



**The Water Environment (Controlled Activities) (Scotland) Regulations
2011**

Licence Application Form D

Surface Water Abstractions and Impoundments

Section 1: Activities applied for

*Please use Application [form K](#) for the construction of deep boreholes >200m
 *Please use Application [form D1](#) for Groundwater Abstractions and Construction of boreholes <200m deep

Please indicate how many activities you are applying for under each category.	No:	National Grid Reference (10 character) of abstraction or impoundment	Name of source waterbody or impounded waters	Source type <ul style="list-style-type: none"> •Watercourse •Reservoir •Loch •Spring •Wetlands
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1.1 Surface Water Abstractions:

Registration	An abstraction of more than 10m ³ /day and less than or equal to 50m ³ /day		Attach separate Application forms for registration to this Application		
Simple Licence	An abstraction of more than 50m ³ /day and less than or equal to 2000m ³ /day		-		
Complex Licence	An abstraction of more than 2000m ³ /day	2	NH 05847 03071	Loch Fearna (Upper reservoir)	Loch
			NH 05971 01743	Loch Quoich (Lower Reservoir)	Loch

1.2 Mobile abstraction units used to abstract water under this Application

Mobile Plant	Additional mobile unit abstraction location(s)		-		
	If applicable, please state how many mobile abstraction units are to be used to				

	abstract water applied for under this licence				
1.3 Impoundments:					
Simple Licence	Existing passive weir		- -		
	Existing managed weir less than or equal to 1 metre high		- -		
	Existing raised loch less than or equal to 1 metre high		- -		
	Construction of all new impoundments less than or equal to 1m high that do not affect the passage of salmon or sea trout.		- -		
	Removal or modification of an impoundment authorised under GBR1		- -		
	Removal or modification of a simple licence level impoundment		- -		
Complex Licence	Construction and operation of all		1	Fearna Dam NH 05844 02872	Loch Fearna

	<p>other impoundments</p>		<p>2</p>	<p>Coire Dubh Dam NH 05070 03838</p>	
	<p>Removal or modification of a complex licence level impoundment</p>		<p>- -</p>		

Section 2: Reasonable need

2.1 Please indicate your main category or categories of use (if appropriate):

Agricultural irrigation		Please continue to section 2.2
Agricultural water supply		Please continue to section 2.2
Golf Course irrigation		Please continue to section 2.2
Industry (other than hydropower)		Please continue to section 2.2
Private Water Supply		Please continue to section 2.2 and complete Table A
Public Water Supply		Please continue to section 2.2 and complete Table B
Other (please specify)	Pumped Storage Hydropower	Please continue to section 2.2 and complete Table C

2.2 All users

2.2.1 Total Quantities to be authorised Please give the total volume of usage in cubic metres to be authorised from all sources in the periods indicated	Hour (m ³) 2,160,000 (based on maximum abstraction of up to 600 m ³ /s)	Day (m ³) 45,000,000m ³ (maximum water stored in upper reservoir Loch Fearna)	Year (m ³) 55,000,000m ³ (water in Loch Fearna and Quoich is recycled daily / weekly)
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<p>2.2.2 Please set out here any other information, e.g. supporting calculations, operational practices or other reasons, in addition to that which you include in the following tables, to show how you have arrived at the quantities set out above that you are seeking to have authorised. (Please continue on a separate sheet were necessary)</p>	<ul style="list-style-type: none"> • A new pumped storage hydro scheme is being proposed, which would transfer water between two impounded reservoirs – one new upper reservoir and an existing lower reservoir. • Both reservoirs would lie within the catchment of Loch Quoich, with no water transferring outwith this catchment • In pumping mode, during periods of excess renewable generation where supply outweighs demand on the national electricity network, electricity from would be imported to pump water from Loch Quoich up to Loch Fearna and be stored. During periods of demand exceeding supply, water would be released from Loch Fearna to the lower reservoir passing through the turbines and generating the electricity needed for the national grid. • The lower reservoir would use the existing hydropower reservoir, Loch Quoich and require no modifications to the existing impoundment structures. The Upper reservoir would be formed by creating two new dam structures at i) Loch Fearna and ii) the adjacent Coire Dubh. This would create an impoundment of up to 45Mm³, with minium operating level at +540mAOD and maximum operating level of +600mAOD. • Loch Quoich stores in the region of 360Mm³ and operates over a 26m vertical range. Fearna PSH has reached agreement with the operator of Loch Quoich (SSE) that Fearna would operate within a 15m band of the 26m range, with a 5m buffer at the upper end and a 6m buffer at the lower end. If the levels of Quoich ie outwith the agreed 15m band, Fearna PSH would be constrained from operating. • The Fearna PSH project would therefore have no impact
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on the discharge or spill regime of Loch Quoich. Compliance with the existing CAR Licence CAR/L/1011471 would also be maintained at all times.

- The upper reservoir would store in the region of 45Mm³, thereby providing approximately 20 hours of generation at 600m³/s.
- The maximum export capacity of the pumped storage hydro would be up to 1800MW, with maximum generating flow of up to 600m³/s which would transfer from Loch Fearna to Loch Quoich. The maximum pumping design flow would be lower, in the region of 450m³/s.
- During pumping mode, the maximum design flow from Loch Quoich to Loch Fearna would be approximately 450m³/s. Therefore it is likely that the maximum daily pumping would be 24hrs at 450m³/s and hence maximum daily abstraction from Loch Quoich would be 38,880,000Mm³.
- To fill the upper reservoir from Loch Quoich would cause a level fluctuation in Loch Quoich of approximately 2.5 to 3.5m over a period of 25 hours. The exact fluctuation would be dependent on the starting level in Loch Quoich, as the loch footprint increases as the level increases.
- An emptying of the whole upper reservoir into Loch Quoich would increase the level by the same amount, however this would occur over approximately 20 hours.
- The pumping/generating cycle times and hence abstraction/impoundment flows would depend on the requirements of the national grid and therefore the PSH

operation is likely to comprise a mix of part cycles (i.e. switching between pumping and generation over shorter periods of renewable intermittency and/or running less than full MW capacity) and full cycles, requiring full emptying/filling of the upper reservoir.

- At the upper reservoir it is proposed to pass compensation flows through the new dams to the two watercourses affected by the construction of the upper reservoir; i) the Allt Fearná and ii) an unnamed tributary of the All a' Mheil burn in Coire Dubh. Compensation flows of Q95 are proposed.

- Additional flows may be released through the Coire Dubh dam to supplement the compensation flows, to provide generation to the Allt a' Mheil Hydro Scheme, which operates under CAR Licence CAR/L/1090786

- A spillway would be provided on the Coire Dubh dam to accommodate extreme rainfall flood conditions up to and including PMF under a conservative non operational condition. This spillway would be very similar in form and scale to the spillway on the existing Quoich Dam.

The construction access for the site would be taken via the 'Southern Access Route' which comprises approximately 24km of existing forest roads which would be upgraded, with a new section of road of 4km required. No watercourses are proposed to be modified by the construction access, however some upgrade works to culverts and bridge structures are proposed, as well as two new bridge crossings over the River Kingie and Gearr Garry.

For more information on all the points above please refer to **Chapter 3 Scheme Description** of the **Fearná PSH CAR Licence Application Report**

<p>2.2.3 Please set out here what steps you have taken or intend to introduce to ensure efficient use of water (Please continue on a separate sheet if necessary)</p>	<p>Pumped storage hydro (PSH) is a very efficient use of stored water, as it can be re-cycled between the lower and upper reservoirs with efficiencies of around 90% in both pumping and generating modes, providing a round trip efficiency in the order of 80% to store national scale electrical power, with no loss of water from the system, except for evaporation from the reservoirs, a naturally occurring factor.</p> <p>The Fearna PSH project would use an existing reservoir, which would be used to fill the scheme once constructed. It therefore requires no additional water not already stored within the Quoich catchment to commence operations.</p>
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Table A – Private Water Supplies – including hospitals, schools, prisons, hotels, industrial premises etc.		
A.1 Please indicate nature of supply (i.e. domestic, agriculture, hospital etc.). Include all components.	There are no private water supplies within the site boundary.	
A.2 Please give details of the numbers of people being supplied and details of any residential capacity etc.	No of domestic properties served	N/A
	Total population supplied	N/A
	For hospitals, schools, prisons, hotels etc. please provide the maximum number of person-days occupancy provided for in one year.	N/A
	Other (please specify)	

Table B – Public Water Supplies		
B.1 Please indicate the nature of the abstraction (direct into treatment and supply, raw water storage, river basin transfer etc.)	N/A	
B.2 Please give details of the supply.	B.2.1 Water resource zone to be supplied	N/A

	B.2.2 Total population supplied	N/A
	B.2.3 Components of supply (percentage domestic, industrial, agricultural etc.)	N/A
<p>B.3 Please give details of relevant water resources planning and any other documents relating to this scheme. If the scheme departs from these plans, please give the reasons for this.</p> <p>Please include details of any other current proposals which could have a bearing on the outcome of this Application.</p>	N/A	

Table C – Other	
C.1 Please give details of the water use, purpose of abstraction etc.	<p>The purpose of the abstraction is for Pumped Storage Hydropower</p> <p>The average of the minimum and maximum head of the project is 385 metres (mean)</p> <p>The maximum design flow is 600m³/s</p>

<p>C.2 Please give as much detail as possible of the operational regime intended, water storage and conservation provision etc.</p>	<p>As discussed above the operational regime would be as follows:</p> <p>During periods of insufficient renewable power being produced and/or high demand on the national electricity grid network, water would flow from Loch Fearna down to the Loch Quiuch reservoir passing through the turbines and generating the electricity needed for the national grid.</p> <p>In pumping mode, during periods of excess renewable power on the national electricity grid network, this power would be directed to the pumps and the water would flow between the Loch Quoich reservoir and the Loch Fearna reservoir.</p> <p>The active volume of stored water in Loch Fearna would be approximately 45Mm³.</p> <p>The total active storage in Loch Quoich is around eight times that of Loch Fearna, at approximately 362Mm³. The storage potential of the Fearna PSH is scheme is therefore governed by the capacity of the upper reservoir.</p> <p>Please refer to Chapter 4 Water Management of the Fearna PSH CAR Licence Application Report.</p>
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Section 3: Applications Including Abstraction Activities

Complete this table for all activities you are applying for. If you are applying for a licence which includes more than one abstraction activity please copy, complete and reference a separate table for each licensable activity.

No. of Section 3 tables completed:	2	Table ref: (e.g.1 of 2, 2 of 2)	1 of 2 (lower control works)
Abstraction details:			
3.1 Abstraction Point No/Ref/Name (This should correspond to a reference on the site map in 2.4 of Form A):	Lower Control Works		
3.2 Name of watercourse or loch (if applicable):	Loch Quoich		

Section 3: Applications Including Abstraction Activities

3.3 National Grid Reference of abstraction. Specify a single point or for mobile abstraction units specify the upstream (u/s) and downstream (d/s) limits.	Single point NH 05971 01743	
3.4 Please provide a full description of your proposals to construct or alter any surface water intake structure, including plans and cross sections.	Document name / reference:	Please refer to the Scheme Description Chapter (3) of the Fearna PSH CAR Licence Application Report . Please refer to the following drawings of the Lower Control Works: FEA/FC4/700, 705 & 436
3.5 Please provide method statements describing the method and controls of construction or alteration for any surface water intake structure	Document name / reference:	Please refer to the Outline CEMD + Upper Reservoir PPP which are included as appendices in the Fearna PSH CAR Licence Application Report
3.6 Do you consider this abstraction would qualify as an environmental service?	<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes, provide details on separate sheet	
	Document name / reference:	Yes. Please refer to Chapter 1 Need for Project of the Fearna PSH CAR Licence Application Report . Which sets out the project benefits/need for project and the benefit to

Section 3: Applications Including Abstraction Activities			
		achieving net zero the project would bring.	
3.7 Do you consider this abstraction would qualify for abated charges?	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes, provide details on separate sheet		
	Document name/ reference:		
3.8 What is the maximum proposed rate or volume of abstraction for this abstraction activity? Conversion: 1m ³ = 1000 litres 1m ³ = 220 gallons 1m ³ /hour = 0.2778 litres/sec	litres/ second:	cubic metres/ day:	cubic metres/ year:
	600,000	45Mm ³	N/A (Active storage is recycled between the two reservoirs)
3.9 Describe how you propose to monitor the volume of water abstracted?	Document name/ reference:		Please refer to Chapter 4 Water Management of the Fearna PSH CAR Licence Application Report.
3.10 Do you intend to abstract every year or only intermittently? (Intermittent means that it is predictable in which years you will abstract. If you are applying to have the capability to abstract in any year, select annual)	<input checked="" type="checkbox"/> ANNUALLY <input type="checkbox"/> INTERMITTENTLY, if so, please provide further details on separate sheet		
	Document name/ reference:	Please refer to Chapter 4 Water Management of the Fearna PSH CAR Licence Application Report.	
3.11 Please tick during which months the abstraction takes place and, if available, indicate			

Section 3: Applications Including Abstraction Activities

abstraction volumes (m³/month).

Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
X	X	X	X	X	X	X	X	X	X	X	X

<p>3.12 Is any abstracted water to be discharged back into the water environment? If yes, enter the National Grid Reference (NGR) of the discharge point(s).</p> <p>Please note this discharge may require authorisation as a point source discharge See the CAR Practical Guide for further details.</p>	<p><input type="checkbox"/> No <input checked="" type="checkbox"/> Yes</p> <p>NGR: 1) NH 05847, 03071</p> <p>All water abstracted at the lower control works would be discharged at the upper control works and vice versa.</p>	
<p>3.13 Where you have selected 'yes' above specify the water returned as a percentage of take at the above grid reference(s)</p>	<p>NGR: 1) NH 05847, 03071 100% of abstracted water returned</p>	
<p>3.14 If appropriate, provide information on the proposed operating regime (e.g. abstraction limits, hands off flow etc)</p>	<p>Document name/ reference:</p>	<p>Please refer to Chapter 4 Water Management of the Fearna PSH CAR Licence Application Report.</p>
<p>3.15 Where a management agreement is in place which influences the abstraction, please provide details.</p>	<p>Document name/ reference:</p>	<p>N/A</p>
<p>3.16 If appropriate, provide information on any inter-relationships</p>	<p>Document name/ reference:</p>	<p>Please refer to Chapter 4 Water Management of the</p>

between abstraction points applied for as part of this Application (see section 3 of the guidance)	reference:	Fearna PSH CAR Licence Application Report.
3.17 Please provide for mobile spray irrigation abstractions and water transfers a method statement detailing how each activity is to be carried out to prevent the spread of invasive non-native species ¹ .	Document name/ reference:	Please refer to Chapter 4 Water Management of the Fearna PSH CAR Licence Application Report.

Section 3: Applications Including Abstraction Activities

Complete this table for all activities you are applying for. If you are applying for a licence which includes more than one abstraction activity please copy, complete and reference a separate table for each licensable activity.

No. of Section 3 tables completed:	2	Table ref: (e.g.1 of 2, 2 of 2)	2 of 2 (upper control works)
Abstraction details:			
3.1 Abstraction Point No/Ref/Name (This should correspond to a reference on the site map in 2.4 of Form A):	Upper Control Works		
3.2 Name of watercourse or loch (if applicable):	Loch Fearna		
3.3 National Grid Reference of abstraction. Specify a single point or for mobile abstraction units specify the upstream (u/s) and downstream (d/s) limits.	Single point NH 05847 03071		
3.4 Please provide a full	Document name /	Please refer to the	

¹ For information see the check, clean, dry procedure as outlined in the GB non-native species secretariat website (<http://www.nonnativespecies.org/checkcleandry/biosecurity-for-everyone.cfm>) and guidance set out in GPP5 (http://www.netregs.org.uk/media/1418/gpp-5-works-and-maintenance-in-or-near-water.pdf?utm_source=website&utm_medium=social&utm_campaign=GPP5%2027112017)
v7.3 Sept 2022

Section 3: Applications Including Abstraction Activities			
description of your proposals to construct or alter any surface water intake structure, including plans and cross sections.	reference:	Scheme Description Chapter (three) of the Fearna PSH CAR Licence Application Report. Please refer to the following drawings of the Upper Control Works: FEA/FC4/600	
3.5 Please provide method statements describing the method and controls of construction or alteration for any surface water intake structure	Document name / reference:	Please refer to the Outline CEMD + PPP which are included as appendices in the Fearna PSH CAR Licence Application Report	
3.6 Do you consider this abstraction would qualify as an environmental service?	<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes, provide details on separate sheet		
	Document name/ reference:	Please refer to Chapter 1 Need for Project of the Fearna PSH CAR Licence Application Report. Which sets out the project benefits/need for project and the benefit to achieving net zero the project would bring.	
3.7 Do you consider this abstraction would qualify for abated charges?	<input checked="" type="checkbox"/> No <input type="checkbox"/> Yes, provide details on separate sheet		
	Document name/ reference:		
3.8 What is the maximum proposed	litres/	cubic metres/	cubic metres/

Section 3: Applications Including Abstraction Activities

rate or volume of abstraction for this abstraction activity? Conversion: 1m ³ = 1000 litres 1m ³ = 220 gallons 1m ³ /hour = 0.2778 litres/sec	second: 600,000	day: 45Mm ³	year: N/A (Active storage is recycled between the two reservoirs)
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3.9 Describe how you propose to monitor the volume of water abstracted?	Document name/ reference:	Please refer to Chapter 4 Water Management of the Fearna PSH CAR Licence Application Report.
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3.10 Do you intend to abstract every year or only intermittently? (Intermittent means that it is predictable in which years you will abstract. If you are applying to have the capability to abstract in any year, select annual)	<input checked="" type="checkbox"/> ANNUALLY so, please provide further details on separate sheet <input type="checkbox"/> INTERMITTENTLY, if	
	Document name/ reference:	Please refer to Chapter 4 Water Management of the Fearna PSH CAR Licence Application Report.

3.11 Please tick during which months the abstraction takes place and, if available, indicate abstraction volumes (m³/month).

Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
X	X	X	X	X	X	X	X	X	X	X	X

<p>3.12 Is any abstracted water to be discharged back into the water environment? If yes, enter the National Grid Reference (NGR) of the discharge point(s).</p> <p>Please note this discharge may require authorisation as a point source discharge See the CAR Practical Guide for further details.</p>	<p><input type="checkbox"/> No <input checked="" type="checkbox"/> Yes</p> <p>NGR: 1) NN 4720 8170</p> <p>All water abstracted at the lower control works would be discharged at the upper control works and vice versa.</p>	
<p>3.13 Where you have selected 'yes' above specify the water returned as a percentage of take at the above grid reference(s)</p>	<p>NGR: 1) NN 4720 8170</p> <p>100% of abstracted water returned</p>	
<p>3.14 If appropriate, provide information on the proposed operating regime (e.g. abstraction limits, hands off flow etc)</p>	<p>Document name/ reference:</p>	<p>Please refer to Chapter 4 Water Management of the Fearna PSH CAR Licence Application Report.</p>
<p>3.15 Where a management agreement is in place which influences the abstraction, please provide details.</p>	<p>Document name/ reference:</p>	<p>N/A</p>
<p>3.16 If appropriate, provide information on any inter-relationships between abstraction points applied for as part of this Application (see section 3 of the guidance)</p>	<p>Document name/ reference:</p>	<p>Please refer to Section Chapter 4 Water Management of the Fearna PSH CAR Licence Application Report.</p>
<p>3.17 Please provide for mobile spray irrigation abstractions and water transfers a method statement detailing how each activity is to be carried out to prevent the spread of</p>	<p>Document name/ reference:</p>	<p>Discussion ongoing</p>

invasive non-native species ² .		
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² For information see the check, clean, dry procedure as outlined in the GB non-native species secretariat website (<http://www.nonnativespecies.org/checkcleandry/biosecurity-for-everyone.cfm>) and guidance set out in GPP5 (http://www.netregs.org.uk/media/1418/gpp-5-works-and-maintenance-in-or-near-water.pdf?utm_source=website&utm_medium=social&utm_campaign=GPP5%2027112017)
v7.3 Sept 2022

Section 4: Applications Including Impoundment Activities

Complete this table for all impoundments that you are applying for. If you are applying for a licence which includes more than one impoundment structure please copy, complete and reference a separate table for each activity

No. of Section 4 tables completed:	2	Table ref: (e.g.1 of 2, 2 of 2)	1 of 2 (Fearna Dam)
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IMPOUNDMENT DETAILS:

4.1 Impoundment No/Ref/Name: (This should correspond to the reference on the site map)	Fearna Dam
4.2 Type of original waterbody impounded:	<input type="checkbox"/> Watercourse <input checked="" type="checkbox"/> Loch <input type="checkbox"/> None
4.3 Name of watercourse or loch impounded:	Loch Fearna
4.4 National Grid Reference of impoundment (from mid-point of impounding structure):	Fearna Dam NH 05844 02872
4.5 Using the look up table in Section 4 of the guidance specify the Purpose Category/Categories for the use of the impounded water. Continue on separate sheet if	Primary purpose: Pumped Storage Hydropower

necessary.		
4.6 Do you consider this impoundment would qualify as an environmental service?	<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes, provide details on separate sheet	
	Document name / reference:	Please refer to the project need Chapter 1 of the Fearna PSH CAR Licence Application Report.
4.7 Do you consider this impoundment would qualify for abated charges?	<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes, provide details on separate sheet	
	Document name / reference:	Hydropower / sustainable generation
4.8 Where a management agreement is in place which influences the operation of the impoundment, please provide details.	Document name / reference:	N/A
4.9 Please provide a full description of your proposals to construct, alter or remove the impoundment, including plans and cross sections.	Document name / reference:	Refer to Scheme Description Chapter 3 of Fearna PSH CAR Licence Application Report. Please refer to the following drawings of Fearna Dam:

		FEA/FC4/250 & 300.
4.10 Please provide method statements describing the method and controls of construction/alteration/removal works	Document name / reference:	Please refer to the CEMD and PPP documents which are included as appendices in the Fearna PSH CAR Licence Application Report . Furthermore detailed RAMS would be submitted before construction as part of a pre commencement condition to achieve SEPA sign off.
4.11 If applicable, what date do you intend to start construction, alteration or removal works for the impoundment?	Document name / reference:	2029
4.12 Height of impoundment structure:	All levels from EGL to TWL: Impoundment between +537m AOD and +600mAOD = 63m (Upper wave wall at +602mAODm AoD subject to final detailed design)	
4.13 Please give the level of the overflow or crest of the dam (metres AOD) if this is different to the height of the impoundment structure	Coire Dubh Dam 600m AoD (spillway for Fearna located on Coire Dubh dam)	
4.14 National Grid Reference of outflow point from impounded waterbody	Fearna Dam NH 05275 02938	
4.15 Where there is a means of drawing the impounded water down,	There would be a drawdown facility	

<p>what is the minimum draw-off level (metres AOD)?</p>	<p>located within Fearna Dam which could reduce the level to +538mAoD</p>	
<p>4.16 Provide details of ongoing maintenance of this impoundment structure e.g. debris clearance, scour valve operation, fish pass maintenance etc.</p>	<p>Document name / reference:</p>	<p>The impoundment would be maintained in accordance with the Reservoirs Act (Scotland) and the scheme O&M protocols.</p>
<p>4.17 Please provide details of any sediment management plan associated with this impoundment (see guidance in section 4.17)</p>	<p>Document name / reference:</p>	<p>Sediment load at the proposed dammed outlet is currently negligible and would be unlikely due to the catchment characteristics and small size, with little river morphology upstream. Refer to the Geomorphology appendix (E) of the Fearna PSH CAR Licence Application Report.</p>
<p>4.18 Is there to be provision for fish passage?</p>	<p><input checked="" type="checkbox"/> No, please provide a justification for this on a separate sheet <input type="checkbox"/> Yes, if so, please design details on separate sheet</p> <p>Document name / reference:</p>	<p>No. The downstream watercourse (Allt Fearna) is impassable.</p>
<p>4.19 Are there to be fish screens or</p>	<p><input type="checkbox"/> No, please provide a justification for this on a</p>	

<p>other fish protection measures?</p>	<p>separate sheet</p> <p><input checked="" type="checkbox"/> Yes, if so, please design details on separate sheet</p>				
<p>4.20 Provide information of the proposed operating regime (e.g. compensation release, freshets, drawdown)</p>	<table border="1"> <tr> <td data-bbox="708 338 1046 1480"> <p>Document name / reference:</p> </td> <td data-bbox="1046 338 1471 1480"> <p>Fish screens would be provided on the upper and lower control works. The upper reservoir, Loch Fearnha has been found to have no fish populations.</p> <p>At the upper control works within Loch Fearnha, debris screens with 40mm spacing are proposed to prevent debris entering the tunnel system.</p> <p>At the lower control works, fish screens are proposed with 10mm spacing, designed to achieve an approach velocity of 0.3m/s.</p> </td> </tr> <tr> <td data-bbox="708 1480 1046 2098"> <p>Document name / reference:</p> </td> <td data-bbox="1046 1480 1471 2098"> <p>Compensation releases are proposed from the Fearnha Dam, which would be achieved via an outlet structure through the dam. A drawdown facility through the dam would also be provided. This would be a very similar arrangement to the existing Quoich Dam.</p> </td> </tr> </table>	<p>Document name / reference:</p>	<p>Fish screens would be provided on the upper and lower control works. The upper reservoir, Loch Fearnha has been found to have no fish populations.</p> <p>At the upper control works within Loch Fearnha, debris screens with 40mm spacing are proposed to prevent debris entering the tunnel system.</p> <p>At the lower control works, fish screens are proposed with 10mm spacing, designed to achieve an approach velocity of 0.3m/s.</p>	<p>Document name / reference:</p>	<p>Compensation releases are proposed from the Fearnha Dam, which would be achieved via an outlet structure through the dam. A drawdown facility through the dam would also be provided. This would be a very similar arrangement to the existing Quoich Dam.</p>
<p>Document name / reference:</p>	<p>Fish screens would be provided on the upper and lower control works. The upper reservoir, Loch Fearnha has been found to have no fish populations.</p> <p>At the upper control works within Loch Fearnha, debris screens with 40mm spacing are proposed to prevent debris entering the tunnel system.</p> <p>At the lower control works, fish screens are proposed with 10mm spacing, designed to achieve an approach velocity of 0.3m/s.</p>				
<p>Document name / reference:</p>	<p>Compensation releases are proposed from the Fearnha Dam, which would be achieved via an outlet structure through the dam. A drawdown facility through the dam would also be provided. This would be a very similar arrangement to the existing Quoich Dam.</p>				

		<p>No spillway is proposed at this dam, as this would be provided on the second upper reservoir dam (Coire Dubh Dam)</p> <p>Please refer to Water Management Chapter 4 of the Fearna PSH CAR Licence Application Report.</p>
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<p>4.21 For reservoirs, the total volume of water to be impounded and, if different total volume of waterbody (where known) (litres or cubic metres):</p> <p>(N.B. this information is not mandatory for schemes less than 25000m³)</p>	<p>Total volume of impounded water by both the Fearna Dam and Coire Dubh Dam: 45,000,000 m³</p>
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<p>4.22 Provide details on any interconnections with other impoundments, abstractions or catchments.</p>	<p>Document name / reference:</p>	<p>The Fearna Dam would be one of two dams forming the upper reservoir, with the other being Coire Dubh Dam. Both structures are required to create the upper storage reservoir. Both dams would have compensation arrangements, to allow compensation flows to be released to the respective watercourses</p>
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		<p>downstream.</p> <p>The drawdown capability of the upper reservoir would be split between the Fearna and Coire Dubh dams.</p> <p>A spillway would be provided on the Coire Dubh dam only. This spillway would be sized to pass the required flows from both the Loch Fearna and Coire Dubh catchments, which are both small (<1.5km² each)</p>	
<p>4.23 Is registration required under the Reservoirs (Scotland) Act 2011? (i.e. can the reservoir hold 25,000m³ or more above the surrounding land?)</p> <p>If yes, answer the following question:</p>	<p><input type="checkbox"/> No <input checked="" type="checkbox"/> Yes</p>		
<p>4.23.1 Have you already registered your reservoir with SEPA under the 2011 Act?</p>	<p><input type="checkbox"/> Yes</p>	<p>Confirm reference number?</p>	<p>RES/R/.....</p>
	<p><input checked="" type="checkbox"/> No</p>	<p>Contact SEPA's Reservoir Regulatory Unit at Reservoirs@sepa.org.uk to register</p>	

Section 4: Applications Including Impoundment Activities

Complete this table for all impoundments that you are applying for. If you are applying for

a licence which includes more than one impoundment structure please copy, complete and reference a separate table for each activity

No. of Section 4 tables completed:	2	Table ref: (e.g.1 of 2, 2 of 2)	2 of 2 (Coire Dubh Dam)
IMPOUNDMENT DETAILS:			
4.1 Impoundment No/Ref/Name: (This should correspond to the reference on the site map)	Coire Dubh Dam		
4.2 Type of original waterbody impounded:	<input type="checkbox"/> Watercourse <input checked="" type="checkbox"/> Loch <input type="checkbox"/> None		
4.3 Name of watercourse or loch impounded:	Unnamed tributary of the Allt a' Mheil burn within Coire Dubh		
4.4 National Grid Reference of impoundment (from mid-point of impounding structure):	Coire Dubh Dam NH 05070 03838		
4.5 Using the look up table in Section 4 of the guidance specify the Purpose Category/Categories for the use of the impounded water. Continue on separate sheet if necessary.	Primary purpose: Hydropower Secondary purpose:		
4.6 Do you consider this impoundment would qualify as an	<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes, provide details on separate sheet		

environmental service?	Document name/ reference:	Please refer to the project need chapter 1 of the Fearna PSH CAR Licence Application Report.
4.7 Do you consider this impoundment would qualify for abated charges?	<input type="checkbox"/> No <input checked="" type="checkbox"/> Yes, provide details on separate sheet Document name/ reference:	Hydropower / sustainable generation
4.8 Where a management agreement is in place which influences the operation of the impoundment, please provide details.	Document name / reference:	There is an existing 500kW hydropower scheme downstream on the Allt a' Mheil burn (CAR/L/1090786). The Coire Dubh Dam would affect approximately 1/3 of the catchment of this project. A management agreement has been reached with the Allt a' Mheil operators whereby the Coire Dubh would pass flows to emulate the annual generation potential of the affected

		catchment
4.9 Please provide a full description of your proposals to construct, alter or remove the impoundment, including plans and cross sections.	Document name / reference:	Refer to Scheme Description Chapter 3 of Fearna PSH CAR Licence Application Report . Please refer to the following drawings of Coire Dubh Dam: FEA/FC4/250 & 350
4.10 Please provide method statements describing the method and controls of construction/alteration/removal works	Document name / reference:	Please refer to the CEMD and PPP documents which are included as appendices to the Fearna PSH CAR Licence Application Report . Furthermore detailed RAMS would be submitted before construction as part of a pre commencement condition to achieve SEPA sign off.
4.11 If applicable, what date do you intend to start construction, alteration or removal works for the impoundment?	Document name / reference:	2029
4.12 Height of impoundment structure:	All levels from EGL to TWL: EGL = +517mAOD TWL = +600mAOD Impoundment = 83m, with additional wave wall	

	(subject to detailed engineering) a further 2m high, to +602mAOD.	
4.13 Please give the level of the overflow or crest of the dam (metres AOD) if this is different to the height of the impoundment structure	Spillway crest proposed at +600mAOD	
4.14 National Grid Reference of outflow point from impounded waterbody	NH 049037 03705	
4.15 Where there is a means of drawing the impounded water down, what is the minimum draw-off level (metres AOD)?	+517mAOD	
4.16 Provide details of ongoing maintenance of this impoundment structure e.g. debris clearance, scour valve operation, fish pass maintenance etc.	Document name / reference:	Please refer to table on Fearna Dam.
4.17 Please provide details of any sediment management plan associated with this impoundment (see guidance in section 4.17)	Document name / reference:	Sediment load at the proposed dammed outlet is currently negligible and would be unlikely due to the catchment characteristics and small size, with little river morphology upstream. Refer to the Geomorphology appendice of the Fearna PSH CAR Licence Application Report.
4.18 Is there to be provision for fish passage?	<input checked="" type="checkbox"/> No, please provide a justification for this on a separate sheet	

	<input type="checkbox"/> Yes, if so, please design details on separate sheet		
	<table border="1"> <tr> <td data-bbox="708 277 1046 405">Document name / reference:</td> <td data-bbox="1046 277 1469 405"></td> </tr> </table>	Document name / reference:	
Document name / reference:			
<p>4.19 Are there to be fish screens or other fish protection measures?</p>	<input type="checkbox"/> No, please provide a justification for this on a separate sheet <input checked="" type="checkbox"/> Yes, if so, please design details on separate sheet		
	<table border="1"> <tr> <td data-bbox="708 651 1046 781">Document name / reference:</td> <td data-bbox="1046 651 1469 781">Refer to table above re. Fearna Dam</td> </tr> </table>	Document name / reference:	Refer to table above re. Fearna Dam
Document name / reference:	Refer to table above re. Fearna Dam		
<p>4.20 Provide information of the proposed operating regime (e.g. compensation release, freshets, drawdown)</p>	<table border="1"> <tr> <td data-bbox="708 781 1046 2080">Document name / reference:</td> <td data-bbox="1046 781 1469 2080"> <p>Compensation releases are proposed from the Coire Dubh Dam, which would be achieved via an outlet structure through the dam.</p> <p>Additional flow to emulate the annual generation potential of the downstream Allt a' Mheil hydro scheme would also be passed via this facility.</p> <p>A drawdown facility through the dam would also be provided. This would be a very similar arrangement to the existing Quoich Dam. The drawdown provision for the upper reservoir would be shared between the</p> </td> </tr> </table>	Document name / reference:	<p>Compensation releases are proposed from the Coire Dubh Dam, which would be achieved via an outlet structure through the dam.</p> <p>Additional flow to emulate the annual generation potential of the downstream Allt a' Mheil hydro scheme would also be passed via this facility.</p> <p>A drawdown facility through the dam would also be provided. This would be a very similar arrangement to the existing Quoich Dam. The drawdown provision for the upper reservoir would be shared between the</p>
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		Coire Dubh and Fearna dams.
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<p>4.21 For reservoirs, the total volume of water to be impounded and, if different total volume of waterbody (where known) (litres or cubic metres):</p> <p>(N.B. this information is not mandatory for schemes less than 25000m³)</p>	<p>Total volume of impounded water by both Fearna Dam and Coire Dubh Dam: 45,000,000 m³</p>
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<p>4.22 Provide details on any interconnections with other impoundments, abstractions or catchments.</p>	<p>Document name / reference:</p>	<p>The existing run-of-river Allt a' Mheil hydro scheme is located downstream, with an intake structure at NH 046025 03147</p>
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<p>4.23 Is registration required under the Reservoirs (Scotland) Act 2011? (i.e. can the reservoir hold 25,000m³ or more above the surrounding land?)</p> <p>If yes, answer the following question:</p>	<p><input type="checkbox"/> No <input checked="" type="checkbox"/> Yes</p>
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<p>4.23.2 Have you already registered your reservoir with SEPA under the 2011 Act?</p>	<p><input type="checkbox"/></p>	<p>Confirm reference number?</p>	<p>RES/R/.....</p>
	<p><input checked="" type="checkbox"/></p>	<p>Contact SEPA's Reservoir Regulatory Unit at Reservoirs@sepa.org.uk to register</p>	

Section 5: Additional information	
5.1 Cumulative Chargeable Abstraction Value	
<p>Please specify the combined maximum volume of abstraction from all abstraction points subject to a subsistence charge? (Please see guidance for more details)</p> <p>Conversion: 1m³ = 1000 litres 1m³ = 220 gallons</p>	<p>N/A</p>

5.2 Additional information submitted		
<p>Please reference additional supporting documents submitted as part of this Application</p>	<p>Document name:</p> <p>Document reference:</p>	<p>Fearna PSH CAR Licence Application Report</p>
	<p>Document name:</p> <p>Document reference:</p>	<p>Fearna PSH CAR Licence Application Non-Technical Summary</p>
	<p>Document name:</p> <p>Document reference:</p>	
	<p>Document name:</p> <p>Document reference:</p>	