective baseflows. Groundwater monitoring will be undertaken to identify any downward hydraulic gradient in the Dalradian bedrock and respective effect on stream flow rates.

Any reduction in flow of watercourses feeding the designated site has the potential to affect Atlantic salmon. This is particularly relevant given the hydrological connection of the area with the River Foyle and Tributaries ASSI. The applicant has indicated that filling of fissures will be 'considered' using grouting methodology if dry or there is minimal water ingress. Currently only 'large' inflows are earmarked for grouting. The applicant also indicates an intention to install lining to streams in the form of an impermeable membrane where water loss is occurring. This will take the form of clay or glacial till extracted from the mining area. In addition, the applicant proposes to backfill the site with extracted rock which will be blended with cement to reduce permeability. The finished surface will be back-filled with waste rock and tailings in a 1:1 ratio with a topsoil cover comprising tailings, sand and peat. Groundwater recharge rates are considered likely to be equal to or greater than the existing conditions. While NIEA Water Management Unit has not

indicated this as a concern, it should however be pointed out that the applicant has stated only an intention to consider grouting of fissures. This effect must by necessity be deemed as likely to be significant.

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Baseline water level data shall be collected for a 12-month period to derive control and compliance limits for groundwater levels. Data collection shall start as soon as possible from date of

commencement and suggested control and compliance limits shall be presented for agreement with NIEA before any groundwater dewatering takes place on site.

The control and compliance limits presented for groundwater chemistry in Table 4.3 shall be reviewed in light of additional data collected between the date of commencement and end of phase 2 (further operational stage – underground mining, see Section 1.4 of Cavanacaw monitoring plan of controlled waters) before phase 3 starts (post operational – groundwater recovery stage, see Section 1.4 of Cavanacaw monitoring plan of controlled waters). The review shall be presented and agreed with NIEA.

Reviews of the monitoring plan shall be carried out as per section 6.3 of the document.

CDP does not consider these measures necessary for the protection of the features of the designated site given that they depend on a request for further information. This effect is however, considered likely to be significant.

It is expected that there will be a total volume of 1,953,000 m³ of waste rock generated as a result of the mining works and most of the workings will be completed within 5 years of commencement. It is forecast that 50% of all tailings onsite will be used for backfilling underground cavities, 11% will be disposed of in the paste cells (which will contain a basal drainage system with gravity drainage ensuring compaction and stability – low permeability till or basal liners will be used in the paste cells), 14% of the tailings will be used in developing a soil cover for landscaping. Rock will be used for backfilling during restoration, export for aggregate, use in paste cell formation and profiling (tailings disposal) and mixing with granular peat to form an artificial soil for landscaping. A concern raised during the application process is that of acid rock deposition. This is of particular concern where aggregate is exported and used in construction – e.g. for road construction adjacent to rivers. The applicant has indicated that there is no potential net acid deposition from the rocks. In agreement with NIEA Water Management Unit, CDP is not in a position to query the results and must take them at face value. Further information provided by the applicant during November 2013 indicates that laboratory testing of materials from the mine showed elevated levels of Barium, nitrate and fluorine. Arsenic was also found to be above the soil guideline value (SGV). Testing has confirmed that the rock from the site is non-net acid generating.

	The tailings produced onsite are considered to be inert in nature. The acid generating potential of the waste rock onsite is assessed as neutral, with no net acid generating capacity. Effects from acid rock deposition are not considered as likely to be significant.
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Provide details of any other projects or plans that together with the project or plan being assessed could (directly or indirectly) affect the site.	Provide details of any likely in-combination effects and quantify their significance -
A number of applications for wind farm developments have previously been considered by NIEA. These include planning ref: K/2012/0384/F (internal ref: CB18687), planning ref: K/2011/0592/F (internal ref: CB18645), planning ref: K/2011/0237/F (internal ref: CB18317) and planning ref: K/2008/0334/F (internal ref: CB15893).	In-combination effects are considered unlikely to be significant given the non-significant likelihood of effects on water quality due to mitigation attached to each proposal.

Is the potential scale or magnitude of any effect likely to be significant?	Effects are considered likely to be significant.
Alone?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
In-combination with other projects of plans?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>

List of Agencies Consulted: Provide contact name and telephone or email address.	NIEA Water Management Unit.
Summary of response to consultation received.	See response on file.

Conclusion: Is the proposal likely to have a significant effect on an N2K site?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
IF IT HAS BEEN DETERMINED THAT THE PROPOSAL WILL NOT HAVE A SIGNIFICANT EFFECT THEN ASSESSMENT IS COMPLETED.	
IF ANY PART OF THE PROPOSAL IS LIKELY TO HAVE A SIGNIFICANT EFFECT AN APPROPRIATE ASSESSMENT WILL BE REQUIRED – STAGE 2 APPROPRIATE ASSESSMENT.	

Stage 2: Appropriate Assessment Report

Assessment of the Effects of the Project or Plan on the Integrity of the Site	
<p>Describe the elements of the project or plan (alone or in combination with other projects or plans) that are likely to give rise to significant effects on the site (from screening assessment)</p>	<p>Effects on water table in the area leading to reduced basal flow within headwaters of the designated site.</p>
<p>Set out the Conservation objectives of the site</p>	<p>Atlantic Salmon <i>Salmo salar</i></p> <ul style="list-style-type: none"> • Maintain and if possible expand existing population numbers and distribution (preferably through natural recruitment), and improve age structure of population. • Maintain and if possible enhance the extent and quality of suitable Salmon habitat - particularly the chemical and biological quality of the water and the condition of the river channel and substrate. <p>Water courses of plain to montane levels with the <i>Ranunculus fluitans</i> and <i>Callitriche-Batrachion</i> vegetation</p> <ul style="list-style-type: none"> • Maintain and if possible enhance extent and composition of community. • Improve water quality • Improve channel substrate quality by reducing siltation. • Maintain and if feasible enhance the river morphology <p>Otter <i>Lutra lutra</i></p> <ul style="list-style-type: none"> • Maintain and if possible increase population numbers and distribution. • Maintain the extent and quality of suitable Otter habitat, in particular the chemical and biological quality of the water and all associated wetland habitats.
<p>Describe how the project or plan will affect key species, key habitats and the integrity of the site (determined by structure and function and conservation objectives). Acknowledge uncertainties and any gaps in information.</p>	<p>Mitigation for effects resulting from excessive dewatering of the site includes pressure grouting of large water inflows in the underground workings. The grouting is expected to result in a reduction in water pumped from the mine and therefore discharged to surface watercourses. Pumping capacity onsite is currently 1,400 m³/day with an additional 1,400 m³/day proposed. Groundwater inflow is currently at a rate of 1,290 m³/day. Reduction in discharge from the site is expected to help prevent potential surface flooding in local streams. Should groundwater pumping be necessary it will be pumped to the surface and treated prior to discharge. In addition, should discharge of large volumes of water to surface watercourses be required, the volume of water will be distributed between Botera Burn, Boyles Burn and Kerr Burn to prevent surface flooding, where practical to do so. Flow monitoring in the Kerr Burn and Creevan Burn with additional monitoring in the Botera and Boyle's Burn will be undertaken. This will identify the seasonality in flow rates and respective baseflows. Groundwater monitoring will be undertaken to</p>

identify any downward hydraulic gradient in the Dalradian bedrock and respective effect on stream flow rates.

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	<p>response. There is a request/requirement to undertake a degree of surface water monitoring as part of the proposal. This is necessary as the character and quality of groundwater can change throughout the duration of the works onsite. NIEA Water Management Unit has requested the following measures should be implemented as conditions:</p> <p>Baseline water level data shall be collected for a 12-month period to derive control and compliance limits for groundwater levels. Data collection shall start as soon as possible from date of commencement and suggested control and compliance limits shall be presented for agreement with NIEA before any groundwater dewatering takes place on site.</p> <p>The control and compliance limits presented for groundwater chemistry in Table 4.3 shall be reviewed in light of additional data collected between the date of commencement and end of phase 2 (further operational stage – underground mining, see Section 1.4 of Cavanacaw monitoring plan of controlled waters) before phase 3 starts (post operational – groundwater recovery stage, see Section 1.4 of Cavanacaw monitoring plan of controlled waters). The review shall be presented and agreed with NIEA.</p> <p>Reviews of the monitoring plan shall be carried out as per section 6.3 of the document.</p> <p>CDP does not consider these measures necessary for the protection of the features of the designated site given that they depend on a request for further information. This effect is however, considered likely to be significant.</p>
<p>Describe what mitigation measures are to be introduced to avoid or reduce the adverse effects on the integrity of the site. Acknowledge uncertainties and any gaps in information</p>	<p>By way of mitigation, the following conditions are required:</p> <p>All visible fissures, including those initially dry and those with minimal water egress, shall be sealed with the most appropriate means to prevent water ingress to the mine cavity.</p> <p>Any lining of watercourses to prevent water loss shall be undertaken using natural materials of local provenance and shall be confined to the area within the planning boundary. In-river works shall be undertaken outside the period 1 November – 31 March.</p> <p>No less than 6 months prior to cessation of works onsite the applicant shall submit a detailed decommissioning strategy for the site. The strategy shall demonstrate that hydraulic continuity of all watercourses onsite shall be maintained in perpetuity.</p>

Appropriate Assessment: Mitigation Measures

List measures to be introduced	Explain how the measures will avoid the adverse effects on the integrity of the site.	Explain how the measures will reduce the adverse effects on the integrity of the site.	Provide evidence of how they will be implemented and by whom.
<p>All visible fissures, including those initially dry and those with minimal water egress, shall be sealed with the most appropriate means to prevent water ingress to the mine cavity.</p>	<p>The main risk in terms of reduction in flow of watercourses onsite is likely to be from interrupted groundwater flow and associated recharge rates feeding each stream. This measure will ensure that all fissures and cracks will be filled with the most appropriate method to prevent groundwater ingress to the mine cavity.</p>	<p>Groundwater flow will be maintained in the area. The mine has already penetrated subsurface layers below groundwater and is expected to impact deeper lying groundwater associated with Dalradian substrate.</p>	<p>Implemented as a condition of planning permission.</p>
<p>Any lining of watercourses to prevent water loss shall be undertaken using natural materials of local provenance and shall be confined to the area within the planning boundary. In-river works shall be undertaken outside the period 1 November – 31 March.</p>	<p>Habitat mapping of the area notes spawning areas downstream of the boundary of the site (approx 700 meters). Planning permission refers only to the areas within the red line boundary, thereby limiting the potential for effects on spawning areas (i.e. through removal/covering of gravels). Effects could occur through release of suspended solids if works are undertaken at inappropriate times – between November and March for spawning and between mid-April and June for smolts (young fish migrating to sea). In-river works being undertaken outside this period will remove the receptors for such effects.</p>	<p>The source-pathway-receptor linkage will be broken as the works will be undertaken outside the most susceptible periods for effects.</p>	<p>Implemented as a condition of planning permission.</p>

<p>No less than 6 months prior to cessation of works onsite the applicant shall submit a detailed decommissioning strategy for the site. The strategy shall demonstrate that hydraulic continuity of all watercourses onsite shall be maintained in perpetuity.</p>	<p>The applicant has indicated that cement based materials will be used to backfill the site and maintain long term hydraulic continuity in the area. The premise is desirable, however it is unclear to what degree materials will allow this. This measure will ensure that only suitable materials will be used.</p>	<p>This will ensure the long term hydraulic conditions of the area, and the associated watercourses feeding into the designated site, are maintained.</p>	<p>Implemented as a condition of planning permission.</p>
<p>All visible fissures, including those initially dry and those with minimal water egress, shall be sealed with the most appropriate means to prevent water ingress to the mine cavity.</p>	<p>During meetings with the applicant and DOE Planning it was indicated that grouting is the industry standard and is improving all the time. The technology behind this method allows quick drying materials to be used. The applicant indicated in the ES Addendum that only those fissures with significant water ingress would be grouted. This leaves other fissures that could potentially become 'active' in terms of water ingress as mining progresses, thereby affecting watercourse flow. This mechanism will ensure that industry standard methods are employed to prevent this.</p>	<p>During the works.</p>	<p>Implemented by planning legislation.</p>

<p>Any lining of watercourses to prevent water loss shall be undertaken using natural materials of local provenance and shall be confined to the area within the planning boundary. In-river works shall be undertaken outside the period 1 November – 31 March.</p>	<p>The applicant has indicated that a cone of depression is possible for up to 1 km from the site. The worst affected areas (due to altered hydraulic gradient) will be within the boundary of the application site. Flows within watercourses could potentially be altered. The mitigation is designed to isolate the watercourses from the groundwater pressure and maintain flow. This method is desirable, however timing has not been provided. The timing is designed to remove the works to a period outside the most sensitive times, thereby breaking the linkage.</p>	<p>During the works.</p>	<p>Implemented by planning legislation.</p>
<p>No less than 6 months prior to cessation of works onsite the applicant shall submit a detailed decommissioning strategy for the site. The strategy shall demonstrate that hydraulic continuity of all watercourses onsite shall be maintained in perpetuity.</p>	<p>The applicant has indicated that a cement based material will be utilised, mixing materials from the mine workings to ensure the area is sealed appropriately.</p>	<p>Upon mine closure.</p>	<p>Implemented by planning legislation.</p>

Data collected to carry out the assessment

<p>Who carried out the assessment?</p>	<p>CDP</p>
<p>Sources of data</p>	<p>Provided during application process, meetings with applicant and further information provided.</p>
<p>Level of assessment completed</p>	<p>Stage 2 - Appropriate Assessment</p>
<p>Where can the full results of the assessment be accessed and viewed?</p>	<p>Conservation Designations & Protection, Northern Ireland Environment Agency, 2nd Floor Klondyke Building, Cromac Avenue, Belfast BT7 2JA</p>
<p>Response to consultation</p>	<p>Provided the above mitigation is included in any decision notice, there will be no adverse effects on the integrity of the River Foyle and Tributaries SAC.</p>