

Appendix A11.3

Aquatic Ecology

Transport Scotland

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1. Desk Study

1.1. The Study Area

- 1.1.1. It was agreed with the A9 Environmental Steering Group (ESG) that the Proposed Scheme Options plus 150m is an appropriate extent within which to identify aquatic receptors potentially affected by the Proposed Schemeⁱ.
- 1.1.2. The Study Area is defined in order to identify aquatic habitats which could be affected by physical modification, water quality or water quantity effects as a result of the Proposed Scheme. The Study Area is not synonymous with the Zone of Influence which can be specific to individual receptors. For example, a watercourse affected by physical modification within the Study Area could affect a migratory fish population beyond the Study Area (through, for example the severance of spawning habitat).

1.2. Identification of Aquatic Receptors

- 1.2.1. All watercourses and standing waterbodies within the Study Area were identified from geospatial analysis and Ordnance Survey (OS) mapping.
- 1.2.2. The Centre for Ecology and Hydrology (CEH) Digital River Network (DRN; digitised from 1:50,000 OS mapping) was used as the primary source for identifying ecologically valuable watercourses which may be affected by the Proposed Scheme.
- 1.2.3. In addition, Non-DRN watercourses identified by hydrological walkover surveys undertaken by AMJV between November 2015 and January 2016 were screened according to the criteria defined in Section 2 of this Technical Appendix, to validate their omission from the ecological assessment as minor, mostly ephemeral, drainage pathways of negligible ecological value for aquatic flora and fauna.

1.3. Data Collation

- 1.3.1. A number of data sources were used in support of the DMRB Stage 2 Assessment for aquatic ecology receptors. Data sources are listed below.

Publically Available Data

- 1.3.2. A number of publically available data sources are directly relevant to aquatic receptors including:
- Scottish Environment Protection Agency (SEPA) Water Framework Directive (WFD) Classification Data and River Basin Management Plan (RBMP) Waterbody Datasheets. The RBMP classifies rivers in terms of their Ecological Status at a 'waterbody' (rather than local) scale. Ecological Status is determined by a number of biological, physico-chemical and hydromorphological elements. Relevant data sources relating to the RBMP include:
 - SEPA River Basin Management Plans Interactive Mapⁱⁱ
 - Scotland's Environment websiteⁱⁱⁱ
 - Scottish Natural Heritage (SNH) Interactive Map. The SNH Interactive Map delineates designated sites of importance for nature conservation.

- SNH Site Link^{iv}
- Ordnance Survey contemporary mapping
 - Including Where's the Path website^v

Supplementary Data Request

- 1.3.3. A number of data requests for regulator, stakeholder and record centre data for aquatic receptors were also submitted. Due to the mobility of many aquatic species (such as migratory salmonids), the data request was extended beyond the Study Area to identify all suitable data that could help inform the assessment of Proposed Scheme effects. At the time of writing (June, 2016), this has included the following data requests:
- SEPA river biological monitoring data within 2km of the Proposed Scheme Options collected since 2010. This included a request for taxa lists and biological metrics associated with aquatic macroinvertebrate and phytobenthos communities, as well as barriers to fish migration. Received 15th October 2015 and updated 2nd March 2016.
 - Spey Fishery Board (SFB) electric fishing data within 2km of the Proposed Scheme Options collected since 2010. Received 20th May 2016.
 - Scottish Natural Heritage (SNH) freshwater pearl mussel (*Margaritifera margaritifera*) survey data within 2km of the Proposed Scheme Options. Received 21st October 2015 and updated 1st June 2016.

A9 Existing Data Sources

- 1.3.4. A number of existing data sources collected in support of the DMRB Stage 2 Assessment were of direct relevance to aquatic habitats and receptors including:
- CH2M Hill ecological review of watercourse crossing structures (reviewed May 2016);
 - Atkins Mouchel Joint Venture (AMJV) Amphibian Habitat Suitability Index data for waterbodies (reviewed June 2016);
 - AMJV watercourse geomorphological walkover data (reviewed June 2016); and
 - AMJV Phase 1 Habitat Survey data (reviewed May 2016).

2. Screening Assessment and Proposed Survey Methods

- 2.1.1. Following identification of all aquatic receptors within the Study Area, all existing available data sources were mapped to each receptor. Data was used to help provide a preliminary valuation of the ecological importance of each receptor and determine the need for further specific ecological survey.
- 2.1.2. Survey methods proposed for DMRB Stage 3 Assessment will be applied only in the absence of existing baseline data or suitable proxies, ensuring that survey effort is proportionate to the requirement. Existing baseline data (for example, proxy SEPA monitoring data) will be continually reviewed to identify the validity of its use (spatially and temporally) in place of scheme-commissioned survey. Data that will be in excess of three years old at the time of EIA, or does not conform to the standards outlined below, will not be used to inform the assessment.

2.2. River Habitat Survey

- 2.2.1. River Habitat Survey (RHS)^{vi} is considered an appropriate method for use between March and October (inclusive) due to the nature of watercourses that may require survey¹. High macrophyte abundance can often mask key morphological features in lowland systems during summer months. However, the A9 interacts with upland, higher energy stream systems, typified by low aquatic macrophyte abundance, meaning RHS is suitable over a relatively long survey season.
- 2.2.2. Watercourses within the Study Area will be subject to RHS where:
- The watercourse is a permanent flowing system with a channel width nominally >1m; and
 - The watercourse is to be lost/culverted/diverted or potentially experience a significant change in water quality or quantity; and
 - The watercourse is not obviously canalised or heavily managed; or
 - The watercourse is an immediate tributary of, or falls within, a designated water-dependent site of importance for nature conservation.
- 2.2.3. At each location selected for survey, the survey will, as a minimum, cover a 500m section of the watercourse centred on the proposed design element (for example, a bridge crossing) wherever feasible, i.e. 250m upstream and downstream of the element.
- 2.2.4. In selected instances, for example if stream diversions/realignments are proposed, this may be extended to incorporate additional 500m sections to allow for characterisation of the full extent of habitat that could potentially be physically disturbed.

2.3. Fish Habitat Assessment (in conjunction with RHS)

- 2.3.1. Where RHS is required, based on the criteria above, it will be augmented by a bespoke fish habitat survey. The survey will comprise a habitat suitability assessment for key fish species (e.g. salmonids and lampreys) and life stages, identifying any key discrete habitat features of specific value (e.g. discrete spawning substrate or deep pools). Habitat features will be georeferenced by a National Grid Reference (NGR) identifier.
- 2.3.2. The Fish Habitat Assessment (FHA) will make use of existing approaches for fish habitat classification, e.g. Hendry Cragg-Hine Habitat Classification^{vii}. This approach will allow key fisheries habitat features to be mapped in relation to scheme elements, where required, augmenting the RHS approach which summarises functional habitats at a survey reach scale. A standard proforma has been developed for this assessment and is available on request.

2.4. Aquatic Macroinvertebrate Survey (in conjunction with RHS)

- 2.4.1. Where RHS is required, based on the criteria above, it will be augmented by a standard River Invertebrate Prediction and Classification Software (RIVPACS) method sampling protocol^{viii} survey for aquatic macroinvertebrates.
- 2.4.2. By default, a survey will be undertaken downstream of the design element (the direction in which most impacts will propagate). Where practical, a survey will also be undertaken upstream of the design element, in order to establish a control site for future

¹ The ideal timing for RHS in many riverine systems is May - June. However, this can extend over a much longer season where emergent or bankside vegetation is limited, or regularly managed.

construction/post-construction monitoring. The additional control site data will also be used to further characterise the ecological baseline for the DMRB Stage 3 Assessment.

- 2.4.3. Species level macroinvertebrate identification will be undertaken to allow for the calculation of the Community Conservation Index (CCI)^{ix} which will be used to assess community conservation value for the impact assessment. Where multiple surveys have been undertaken (i.e. upstream and downstream of the design element), the taxa list will be amalgamated to calculate a reach-based (i.e. multi-site) CCI score.
- 2.4.4. In addition, a number of other standard aquatic macroinvertebrate biotic metrics (Average Score Per Taxon (ASPT)^x, Proportion of Sediment-sensitive Invertebrates (PSI)^{xi}, and Lotic invertebrate Index for Flow Evaluation (LIFE)^{xii} will be calculated, enabling an assessment of overall habitat quality in relation to water quality, flow character and benthic sediment loading. These metrics will be calculated for individual survey sites only- it is not appropriate to combine multi-site taxa lists for these metrics as is proposed above for CCI.
- 2.4.5. Environmental variables required to generate RIVPACS community predictions will also be collected. This will ensure that, should it be required in future, the data collected will support a site RIVPACS classification.
- 2.4.6. The recognised survey seasons for RIVPACS macroinvertebrate survey are autumn (September-November) and spring (March-May). Adopting these survey seasons will ensure macroinvertebrate survey can typically be undertaken in conjunction with RHS.

2.5. Aquatic Macrophyte Survey

- 2.5.1. The aquatic macrophyte assemblages of the upland river systems that interact with the A9 are likely to be bryophyte (moss and liverwort) dominated systems, characterised by low vascular macrophyte abundance and diversity.
- 2.5.2. Aquatic macrophytes will therefore not be subject to quantitative standard survey, unless an exceptional case (e.g. high floristic diversity) demands this requirement, as identified during the RHS survey programme.
- 2.5.3. Aquatic macrophyte identification and recording will be undertaken on an ad hoc basis during RHS. This is considered to be an appropriate use of survey effort that will enable a robust assessment of the Proposed Scheme.

2.6. Standing Waterbody Survey

- 2.6.1. Waterbody surveys, where required, will be undertaken using the National Pond Survey (NPS) method^{xiii}.
- 2.6.2. NPS surveys will be undertaken between June-August (inclusive), during a single survey visit. Standard practice for NPS is to undertake three seasonal survey visits. However, a single survey visit using the NPS method is considered sufficient to:
 - Characterise the pond;
 - Identify species of conservation interest; and
 - Determine whether the pond qualifies as Priority Habitat under the Scottish Biodiversity List (SBL)^{xiv}.
- 2.6.3. Waterbodies within the Study Area will be subject to NPS where:

- The waterbody is to be lost by any mechanism (drainage, land take to construction etc.) or is likely to experience a significant change in water quality or quantity as a result of the proposed scheme (e.g. severance of feeder surface water run-off routes to the waterbody); and
- The waterbody, based on amphibian Habitat Suitability Index (HSI)^{xv} survey, supports at least 5% macrophyte coverage, is of moderate or good water quality and <80% is shaded; or
- is within a designated site of importance for nature conservation.

2.7. Freshwater Pearl Mussel (FWPM) Survey

2.7.1. FWPM and its habitat are fully protected by law, under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). FWPM is also listed under Annex II of the Habitats Directive as a species whose conservation requires the designation of Special Areas of Conservation (SAC). Survey requirements for this legally protected species will be determined in liaison with SNH and through application of the following criteria, as outlined in the 'A9 Dualling – Protocols for FWPM Surveys' Memorandum^{xvi}:

- There is a new or extended road crossing which could impact FWPM, their supporting habitat and/or host species; or
- SNH data/historical information confirms the presence of FWPM in areas impacted by in channel working (e.g. bank protection) or an outfall feature (e.g. SuDS discharge); or
- Areas with supporting habitat (identified through desk based review of data or by RHS) for FWPM, but where no data is available, are at risk of being impacted by in channel working/outfall features.

2.7.2. Shallow water surveys will be undertaken following standard SNH FWPM survey protocol for use in site-specific projects^{xvii}. Where required, deep water surveys will be undertaken using boat and underwater camera techniques, as outlined in the 'A9 Dualling – Protocols for FWPM Surveys' Memorandum^{xviii}.

2.8. Fish Survey

2.8.1. In consultation with members of the ESG, the spatial and temporal scale of existing baseline electric fishing data, combined with FHA procedures, consultation with relevant fisheries managers, and a precautionary approach to species distribution, are considered sufficient to undertake the assessment of the effects of the Proposed Scheme on watercourse fisheries, and inform any required design mitigation. However, electric fishing survey is likely to be a specification of pre- and post- scheme monitoring in association with watercourse construction activities.

3. Screening Results and DMRB Stage 3 Survey Requirements

3.1. Watercourse Screening Results

3.1.1. A total of 27 watercourses were identified within the Study Area during the initial screening of aquatic receptors. This includes 18 watercourses that are presently, or will

be, crossed by the Proposed Scheme together with nine watercourses within 150m of the Proposed Scheme Options that are not crossed by the Proposed Scheme.

- 3.1.2. Following the application of the screening criteria as defined in Section 2, a total of 13 watercourses were identified as requiring further survey to assess their ecological value for the purpose of DMRB Stage 3 Assessment. These watercourses are scheduled in Table 3.1 and include:
- Bogbain Burn
 - Allt nan Ceatharnach (also known as Batten Burn)
 - River Dulnain
 - Allt Cnapach
 - Southern Avie Lochan Burn
 - Allt na Criche (Granish)
 - Two separate unnamed tributaries of the River Spey
 - Aviemore Burn/Butchers Creek
 - Allt na Criche (Lynwilg)
 - Caochan Ruadh
 - Allt Chriotheidh; and
 - Allt na Fhearna.
- 3.1.3. These watercourses will be subject to RHS, FHA, and aquatic macroinvertebrate survey as described in Section 2 of this document, at which point the requirement for FWPM survey will be assessed in the context of RHS output and species distribution data. The locations of watercourses relative to the Proposed Scheme are shown in Figure 11.5.
- 3.1.4. An additional three watercourses were identified as requiring field screening due to a lack of available baseline data, namely Allt Ruighe an t-Sabhail (Section 10, CH22600), an Unnamed tributary of Allt Sloch Mhuic (Section 10, CH22100), and an additional Unnamed tributary of the River Spey (Section 5, CH8000). These watercourses are not included in Table 3.1 below as no screening assessment can be made from available baseline data.

3.2. Watercourse Baseline Data Availability

- 3.2.1. In addition to publically available information such as WFD waterbody classifications, a number of supplementary data requests were submitted as described in Section 1.2 of this document.
- 3.2.2. No suitable SEPA river biological monitoring data were available within the Study Area or within the wider dataset provided.
- 3.2.3. No records of FWPM were identified from SNH survey data within the Study Area. A number of records of FWPM were identified within the wider SNH dataset, namely within the River Spey. These records are, hydrologically, a minimum of 1km from any tributary watercourse of the River Spey within the Study Area.
- 3.2.4. Impact pathways that could directly affect FWPM (e.g. sedimentation and water quality) are likely to be localised, and highly unlikely to propagate to the River Spey itself. Indirect impact pathways (e.g. if a key spawning area for host salmonids is isolated)

have the potential to affect the FWPM population over a much wider area. Such impacts are considered highly unlikely, but the data provided will be kept under review during the Stage 3 Assessment in the event it becomes relevant.

3.2.5. Relevant SFB electric fishing data was provided for a number of watercourses within the Study Area. Where relevant, the data is further described in Table 3.1, in relation to each watercourse. Site locations (as identified by Site Codes within Table 3.1) are shown in Figure 11.5.

Table 3.1: Watercourse Survey Requirements (from north to south)

Site	Location	Description
<p>Bogbain Burn</p>  <p>P1040554 – northeast of A9</p>	<p>Route Section: Section 9</p> <p>Chainage: CH19200</p> <p>Central NGR: NH 87623 24248</p>	<p>WFD Characterisation: Classified WFD Waterbody - No Receiving Downstream Classified WFD Waterbody - River Dulnain - Allt Ruighe Magaig (WB ID 23112) Overall Ecological Status of Receiving WFD Waterbody - Good (201 Classification)</p> <p>Existing Supplementary Baseline: Proxy SFB Fish Data Available- Yes (one site): trout (<i>Salmo trutta</i>) fry and salmon (<i>Salmo salar</i>) and trout parr recorded at last survey (August 2012). No other taxa recorded. Designated Site of Nature Conservation Importance - No, but is a tributary of Allt nan Ceatharnach - part of the River Spey SAC.</p> <p>A9 Crossing Characterisation: Crossed by Proposed Scheme - No, adjacent to Proposed Scheme. Crossing Reference(s) - N/A</p> <p>Screening Conclusion: Relatively active stream system likely to support a range of habitats and species, and known to support salmonids.</p>
<p>Allt nan Ceatharnach (also known as Batten Burn)</p>	<p>Route Section: Section 8</p> <p>Chainage: CH17400</p> <p>Central NGR: NH 89123 23148</p>	<p>WFD Characterisation: Classified WFD Waterbody - Yes: River Dulnain - Allt Ruighe Magaig (WB ID 23112) Overall Ecological Status of WFD Waterbody - Good (2014 Classification)</p> <p>Existing Supplementary Baseline: Proxy SFB Fish Data Available - Yes (five sites): trout and salmon fry and</p>

Site	Location	Description
 <p>P1040576 – upstream of A9</p>		<p>parr recorded between 2010 and 2015, up and downstream of existing A9 crossing. No other species recorded.</p> <p>Designated Site of Nature Conservation Importance - Yes: part of the River Spey SAC.</p> <p>A9 Crossing Characterisation: Crossed by Proposed Scheme - Yes Crossing Reference(s) - DS-WC-048</p> <p>Screening Conclusion: Active river system likely to support a range of habitats and species, and known to support salmonids.</p>
<p>River Dulnain</p>  <p>P1040617 – downstream of A9</p>	<p>Route Section: Section 8</p> <p>Chainage: CH16600</p> <p>Central NGR: NH 89669 22548</p>	<p>WFD Characterisation: Classified WFD Waterbody - Yes: River Dulnain - lower catchment (WB ID 23106) Overall Ecological Status of WFD Waterbody - Good (2014 Classification)</p> <p>Existing Supplementary Baseline: Proxy SFB Fish Data Available - Yes (one site): salmon fry and parr recorded at last survey (August 2012), downstream of existing A9 crossing. No other species recorded. Designated Site of Nature Conservation Importance - Yes: part of the River Spey SAC.</p> <p>A9 Crossing Characterisation: Crossed by Proposed Scheme - Yes Crossing Reference(s) - DS-WC-046</p> <p>Screening Conclusion: Active river system likely to support a range of habitats and species, and known to support salmonids.</p>
<p>Allt Cnapach</p>	<p>Route Section: Section 6b</p> <p>Chainage: CH12200</p> <p>Central NGR: NH 91042 18550</p>	<p>WFD Characterisation: Classified WFD Waterbody - No Receiving Downstream Classified WFD Waterbody - River Spey - R. Feshie to R. Nethy (WB ID 23097) Overall Ecological Status of Receiving WFD Waterbody - Moderate (2014 Classification)</p> <p>Existing Supplementary Baseline:</p>

Site	Location	Description
 <p>P1040723 – downstream of A9</p>		<p>Proxy SFB Fish Data Available - No Designated Site of Nature Conservation Importance - No, but is a tributary of the River Spey SAC.</p> <p>A9 Crossing Characterisation: Crossed by Proposed Scheme - Yes Crossing Reference(s) - DS-WC-032</p> <p>Screening Conclusion: Relatively active stream system likely to support a range of habitats and species.</p>
<p>Southern Avie Lochan Burn</p>  <p>P1040781 – upstream of A9</p>	<p>Route Section: Section 5 Chainage: CH9900 Central NGR: NH 90235 16419</p>	<p>WFD Characterisation: Classified WFD Waterbody - No Receiving Downstream Classified WFD Waterbody - Not applicable- watercourse terminates at Avie Lochan (not an assessed WFD waterbody)</p> <p>Existing Supplementary Baseline: Proxy SFB Fish Data Available - No Designated Site of Nature Conservation Importance - No.</p> <p>A9 Crossing Characterisation: Crossed by Proposed Scheme – Yes Crossing Reference(s) – DS-WC-024</p> <p>Screening Conclusion: Relatively active stream system likely to support a range of habitats and species.</p>
<p>Allt na Criche (Granish)</p>  <p>P1040754 – upstream of A9</p>	<p>Route Section: Section 5 Chainage: CH9200 Central NGR: NH 90079 15661</p>	<p>WFD Characterisation: Classified WFD Waterbody - No Receiving Downstream Classified WFD Waterbody - N/A: Receiving water body is Loch nan Carraigan (not an assessed WFD waterbody)</p> <p>Existing Supplementary Baseline: Proxy SFB Fish Data Available - No Designated Site of Nature Conservation Importance - No.</p> <p>A9 Crossing Characterisation: Crossed by Proposed Scheme – Yes (x2) Crossing Reference(s) – DS-WC-021 and DS-WC-022.</p> <p>Screening Conclusion:</p>

Site	Location	Description
<p data-bbox="295 369 762 398">Unnamed tributary of the River Spey</p>  <p data-bbox="295 817 662 846">P1040814 – downstream of A9</p>	<p data-bbox="837 369 917 398">Route</p> <p data-bbox="837 403 949 432">Section: Section 4</p> <p data-bbox="837 436 965 526">Chainage: CH7200</p> <p data-bbox="837 530 949 660">Central NGR: NH 89355 13933</p>	<p data-bbox="997 271 1436 358">Minor, but relatively dynamic stream system potentially supporting a range of habitats and species.</p> <p data-bbox="997 369 1284 398">WFD Characterisation:</p> <p data-bbox="997 403 1420 560">Classified WFD Waterbody – No Receiving Downstream Classified WFD Waterbody – River Spey - River Feshie to River Nethy (WB ID 23097)</p> <p data-bbox="997 564 1356 660">Overall Ecological Status of Receiving WFD Waterbody – Moderate (2014 Classification)</p> <p data-bbox="997 705 1428 734">Existing Supplementary Baseline:</p> <p data-bbox="997 739 1428 869">Proxy SFB Fish Data Available - No Designated Site of Nature Conservation Importance - No, but is a tributary of the River Spey SAC.</p> <p data-bbox="997 913 1380 943">A9 Crossing Characterisation:</p> <p data-bbox="997 947 1436 1014">Crossed by Proposed Scheme – Yes Crossing Reference(s) – DS-WC-015</p> <p data-bbox="997 1059 1284 1088">Screening Conclusion:</p> <p data-bbox="997 1093 1436 1189">Relatively active stream system likely to support a range of habitats and species.</p>
<p data-bbox="295 1205 694 1234">Aviemore Burn/Butchers Creek</p>  <p data-bbox="295 1653 630 1682">P1040810 – upstream of A9</p>	<p data-bbox="837 1205 917 1234">Route</p> <p data-bbox="837 1238 949 1267">Section: Section 4</p> <p data-bbox="837 1272 965 1361">Chainage: CH7100</p> <p data-bbox="837 1366 949 1496">Central NGR: NH 89313 13810</p>	<p data-bbox="997 1205 1284 1234">WFD Characterisation:</p> <p data-bbox="997 1238 1404 1361">Classified WFD Waterbody - No Receiving Downstream Classified WFD Waterbody - River Spey - R. Feshie to R. Nethy (WB ID 23097)</p> <p data-bbox="997 1366 1356 1462">Overall Ecological Status of Receiving WFD Waterbody - Moderate (2014 Classification)</p> <p data-bbox="997 1507 1428 1536">Existing Supplementary Baseline:</p> <p data-bbox="997 1541 1428 1787">Proxy SFB Fish Data Available - Yes (two sites, last surveyed 2010). Salmon and trout parr, trout fry, and European eel (<i>Anguilla anguilla</i>) recorded downstream of existing A9 crossing. Trout fry and parr recorded upstream of existing A9 crossing. No other species recorded.</p> <p data-bbox="997 1792 1428 1888">Designated Site of Nature Conservation Importance - No, but is a tributary of the River Spey SAC.</p> <p data-bbox="997 1933 1380 1962">A9 Crossing Characterisation:</p> <p data-bbox="997 1966 1436 2033">Crossed by Proposed Scheme - Yes Crossing Reference(s) - DS-WC-015</p> <p data-bbox="997 2078 1284 2107">Screening Conclusion:</p>

Site	Location	Description
<p>Unnamed tributary of the River Spey</p>  <p>P100028 – upstream of A9</p>	<p>Route Section: Section 3a Chainage: CH5400 Central NGR: NH 89135 12130</p>	<p>Relatively active stream system likely to support a range of habitats and species, known to support salmonids.</p> <p>WFD Characterisation: Classified WFD Waterbody - No Receiving Downstream Classified WFD Waterbody - River Spey - R. Feshie to R. Nethy (WB ID 23097) Overall Ecological Status of Receiving WFD Waterbody - Moderate (2014 Classification)</p> <p>Existing Supplementary Baseline: Proxy SFB Fish Data Available - No Designated Site of Nature Conservation Importance - No, but is a tributary of the River Spey SAC.</p> <p>A9 Crossing Characterisation: Crossed by Proposed Scheme - Yes (x2) Crossing Reference(s) - DS-WC-011 & DS-WC-012</p> <p>Screening Conclusion: Relatively active stream system likely to support a range of habitats and species.</p>
<p>Allt na Criche (Lynwilg)</p>  <p>P1040464 – upstream of A9</p>	<p>Route Section: Section 3a Chainage: CH3500 Central NGR: NH 88382 10621</p>	<p>WFD Characterisation: Classified WFD Waterbody - No Receiving Downstream Classified WFD Waterbody - River Spey - River Feshie to River Nethy (WB ID 23097) Overall Ecological Status of Receiving WFD Waterbody - Moderate (2014 Classification)</p> <p>Existing Supplementary Baseline: Proxy SFB Fish Data Available - Yes (one site): trout fry and parr recorded at last survey (September 2012), upstream of existing A9 crossing. No other species recorded. Designated Site of Nature Conservation Importance - Yes, part of the River Spey SAC.</p> <p>A9 Crossing Characterisation: Crossed by Proposed Scheme - Yes Crossing Reference(s) - DS-WC-007</p> <p>Screening Conclusion:</p>

Site	Location	Description
<p>Caochan Ruadh</p>  <p>P1040533 – downstream of A9</p>	<p>Route Section: Section 1 Chainage: CH1700 Central NGR: NH 86651 10092</p>	<p>Relatively active stream system likely to support a range of habitats and species, known to support salmonids.</p> <p>WFD Characterisation: Classified WFD Waterbody - No Receiving Downstream Classified WFD Waterbody - Loch Alvie (WB ID 100181) Overall Ecological Status of Receiving WFD Waterbody - Good (2014 Classification)</p> <p>Existing Supplementary Baseline: Proxy SFB Fish Data Available - No Designated Site of Nature Conservation Importance - Yes, falls within Alvie Site of Special Scientific Interest (SSSI).</p> <p>A9 Crossing Characterisation: Crossed by Proposed Scheme - Yes Crossing Reference(s) - DS-WC-004</p> <p>Screening Conclusion: Relatively active stream system likely to support a range of habitats and species.</p>
<p>Allt Chriochaidh</p>  <p>P1040429 – downstream of A9</p>	<p>Route Section: Section 1 Chainage: CH500 Central NGR: NH 85668 09528</p>	<p>Relatively active stream system likely to support a range of habitats and species.</p> <p>WFD Characterisation: Classified WFD Waterbody – No Receiving Downstream Classified WFD Waterbody – Loch Alvie (WB ID 100181) Overall Ecological Status of Receiving WFD Waterbody – Good (2014 Classification)</p> <p>Existing Supplementary Baseline: Proxy SFB Fish Data Available - No Designated Site of Nature Conservation Importance - Yes, falls within Alvie Site of Special Scientific Interest (SSSI).</p> <p>A9 Crossing Characterisation: Crossed by Proposed Scheme - Yes Crossing Reference(s) - DS-WC-002</p> <p>Screening Conclusion: Relatively active stream system likely to support a range of habitats and species.</p>

Site	Location	Description
<p>Allt na Fhearna</p>  <p>P1040407 – upstream of A9</p>	<p>Route Section: Section 1</p> <p>Chainage: CH100</p> <p>Central NGR: NH 85395 09182</p>	<p>WFD Characterisation: Classified WFD Waterbody - Yes: Allt na Fearna - u/s Loch Alvie (WB ID 23126) Overall Ecological Status of WFD Waterbody - Poor (2014 Classification)</p> <p>Existing Supplementary Baseline: Proxy SFB Fish Data Available - No Designated Site of Nature Conservation Importance - Yes, falls within Alvie Site of Special Scientific Interest (SSSI).</p> <p>A9 Crossing Characterisation: Crossed by Proposed Scheme - Yes Crossing Reference(s) - DS-WC-001</p> <p>Screening Conclusion: Active stream system likely to support a range of habitats and species.</p>

3.3. Waterbody Screening Results

- 3.3.1. A total of 27 waterbodies were identified during the initial identification of aquatic receptors for screening.
- 3.3.2. Following the application of the screening criteria as defined in Section 2, six waterbodies were identified as requiring further survey to assess their ecological value for the purpose of DMRB Stage 3 EIA. These waterbodies are scheduled in Table 3.2. The waterbodies will be subject to NPS as described in Section 2. The locations of waterbodies (as identified by the Amphibian HSI number) relative to the Proposed Scheme are shown in Figure 11.5.

Table 3.2: Waterbody Screening Results (from north to south)

Site	Location	Description
<p>Waterbody 010 (Amphibian HSI: P8)</p> 	<p>Route Section: Section 9</p> <p>Chainage: CH20700</p> <p>Central NGR: NH 86141 23803</p>	<p>Amphibian HSI Data Approximate Area: 400m² Permanence: Never Dries Water Quality: Good Macrophyte Cover: 50%</p> <p>Orientation Relative to Existing A9 60m south</p> <p>Designated Site of Nature Conservation Importance</p>

Site	Location	Description
		<p>No.</p> <p>Screening Conclusion Permanent waterbody with aquatic macrophytes; likely to provide a range of aquatic habitats and support a relatively diverse aquatic macroinvertebrate community.</p>
<p>Waterbody 011 (Amphibian HSI: P14)</p> 	<p>Route Section: Section 6b Chainage: CH12700 Central NGR: NH 91161 19053</p>	<p>Amphibian HSI Data Approximate Area: 500m² Permanence: Rarely Dries Water Quality: Good Macrophyte Cover: 70-80%</p> <p>Orientation Relative to Existing A9 85m east</p> <p>Designated Site of Nature Conservation Importance No.</p> <p>Screening Conclusion Waterbody with aquatic macrophytes; likely to provide a range of aquatic habitats and support a relatively diverse aquatic macroinvertebrate community.</p>
<p>Waterbody 013 (Amphibian HSI: P16)</p> 	<p>Route Section: Section 6b Chainage: CH12000 Central NGR: NH 91191 18381</p>	<p>Amphibian HSI Data Approximate Area: 500m² Permanence: Rarely Dries Water Quality: Good Macrophyte Cover: 65%</p> <p>Orientation Relative to Existing A9 175m east</p> <p>Designated Site of Nature Conservation Importance No.</p> <p>Screening Conclusion Waterbody with dense aquatic macrophyte coverage; likely to provide a range of aquatic habitats and support a relatively diverse aquatic macroinvertebrate community.</p>
<p>Waterbody 014 (Amphibian HSI: P31)</p>	<p>Route Section: Section 6b</p>	<p>Amphibian HSI Data Approximate Area: 400m² Permanence: Sometimes Dries</p>

Site	Location	Description
	<p>Chainage: CH11800 Central NGR: NH 90934 18185</p>	<p>Water Quality: Moderate Macrophyte Cover: 50%</p> <p>Orientation Relative to Existing A9 55m west</p> <p>Designated Site of Nature Conservation Importance No.</p> <p>Screening Conclusion Waterbody with dense aquatic macrophyte coverage; likely to provide a range of aquatic habitats and support a relatively diverse aquatic macroinvertebrate community.</p>
<p>Waterbody 023 (Amphibian HSI: P30)</p> 	<p>Route Section: Section 5 Chainage: CH9000 Central NGR: NH 90191 15537</p>	<p>Amphibian HSI Data Approximate Area: 500m² Permanence: Rarely Dries Water Quality: Good Macrophyte Cover: 50%</p> <p>Orientation Relative to Existing A9 140m east</p> <p>Designated Site of Nature Conservation Importance No.</p> <p>Screening Conclusion Waterbody with dense aquatic macrophyte coverage; likely to provide a range of aquatic habitats and support a relatively diverse aquatic macroinvertebrate community.</p>
<p>Waterbody 025 (Amphibian HSI: P37)</p> 	<p>Route Section: Section 5 Chainage: CH8200 Central NGR: NH 89797 14874</p>	<p>Amphibian HSI Data Approximate Area: 500m² Permanence: Rarely Dries Water Quality: Good Macrophyte Cover: 60%</p> <p>Orientation Relative to Existing A9 30m south-east</p> <p>Designated Site of Nature Conservation Importance No.</p>

Site	Location	Description
		<p>Screening Conclusion</p> <p>Waterbody with dense aquatic macrophyte coverage; likely to provide a range of aquatic habitats and support a relatively diverse aquatic macroinvertebrate community.</p>

4. Preliminary Ecological Valuation

- 4.1.1. The approach to ascribing nature conservation value on a geographical context is outlined in the main ecological chapter (Chapter 11).
- 4.1.2. The Allt nan Ceatharnach (also known as Batten Burn, Section 8, CH17400), River Dulnain (Section 8, CH16600) and Allt na Criche (Lynwilg; Section 3a, CH3500) form part of the River Spey Special Area of Conservation (SAC). A number of other watercourses are either direct tributaries of the River Spey SAC, or are tributaries/constituent parts of designated Sites of Special Scientific Interest (SSSIs). In the absence of further survey data for these receptors, their ecological valuation is based on their designated status at this stage in the assessment process.
- 4.1.3. Watercourses that are part of, or are direct tributaries of, designated water-dependant SAC habitat are considered to be of up to International value (for example if they perform a critical function in maintaining the integrity of the SAC) and at a minimum Local value (for example, if the watercourse falls within the SAC but does not support habitats or species for which the site is designated).
- 4.1.4. Watercourses that are part of, or are direct tributaries of, designated water-dependant SSSI habitat are considered to be of up to National value (for example if they perform a critical function in maintaining the integrity of the SSSI) and at a minimum Local value (for example, if the watercourse falls within the SSSI but does not support habitats or species for which the site is designated).
- 4.1.5. Other watercourses and waterbodies may be defined as Priority Habitats under the Scottish Biodiversity List (SBL) if set criteria are met. An assessment of whether receptors qualify as Priority Habitats will be undertaken as part of the DMRB Stage 3 Assessment process. Watercourses and waterbodies that are not part of statutory designated sites as outlined above, are considered to be at a minimum of Site value, and up to County value (i.e. Priority Habitat).
- 4.1.6. These valuations will be reviewed and updated in light of survey findings at DMRB Stage 3 Assessment. The conservative valuations consider the likely receptor value in the context of the likely habitat quality and the species supported. However, where notable species are identified during the DMRB Stage 3 Assessment, these may be considered important enough to value in their own right separately from the watercourse/waterbody receptor (for example, a viable population of FWPM may be accorded a higher valuation than the watercourse in which it is found).

ⁱ CFJV/JUK/AMJV (2015) A9 Dualling Programme – South/Central/North. Outline approach to consistency in A9 ecology survey extents.

ⁱⁱ SEPA (2015) River Basin Management Plans Interactive Map. Available at <http://gis.sepa.org.uk/rbmp/> (Accessed November 2015)

- iii Scotland's Environment (2015) Available at: <http://www.environment.scotland.gov.uk/> (Accessed November 2015)
- iv Scottish Natural Heritage (2015) Site Link. Available at: <http://gateway.snh.gov.uk/sitelink/index.jsp> (Accessed November 2015).
- v Where's the Path 3 (2015) Available at: <http://wtp2.appspot.com/wheresthepath.htm> (Accessed November 2015)
- vi Environment Agency (2003) River Habitat Survey in Britain and Ireland – Field Survey Guidance Manual
- vii Hendry, K., and Cragg-Hine, D. (1997) Restoration of Riverine Salmon Habitats: A Guidance Manual. Fisheries Technical Manual 4. R&D Technical Report W44. Environment Agency, Bristol.
- viii EU Star UK (2006) RIVPACS Macroinvertebrate Sampling Protocol. Available at: <http://www.eu-star.at/pdf/RivpacsMacroinvertebrateSamplingProtocol.pdf> (Accessed November 2015)
- ix Chadd, R.P. and Extence, C.A. (2004). The conservation of freshwater macroinvertebrate populations: a community-based classification scheme. *Aquatic Conservation: Marine and Freshwater Ecosystems*.14, 597–624.
- x Biological Monitoring Working Party (1978) Final report: assessment and presentation of the quality of rivers in Great Britain. Unpublished report, Department of the Environment, Water Data Unit.
- xi Extence, C.A., Chadd, R.P., England, J., Dunbar, M.J., Wood, P.J. and Taylor, E.D. (2013) The assessment of fine sediment accumulation in rivers using macro-invertebrate community response. *River Research and Applications* 29, 17-55.
- xii Extence, C.A., Balbi, D.M. and Chadd, R.P. (1999) River flow indexing using British benthic macroinvertebrates: A framework for setting hydroecological objectives. *Regulated Rivers: Research and Management* 15, 543-574.
- xiii Biggs, J. Fox, G., Nicolet, P. Walker, D., Whitfield, M. & Williams, P. (1998) Available at: <http://freshwaterhabitats.org.uk/wp-content/uploads/2013/09/National-Pond-Survey-Methods.pdf>
- xiv Scottish Biodiversity List, 2013. <http://www.gov.scot/Topics/Environment/Wildlife-Habitats/16118/Biodiversitylist/SBL>.
- xv ARG UK (2010) Advice Note 5: Great Crested Newt Habitat Suitability Index.
- xvi A9 Dualling - Protocols for FWPM Surveys. Memorandum to SNH from Peter Gilchrist, Susie Coyle, Andrew Bell, Liam Atherton, Rachel McEvan and Sarah Price. Dated 1st April 2016.
- xvii SNH (2015) Freshwater Pearl Mussel Survey Protocol for use in Site-specific Projects. Available at <http://www.snh.gov.uk/docs/A372955.pdf> (Accessed November 2015).
- xviii A9 Dualling - Protocols for FWPM Surveys. Memorandum to SNH from Peter Gilchrist, Susie Coyle, Andrew Bell, Liam Atherton, Rachel McEvan and Sarah Price. Dated 1st April 2016.