A96 DUALLING
INVERNESS TO NAIRN
(incl. Nairn Bypass)

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DMRB Stage 3: Habitat Regulations Appraisal

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1 Introduction

1.1 Background

1.1.1 The Strategic Transport Projects Review (STPR) (Transport Scotland 2008) recommended a number of road and rail based interventions to take forward within the Aberdeen to Inverness corridor. Specific trunk road interventions that emerged from the review included upgrading the A96 between Inverness and Nairn to dual carriageway (Intervention 18) and a bypass of Nairn (Intervention 22).

1.1.2 On 6 December 2011, the then Cabinet Secretary for Infrastructure and Capital Investment launched the Infrastructure Investment Plan (IIP) which provides an overview of the Scottish Government's plans for infrastructure investment over the coming decades. Contained within the document is a commitment to complete the dualling of the A96 between Inverness and Aberdeen by 2030.

1.1.3 On 9 May 2013 the then Minister for Transport and Veterans set out how the A96 dualling programme would be taken forward. The outline strategy identified packages of design and development work to be progressed over the following few years with the objective of completing the full dualling as indicated above. These packages of work included route option assessment work for the section of the A96 between Inverness and Nairn, including a Nairn Bypass, to reflect the commitment to dual the entire route.

1.1.4 In addition to these considerations in respect of the transport network, The Highland Council has also developed land-use planning proposals which include increased future development along the A96 corridor. This is currently detailed in The Highland-wide Local Development Plan (HwLDP) (The Highland Council 2012a) and the Inner Moray Firth Local Development Plan (IMFLDP) (The Highland Council 2015a).

1.1.5 Jacobs were commissioned to undertake a Design Manual for Roads and Bridges (DMRB) Stage 2 Assessment of route options between Inverness and Nairn, including a Nairn bypass. The DMRB Stage 2 assessment included consultation with statutory and non-statutory consultees alongside a programme of public exhibitions in both February 2012 and November 2013.

1.1.6 The DMRB Stage 2 assessment culminated in public exhibitions in October 2014 to present the preferred option for the proposed Scheme.

1.1.7 A Habitats Regulations Appraisal (HRA) was undertaken on the preferred option for the proposed Scheme and issued to SNH in August 2015. This reported on the Stage One 'screening step' of the HRA process. Ten European/Ramsar sites were identified as requiring consideration and further assessment was carried out for five of these sites within the report. The HRA Stage One Screening concluded that it would be necessary to undertake a HRA of the specimen design on the potential effects of the proposed Scheme in relation to wintering birds and Slavonian grebe (*Podiceps auritus*). SNH agreed with the conclusions set out in the report. For further information see Section 4 of this Report (DMRB Stage 2 HRA).

1.1.8 The requirement for environmental impact assessment (EIA) of the proposed Scheme is determined by the Town and Country Planning (Environmental Impact Assessment) (Scotland) Regulations 2011. An EIA screening exercise determined that the proposed Scheme falls within the requirements of developments, for which an EIA is always required with the '*construction of a new road of four or more lanes, or realignment and/or widening of an existing road of two lanes or less so as to provide four or more lanes, where such new road, or realigned and/or widened section of road would be 10 km or more in a continuous length*'.

1.1.9 Transport Scotland, together with Jacobs progressed the development and assessment of the proposed Scheme as part of the DMRB Stage 3 assessment which includes the preparation of an Environmental Statement (ES). Draft road orders together with the ES are scheduled for publication in late 2016 for statutory consultation and public comment.

1.1.10 This report has been developed as part of the DMRB Stage 3 assessment and records the outcome of the HRA (Screening and Appropriate Assessment (AA)) in relation to the specimen design developed for the proposed Scheme.

1.2 The Habitats Directive and European/Ramsar Sites

1.2.1 The EU Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora was adopted in 1992, with the latest amendments to the directive released on 13 May 2013 (hereafter referred to as the Habitats Directive). The main aim of the Habitats Directive is to promote the maintenance of biodiversity. This is achieved by requiring Member States to take measures to maintain or restore to a favourable conservation status those natural habitats and wild species listed on the Annexes to the Directive. It also introduces robust protection for those habitats and species of European importance.

1.2.2 The Habitats Directive includes, under Article 3, provision for the designation of Special Areas of Conservation (SACs) for habitats listed on Annex I and for species listed on Annex II. SACs make up the Natura 2000 network of nature protection areas within the EU together with Special Protection Areas (SPAs) classified under Article 4 of the Birds Directive (Directive 2009/147/EC on the conservation of wild birds (codified version of Directive 79/409/EEC)).

1.2.3 Whilst not European site designations, Ramsar sites are wetland sites of international importance and are named after the Convention on Wetlands of International Importance adopted in Ramsar, Iran, in 1971. All Ramsar sites in Scotland are also either SPAs or SACs (Scottish Natural Heritage (SNH) 2016a) although they do not always share the same qualifying species. They are provided the same protection as European sites under domestic policy and treated in the same way as the Natura 2000 network.

1.3 DMRB Stage 3 Environmental Statement and Wintering Birds Report

1.3.1 The Environmental Statement (ES) for the proposed Scheme (Jacobs 2016) will also consider European/Ramsar sites and the possible impacts that the specimen design may have.

1.3.2 Wintering bird surveys were undertaken during 2013/2014/2015 to inform both the ES and the HRA and the analysis of these data have been used to inform both reports. Further information can be found in Section 7 (Stage Two: Appropriate Assessment) and in the Wintering Birds Report (Jacobs 2015b) which was provided to SNH in January 2016.

1.4 Consultation

1.4.1 A meeting with SNH was held on 28 January 2016 to discuss the scope of the HRA. SNH indicated geese numbers within the A96 corridor area were considered to be high and did not appear to be limited by the availability of habitat (McLaughlan 2016).

1.4.2 Additional discussions were undertaken on 4 August 2016 regarding a new proposed SPA in the Moray Firth.

1.4.3 SNH commented on the finalised report in October 2016. SNH agreed with the conclusions of the report detailed in Tables 7.9 and 7.10 which indicate that there would be no adverse effects on site integrity of the proposed Scheme on any European/Ramsar sites.

2 Requirement for HRA

2.1 The HRA Process

2.1.1 The Habitats Regulations require that an Appropriate Assessment (AA) be undertaken by a Competent Authority where any plan or project which is not directly connected with, or necessary to, the management of the European/Ramsar site (i.e. SAC or SPA, candidate or potential SAC/SPA, or Ramsar site), is likely to have a significant effect on the site. HRA refers to the process that informs the Competent Authority's conclusions with respect to the AA, and the AA must be undertaken in relation to 'the implications for the site in view of the site's conservation objectives'. With respect to this DMRB Stage 3 HRA, the Competent Authority will be the Scottish Ministers.

2.1.2 The HRA process establishes whether the proposal:

- is directly connected with or necessary for site management for nature conservation;
- is likely to have a significant effect on the site; and
- will have an adverse effect on the integrity of the site.

2.1.3 The entire process can be broken down into five stages (Highways Agency, Scottish Government, Welsh Assembly Government and The Department for Regional Development Northern Ireland, 2009), as follows:

- Stage One – Screening (this should be undertaken in all cases);
- Stage Two – Appropriate Assessment;
- Stage Three – Alternative Solutions;
- Stage Four – Imperative Reasons of Overriding Public Importance (IROPI); and
- Stage Five – Compensatory Measures.

2.1.4 It should be noted that not all five stages may be necessary in the HRA process. If the screening stage finds that a plan or project is unlikely to have significant effects on a European/Ramsar site then Stages Two to Five are not likely to be required.

Stage One: Screening

2.1.5 Screening identifies the likely effects upon a European/Ramsar site from a project or plan, either alone or in combination with other projects or plans, and considers whether these effects are likely to be significant.

2.1.6 The test is a 'likelihood' of effects rather than a 'certainty' of effects. In accordance with the Waddenzee Judgement [ECJ case C-127/02] a likely significant effect (LSE) is one that cannot be ruled out on the basis of objective information. This is underpinned by the precautionary principle and the test of 'beyond reasonable scientific doubt', as presented in the Habitats Directive. Paragraph 49 of the same judgement adds '…*where a plan or project… is likely to undermine the site's conservation objectives, it must be considered likely to have a significant effect on that site. The assessment of that risk must be made in the light inter alia of the characteristics and specific environmental conditions of the site concerned by such a plan or project*.'

Stage Two: Appropriate Assessment (AA)

2.1.7 If the Stage One screening process determines that the project or plan (either solely or in combination) is associated with impacts which are 'likely to have a significant effect' upon an international site, the HRA proceeds to Stage Two.

2.1.8 An AA considers the effect of the project or plan, either alone or in combination with other projects or plans, on the integrity of the European/Ramsar site, with respect to the site's structure and function, and conservation objectives. The objective of an AA is to assess if the integrity of the site will or will not be adversely affected.

2.1.9 Site integrity is defined as 'the coherence of the site's ecological structure and function across its whole area, or the habitats, complex of habitats or populations of species for which the site is or will be classified'. The decision as to whether a site is adversely affected focuses on, and is limited to, the conservation objectives for the site (European Commission 2000a).

2.1.10 In carrying out an AA, mitigation measures, aimed at minimising or avoiding the negative effect of a plan or project during its operation or after its completion, may be considered as an integral part of the plan or project (European Commission 2000a).

Stage Three: Alternative Solutions

2.1.11 Stage Three is the process which examines alternative ways of achieving the objectives of the project or plan, whilst avoiding adverse effects on the integrity of the European/Ramsar site. Guidance (European Commission 2007) indicates that all alternative options have to be analysed. This could involve alternative locations or routes, different scales or designs of development, or alternative processes (Highways Agency, Scottish Government, Welsh Assembly Government and The Department for Regional Development Northern Ireland 2009).

Stage Four: Imperative Reasons of Overriding Public Importance (IROPI)

2.1.12 Where no alternative solutions exist and where adverse effects on site integrity remain, an assessment is undertaken of the IROPI to determine whether a project or plan should proceed. Such an outcome would require the development of compensatory measures (Stage Five).

Stage Five: Compensatory Measures

2.1.13 Where it is determined that there are IROPI it would be necessary to design, implement, manage and monitor compensation measures.

2.2 Guidance

2.2.1 In undertaking this HRA the following guidance was referred to:

- Assessing Connectivity with Special Protection Areas (SPAs) (SNH 2013a);
- Assessment of plans and projects significantly affecting Natura 2000 sites Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC (European Commission 2001);
- Assessment of Implications (of Highways and/or Roads Projects) on European Sites (Including Appropriate Assessment) (Highways Agency, Scottish Government, Welsh Assembly Government and The Department for Regional Development Northern Ireland 2009);
- Communication from the Commission on the Precautionary Principle (European Commission 2000b);
- Guidelines on the Implementation of the Birds and Habitats Directives in Estuaries and Coastal Zones (European Commission 2011);
- Habitats Regulations Appraisal of Plans: Guidance for Plan-making Bodies in Scotland, Version 3.0 January 2015 (David Tyldesley and Associates 2015);
- Legislative Requirements for European Sites (SNH undated a); and
- Managing Natura 2000 Sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (European Commission 2000a).

3 The Proposed Scheme

3.1 Introduction

3.1.1 The route of the existing A96 within the study area is approximately 31km in length and runs between Inverness Retail and Business Park roundabout, approximately 850m east of Raigmore Interchange to Hardmuir (situated 3.5km east of Auldearn). The 31km proposed Scheme comprises the dualling of this road to a Category 7A all-purpose carriageway with a 120Akph design speed in accordance with DMRB Volume 6, Section 1, Part 1, TD9/93 Highway Link Design (Highways Agency, Scottish Government, Welsh Assembly Government and The Department for Regional Development Northern Ireland 1993). This is the highest category of all-purpose road where all intersections, shall be grade separated.

3.1.2 The proposed Scheme includes a bypass around Nairn to the south with a new crossing of the River Nairn.

3.1.3 With the exception of the areas around Culloden, Balloch and Nairn, the majority of land is characterised by a farming landscape, interspersed with forestry and small settlements. The area is generally flat but encompasses the gently undulating topography of the Moray Lowlands.

3.2 General Description

3.2.1 As indicated above, the proposed Scheme would be a Category 7A all-purpose carriageway. The appointed contractor would be required to develop the detailed design of the proposed Scheme which is compliant with the Contract, Environmental Statement, HRA and Statutory Orders.

3.2.2 The proposed Scheme would comprise a dual carriageway with 2.5m verges and two lanes of 3.65m width in each direction, plus a 1m hardstrip to both the inside and outside lanes in each direction. In addition there would be a 2.5m wide central reservation. Both the verge and central reserve are widened as required to achieve a fully compliant forward visibility throughout the length of the proposed Scheme.

3.2.3 Non-Motorised Users (NMU) provisions would be provided, to ensure the existing NMU network of paths maintains connectivity between communities via grade separated crossing points rather than at grade, thereby improving safety and accessibility of the NMU network. Up to 30km of new shared use path would be provided including, a new shared use path from the roundabout for the Inverness Retail Park at the western end of the proposed Scheme to the Nairn West junction at Blackcastle. From the Nairn West Junction there will be one shared path link along the existing A96 into Nairn to Easter Delnies connecting to existing path infrastructure and a second path link adjacent to local roads around the south of Nairn with a crossing of the River Nairn and connecting to the National Cycle Route at the C1175 Househill – Raitloan – Howford Road at Crook.

3.2.4 The path between Nairn and Auldearn will be maintained along the southern side of the B9111 Auchnacloich – Auldearn Road under the dual carriageway maintaining connectivity for local communities.

3.2.5 Six new grade separated junctions are proposed between the tie-ins:

- Smithton Junction (ch1750);
- Balloch Junction (ch5000);
- Mid Coul Junction (ch10500);
- Brackley Junction (ch14100);
- Nairn West Junction (ch17950); and
- Nairn East Junction (ch26000).

3.2.6 In addition to the junction structures, 24 principal structures will be provided (underbridges and overbridges) and also 21 new culverts where the proposed Scheme crosses local watercourses. These include a crossing of the River Nairn at ch22400, and replacement crossings of the Aberdeen to Inverness Railway Line at ch16100 and ch19400.

3.2.7 Two new Type B lay-bys and seven new Type A lay-bys will be provided along the route with four on the eastbound carriageway at locations ch15500 (Type B), ch20000, ch23200, ch27900 and five on the westbound carriageway at locations ch15500 (Type B), ch20000, ch23200, ch27800 and ch29800. In accordance with relevant design standards the proposed Scheme will include road lighting at each of the grade separated junctions and for the main dual carriageway between ch850 and ch2970. The road lighting at each of the grade separated junctions extends to the slip roads and local road approaches to roundabouts or priority junctions with the local road. In addition, the existing network of road lighting will remain on the C1020 Barn Church Road and on the existing A96 and C1017 Kerrowgair – Croy Road in the vicinity of Mid Coul Junction. The functionality of the installed lighting will allow for dimmable and remote control for future energy reduction and to support government

objectives to reduce carbon emissions, pollution of the night sky and to reduce impacts on the rural landscape where this can be achieved safely and effectively.

3.2.8 Once the proposed Scheme is completed an assessment should be undertaken to determine whether there is justification to remove the existing street lighting on the existing A96 which will remain as a local road between Seafield and the Smithton north roundabout.

Major Structures

Kerrowaird Underbridge

3.2.9 A structure is proposed to carry the new dual carriageway over the existing A96 at Kerrowaird. A single span structure is envisaged with a span of approximately 34m and a minimum 1m high parapet over the structure on each side. The proposed structure comprises a precast concrete or a steel composite deck, supported on a concrete substructure.

Gollanfield Rail Bridge

3.2.10 A structure is proposed to carry the new dual carriageway over the Aberdeen to Inverness Railway Line. A single span structure is envisaged with a span of approximately 15.5m and a minimum 1.5m high parapet. This would accommodate a future doubling of the existing single line track. The proposed structure comprises a precast concrete deck supported on a reinforced concrete substructure. The structure is likely to span across the railway at a skew angle of approximately 20 degrees.

Moss Side A96 Rail Bridge

3.2.11 A structure is proposed to carry the new dual carriageway over the Aberdeen to Inverness Railway Line. A single span structure is envisaged with a span of approximately 16m and a minimum 1.5m high parapet. The proposed structure comprises a precast concrete deck supported on reinforced concrete substructure. The structure is likely to span across the railway at a skew angle of approximately 20 degrees.

Moss Side C1163 Rail Bridge

3.2.12 A structure is proposed to carry the realigned C1163 over the Aberdeen to Inverness Railway Line. A single span portal type structure is envisaged with a span of approximately 16m. This would accommodate a future doubling of the existing single line track. The proposed superstructure comprises precast concrete beams supported on a cast insitu reinforced concrete substructure. A minimum 1.5m high parapet would be provided over the structure on each side.

River Nairn Crossing

3.2.13 A structure is proposed to carry the new dual carriageway over the River Nairn. A three span steel composite bridge deck is envisaged supported on a reinforced concrete substructure. A new path link would be provided adjacent to the east abutment to connect the existing right of way along the east bank of the river below the bridge. A 1m high parapet would be provided over the structure on the south side and a 1.4m high parapet would be provided over the structure on the north side.

Hardmuir Overbridge (No. 1)

3.2.14 A structure is proposed to carry the realigned existing A96 over the new dual carriageway. A single span structure is proposed with precast concrete beam and slab deck supported on a reinforced concrete substructure. A 1m high parapet would be provided over the structure on each side.

General Principles

3.2.15 The proposed Scheme would incorporate road drainage which has been developed in accordance with Sustainable Drainage Systems (SUDS) guidance, and through consultation with Scottish Environment Protection Agency (SEPA) and The Highland Council. The design is based on the

principle of at least two levels of treatment for the dual carriageway and slip road catchments which was agreed with consultees and Transport Scotland; for further details see *Treatment Levels* below in paragraphs 3.2.24 and 3.2.25.

3.2.16 The design criteria for SUDS for the proposed Scheme include:

- the minimisation of any change to the hydrology and groundwater conditions within the site;
- the minimisation of sediment loads in the runoff during the operational phase;
- the avoidance of high flow velocities particularly at the entry point to the final settlement pond; and
- to achieve compliance with SEPA requirements.

Road Drainage Proposals

3.2.17 For the dual carriageway and associated slip road catchments, the proposals are to provide:

- a minimum of two levels of treatment prior to outfall to a surface water feature (SWF);
- a first level of treatment achieved by using filter drains to capture runoff at source, running parallel to the carriageway;
- a second level of treatment achieved by using a detention basin; and
- a third level of treatment (polishing) would be provided where required for high sensitivity receiving SWFs, which would be achieved by constructing a grassed swale downstream from the basin, prior to final outfall.

3.2.18 For Local road catchments, where discharges are to existing positive drainage, the SUDS proposals are to:

- provide one level of treatment where outfall connects to an existing surface water drainage network which would be achieved by using filter drains parallel to the carriageway to capture runoff at source.

3.2.19 For Local road catchments, where discharges are to ground, the SUDS proposals are to:

- provide a minimum of two levels of treatment prior to outfall to ground by using filter drains to capture runoff at source, running parallel to the carriageway; and
- provide a second level of treatment achieved by using an infiltration trench.

3.2.20 Other parts of the proposed Scheme, such as private access tracks, would have a minimum of one level of treatment achieved by using permeable surfaces such porous asphalt, unsealed granular surfacing or grass verge filter strips. This runoff would be allowed to naturally infiltrate to ground.

3.2.21 SUDS basins have been designed to attenuate the runoff rate from the carriageway drainage in events up to the 1:200 year. This would prevent the flow rate exceeding the existing flow rate. In addition, the basins would have sufficient freeboard above the maximum attenuated water level. The basins would also enable the removal of pollutants contained in sediment from the ‘first flush’ of carriageway runoff through settlement such that the quality of the water discharged is at an acceptable level in terms of the receiving SWF.

3.2.22 Basins with permanent water are highly effective at treating runoff laden with winter rock salts, which is particularly applicable to Highland trunk roads. However, in some locations, particularly in the vicinity of Inverness airport, some basins would not retain a permanent pool of water to reduce their attractiveness to birds.

3.2.23 Where it has been identified as necessary for road drainage to discharge to SWFs, mitigation would be designed to limit the volume of discharge and the risk to water quality. Where required, authorisation for the road drainage discharge under CAR 2011 (as amended) would be obtained from SEPA. All discharges would comply with SEPA requirements.

3.2.24 Proposed SUDS basin locations have been identified and are indicated on Figure 1.

Treatment Levels

3.2.25 In a meeting (2 June 2016), SEPA indicated that the general approach to the drainage design including levels of treatment was acceptable. However, SEPA also advised that they would expect three levels of treatment prior to the proposed outfalls discharging routine runoff from the dual carriageway alignment into the River Nairn and its tributaries. This has been incorporated into the SUDS designs at the locations requested by SEPA.

3.2.26 SEPA indicated that the level of treatment proposed would be acceptable for discharge into the Longman and Castle Stuart Bay areas.

3.2.27 However, the process of agreeing no likely significant effects on the SPA qualifying features should be undertaken with SNH.

3.3 Construction Working Practices

3.3.1 The proposed Scheme will be required to adhere to good working practices including a Construction Environmental Protection Plan (CEMP).

3.3.2 In addition, all construction activities will adhere to SEPA pollution prevention guidelines (PPGs) (SEPA 2016), including the following:

- PPG 1 General guide to the prevention of pollution;
- PPG 2 Above ground soil storage;
- PPG 3 Use and design of soil separators in surface water drainage systems;
- PPG 5 Works and maintenance in or near water;
- PPG 6 Working at construction and demolition sites;
- PPG 7 Working at construction and demolition sites;
- PPG 8 Safe storage and disposal of used oils;
- PPG 13 Vehicle washing and cleaning;
- PPG 21 Pollution incident response planning;
- PPG 22 Incident response - dealing with spills; and
- PPG 26 Safe storage - drums and intermediate bulk containers.

3.4 Construction Programme

3.4.1 A preliminary indicative construction timetable has been produced; subject to the completion of the statutory process, construction could start in 2019 with all works completed by the end of 2022. An outline of the likely timing of the overall works is as follows:

- Advance Works: undertaken in 2019. Some mitigation works may be required a year or more in advance of the main construction works.
- Site establishment: 2019.
- Fencing: 2019.
- Site Clearance: 2019.
- Main Works: 2019 to 2022.
- Environmental Mitigation: Throughout the advanced and main construction period. Landscaping and ecological planting may be later in the construction period.
- Temporary Works: Throughout the main construction period.
- Maintenance: 2022 onwards.

4 DMRB Stage 2 HRA

4.1 Introduction

4.1.1 A preliminary list of European/Ramsar sites needing consideration in the DMRB Stage 2 HRA was developed and then discussed with SNH at a meeting on 8 October 2013 (SNH 2013b).

4.2 Sites Included in the DMRB Stage 2 HRA

4.2.1 Ten sites were identified; four SACs, four SPAs and two Ramsar sites (Table 4.1). This included an additional site (Lower Findhorn Woods SAC) which was added during the initial appraisal process as it is contiguous with the Darnaway and Lethen Forest SPA.

Table 4.1: European/Ramsar Sites Included in the DMRB Stage 2 HRA

EU/Ramsar Code	SNH Code	Site Name	Qualifying Interests (taken from SNH Sitelink)
SACs			
UK0030112	8222	Cawdor Wood	• Western acidic oak woodland
UK0019807	8238	Culbin Bar	• Atlantic salt meadows • Coastal shingle vegetation outside the reach of waves • Shifting dunes
UK0030197	8310	Lower Findhorn Woods	• Mixed woodland on base-rich soils associated with rocky slopes
UK0019808	3408	Moray Firth	• Bottlenose dolphin (*Tursiops truncatus*) • Subtidal sandbanks
SPAs			
UK9020292	8672	Darnaway and Lethen Forest	• Capercaillie (*Tetrao urogallus*), breeding
UK9001624	8515	Inner Moray Firth	• Common tern (*Sterna hirundo*), breeding • Osprey (*Pandion haliaetus*), breeding • Bar-tailed godwit (*Limosa lapponica*), non-breeding • Cormorant (*Phalacrocorax carbo*), non-breeding • Curlew (*Numenius arquata*), non-breeding • Goldeneye (*Bucephala clangula*), non-breeding • Goosander (*Mergus merganser*), non-breeding • Greylag goose (*Anser anser*), non-breeding • Oystercatcher (*Haematopus ostralegus*), non-breeding • Red-breasted merganser (*Mergus serrator*), non-breeding • Redshank (*Tringa totanus*), non-breeding • Scaup (*Aythya marila*), non-breeding • Teal (*Anas crecca*), non-breeding • Wigeon (*Anas penelope*), non-breeding • Waterfowl assemblage, non-breeding
UK9001691	8527	Loch Flemington	• Slavonian grebe, breeding
UK9001625	8550	Moray and Nairn Coast	• Osprey, breeding • Bar-tailed godwit, non-breeding • Common scoter (*Melanitta nigra*)*, non-breeding • Dunlin (*Calidris alpina alpina*)*, non-breeding • Greylag goose, non-breeding • Long-tailed duck (*Clangula hyemalis*)*, non-breeding • Oystercatcher*, non-breeding • Pink-footed goose (*Anser brachyrhynchus*), non-breeding • Red-breasted merganser*, non-breeding • Redshank, non-breeding • Velvet scoter (*Melanitta fusca*)*, non-breeding • Wigeon*, non-breeding

EU/Ramsar Code	SNH Code	Site Name	Qualifying Interests (taken from SNH Sitelink)
			• Waterfowl assemblage, non-breeding
Ramsar Sites			
UK13025	8430	Inner Moray Firth	• Intertidal mudflats and sandflats • Saltmarsh • Sand dune • Shingle • Bar-tailed godwit, non-breeding • Greylag goose, non-breeding • Red-breasted merganser, non-breeding • Redshank, non-breeding • Waterfowl assemblage, non-breeding
UK13048	8447	Moray and Nairn Coast	• Intertidal mudflats and sandflats • Saltmarsh • Sand dune • Shingle • Wet woodland • Greylag goose, non-breeding • Pink-footed goose, non-breeding • Redshank, non-breeding • Waterfowl assemblage, non-breeding

* indicates assemblage qualifier only

4.3 DMRB Stage 2 HRA: Screening (Stage One)

4.3.1 At DMRB Stage 2, it was considered that for five sites, there would be no LSEs. These sites were:

- Cawdor Woods SAC;
- Culbin Bar SAC;
- Lower Findhorn Woods SAC;
- Moray Firth SAC; and
- Darnaway and Lethen Forest SPA.

4.3.2 For these sites it was considered that there were no pathways for the proposed Scheme to affect the qualifying interests and conservation objectives of the sites and therefore there could be no likely significant effects on these sites from the Scheme.

4.3.3 For Culbin Bar SAC and, Moray Firth SAC it was considered that there could be potential effects from the Scheme however standard good construction practices, such as adherence to SEPA PPGs (SEPA 2016), and the inclusion of pollution (road runoff) management systems within the proposed Scheme design, see Section 3 (The Proposed Scheme) meant that no LSE pathways were predicted (Jacobs 2015a).

4.3.4 For five sites, it was considered that the potential for LSEs remained. These sites were:

- Inner Moray Firth SPA;
- Loch Flemington SPA;
- Moray and Nairn Coast SPA;
- Inner Moray Firth Ramsar site; and
- Moray and Nairn Coast Ramsar site.

4.3.5 The five sites represented 10 qualifying interests or interest groups and it was considered that not all of these would be subject to LSEs. For four interests, no LSEs were predicted:

- Breeding common tern (Inner Moray Firth SPA).
- Breeding osprey (Inner Moray Firth SPA and Moray and Nairn Coast SPA).
- Habitats at the Inner Moray Firth Ramsar site (saltmarsh, intertidal mudflats and sandflats, sand dune and shingle).
- Habitats at the Moray and Nairn Coast Ramsar site (wet woodland, saltmarsh, intertidal mudflats and sandflats, sand dune and shingle).

4.3.6 The DMRB Stage 2 HRA recognised LSEs for wintering water birds and Slavonian grebe. It concluded that:

- at Loch Flemington SPA, LSE was predicted as a result of the effects of disturbance to Slavonian grebe during construction of the proposed Scheme; and
- at the Inner Moray Firth SPA and Ramsar site, Moray and Nairn Coast SPA and Ramsar site, LSEs were predicted as a result of disturbance to over-wintering birds and habitat loss (non-designated supporting habitat) during construction and operation of the proposed Scheme.

4.4 Conclusion

4.4.1 It was concluded that it would be necessary to undertake a HRA of the specimen design on the potential effects of the proposed Scheme on the conservation objectives of the five identified European/Ramsar sites in relation to over-wintering birds and Slavonian grebe, to ensure that there would be no adverse effect on site integrity.

4.4.2 SNH agreed with the conclusions as set out in the report (SNH 2015).

5 Potential Effects of the Proposed Scheme

5.1 Introduction

5.1.1 This section describes the likely activities of the proposed Scheme during its preconstruction, construction and operational phases.

5.2 Activities of the Proposed Scheme

5.2.1 Likely activities of the proposed Scheme are indicated in Table 5.1. These activities could result in a variety of potential impacts such as disturbance, habitat loss and fragmentation and pollution. These could result in LSEs on the qualifying interests of the European/Ramsar sites and could therefore have implications for the conservation objectives of the sites and site integrity. Potential effects are described in more detail in Section 5.3 (Potential Effects).

Table 5.1: Likely Activities during Pre-construction, Construction and Operation of the Proposed Scheme

Activity Phase	Likely Activities
Pre-construction	• Ground investigation works • Invasive archaeological survey works
Construction	• Ground investigation works • Vegetation clearance • Earthworks including cuttings and embankments • Construction vehicle movements • Structure construction including piling • Concrete batching • Road surface laying and asphalting
Operation, including maintenance	• Movement of vehicle traffic • Movement of non-motorised units • Verge maintenance • Drainage maintenance

Activity Phase	Likely Activities
	• Structures and road-surface maintenance

5.3 Potential Effects

5.3.1 A road scheme can have a wide variety of effects on species and habitats for which a site is designated. These include:

- habitat loss and/or fragmentation;
- disturbance (noise, vibration, movement and lighting);
- changes in water quality; and
- changes in air quality.

5.3.2 These may affect a species or habitat directly or indirectly such as through loss of a prey species or supporting habitat. Potential effects in relation to those sites identified at DMRB Stage 3 are described below.

Habitat Loss/Fragmentation

5.3.3 The proposed Scheme would not result in land-take from any European/Ramsar sites (Figure 1). However, it is considered that the proposed Scheme could result in the loss of supporting habitat for those bird species which are SPA qualifying interests.

Disturbance

5.3.4 Disturbance may take a number of forms including, but not limited to, noise, vibration, movement (of people and/or vehicles) and lighting. General disturbance may lead to the abandonment of habitats by qualifying species, which could include designated or supporting habitats. Such disturbance could occur during both the construction and the operational phases.

5.3.5 Road lighting could lead to abandonment of areas, or it could result in increased feeding opportunities for birds in lighted areas.

5.3.6 Piling for road structures could result in the disturbance of species including birds.

Changes in Water Quality

5.3.7 Water quality can be affected by oil or chemical spillages or through chronic runoff of such materials. Water quality can also be affected by sedimentation through runoff from construction sites during culvert and bridge construction, or watercourse realignments. Changes in water quality could directly affect species or habitats, or affect them indirectly through loss of aquatic prey species. However, the proposed Scheme will be required to adhere to good construction practices as indicated in Section 3.3 (Construction Working Practices).

5.3.8 Water quality may also be affected by airborne deposition of dust and/or nitrogen compounds – see paragraphs 5.3.10 to 5.3.13 for more information.

5.3.9 During operation road runoff may lead to discharges of oils, chemicals and heavy metals into water bodies. However, as indicated in Section 3.2 (General Description), the proposed Scheme incorporates SUDS to ensure appropriate levels of treatment prior to discharge to waterbodies.

Changes in Air Quality

5.3.10 Air pollution can affect terrestrial, freshwater and marine habitats and species, and can come from a variety of sources including agriculture, industrial premises and transport. Pollution from transport includes nitrogen deposition (ammonia (NH_3) and nitrogen oxides (NOx)), heavy metals and particulates/dust (Air Pollution Information System (APIS), 2016).

5.3.11 Eutrophic waters, such as those that occur at Loch Flemington, are sensitive to nitrogen inputs. Increases in nitrogen can increase the aluminium ion (Al^{3+}) concentration which can result in acidification of freshwater and have an impact on invertebrate populations. Increases in Al^{3+} can also be toxic to fish populations (APIS 2016). Nitrogen inputs can lead to changes in species composition, algal productivity and nutrient regimes.

5.3.12 DMRB guidance indicates that the pollutant of most concern for sensitive vegetation and ecosystems near roads is NOx. Ammonia from road vehicles can lead to significant additional deposition of nitrogen to vegetation in immediate vicinity of roads, typically within 10m

5.3.13 The main alignment, which would be the principal source of nitrogen deposition emissions, is over 400m from Loch Flemington and therefore inputs at Loch Flemington are likely to be negligible. Although the broad habitat for Slavonian grebe is sensitive to NOx (APIS 2016), emissions are not expected to have a negative impact on the species.

Summary

5.3.14 An indicative list of the possible effects pathways as a result of the proposed Scheme on the conservation objectives of European/Ramsar sites was determined. This list was derived from the outcomes of the DMRB Stage 2 assessment and a consideration of possible pathways as part of the DMRB Stage 3 assessment. It should be noted that re-screening of all sites and qualifying interests was undertaken at DMRB Stage 3, see Section 6 (DMRB Stage 3 HRA: Screening (Stage One)) of this report.

5.3.15 Due to the inclusion of SUDS within the proposed Scheme design, water pollution as a result of road runoff was not considered to be a credible pathway during the operational phase of the proposed Scheme, see Section 6 (DMRB Stage 3 HRA: Screening (Stage One)) of this report for more details.

5.3.16 Section 4 of the HRA Screening Report (Jacobs 2015a) at DMRB Stage 2 assessment also proposed standard construction practices, including adherence to SEPA PPGs, to avoid LSEs resulting from waterborne construction pollution on European/Ramsar sites (Section 4 (DMRB Stage 2 HRA).

Table 5.2: Possible Effects Pathways on European/Ramsar Sites

European/Ramsar Site	Activity Phase	Possible Effects Pathways
UK9001624 Inner Moray Firth SPA	Construction	Disturbance
	Operation	Loss of supporting habitat
		Disturbance
UK9001691 Loch Flemington SPA	Construction	Water pollution (airborne dust)
		Disturbance
	Operation	Disturbance
UK9001625 Moray and Nairn Coast SPA	Construction	Disturbance
	Operation	Loss of supporting habitat
		Disturbance
UK13025 Inner Moray Firth Ramsar site	Construction	Disturbance
	Operation	Loss of supporting habitat
		Disturbance
UK13048, 8447 Moray and Nairn Coast Ramsar	Construction	Disturbance
	Operation	Loss of supporting habitat
		Disturbance

6 DMRB Stage 3 HRA: Screening (Stage One)

6.1 Introduction

6.1.1 The DMRB Stage 2 HRA identified sites as recommended by SNH (Jacobs 2015a) and as discussed in Section 4 (DMRB Stage 2 HRA). It was accepted that sites and qualifying interests identified as being subject to LSEs at DMRB Stage 2 would need further assessment at DMRB Stage 3 against the specimen design. Furthermore, it was also considered that sites and qualifying interests removed from further consideration at DMRB Stage 2 should be re-screened at DMRB Stage 3 to ensure that any changes to route alignment etc. during the development of the specimen design would not present any additional risk of LSEs.

6.1.2 This section undertakes the re-screening of all sites and qualifying interests previously identified, including those sites and qualifying interests screened out at DMRB Stage 2.

6.2 Sites Unlikely to be Significantly Affected by the Proposed Scheme

6.2.1 The DMRB Stage 2 HRA considered that no LSEs were predicted, see Section 4 (DMRB Stage 2 HRA), for all qualifying interests of five European sites. Re-screening at DMRB Stage 3 indicated that this conclusion remained valid (Table 6.1).

6.2.2 This assessment included the incorporation of the SUDS designs for the operational phase of the proposed Scheme, see Section 3.2 (Road Drainage), to avoid the potential for waterborne pollution risks, which was identified within the DMRB Stage 2 assessment as being important to the avoidance of any effects on the Culbin Bar SAC and the Moray Firth SAC. The assessment also took cognisance of the requirement outlined in the DMRB Stage 2 HRA (Jacobs 2015a) that all construction works would adhere to standard construction practices, including SEPA PPGs, to prevent pollution entering watercourses.

Table 6.1: European Sites Unlikely to be Affected by the Proposed Scheme

Site ID	Site Name	Qualifying Interest (SNH Sitelink)	DMRB Stage 3 Screening Determination
UK0030112, 8222	Cawdor Wood SAC	• Western acidic oak woodland	No LSEs identified
UK0019807, 8238	Culbin Bar SAC	• Atlantic salt meadows • Coastal shingle vegetation outside the reach of waves • Shifting dunes	No LSEs identified
UK0030197, 8310	Lower Findhorn Woods SAC	• Mixed woodland on base-rich soils associated with rocky slopes	No LSEs identified
UK0019808, 8327	Moray Firth SAC	• Bottlenose dolphin • Subtidal sandbanks	No LSEs identified
UK9020292, 8672	Darnaway and Lethen Forest SPA	• Capercaillie, breeding	No LSEs identified

6.3 Sites Potentially Affected by the Proposed Scheme

6.3.1 Re-screening for DMRB Stage 3 identified the same five sites identified at DMRB Stage 2 where LSEs remained credible. These sites were:

- Inner Moray Firth SPA;
- Loch Flemington SPA;
- Moray and Nairn Coast SPA;
- Inner Moray Firth Ramsar site; and
- Moray and Nairn Coast Ramsar site.

6.3.2 In addition, in July 2016, SNH initiated a public consultation on the proposal to designate a suite of proposed Special Protection Areas (pSPAs). This included a site within the Moray Firth – the Moray Firth pSPA. It is Scottish Government policy to assess pSPAs as if they were designated (SNH, undated b; Scottish Government, 2014). Accordingly, when a plan or project has the potential to affect a pSPA, a HRA is required.

6.3.3 Descriptions and a preliminary assessment of each site can be found below (see also Table 6.3).

Inner Moray Firth SPA (UK9001624, 8515)

6.3.4 The Inner Moray Firth SPA (Figure 1) is an intertidal and estuarine area of mudflats, sandflats saltmarsh and sand dunes of 2,339ha (SNH 1999a). The SPA comprises the Beauly Firth and Inverness Firth and follows the boundaries of four Sites of Special Scientific Interest (SSSIs) (Beauly Firth SSSI, Munlochy Bay SSSI, Longman and Castle Stuart Bays SSSI, and Whiteness Head SSSI). The site has 15 qualifying interests:

- breeding osprey;
- breeding common tern;
- twelve species of over-wintering waders and wildfowl (of which seven qualify only as part of an assemblage); and
- an assemblage of over 20,000 waterfowl.

6.3.5 Of the 15 qualifying interests, 11 are in a Favourable Maintained condition. The remaining four are in an Unfavourable No Change condition. These are:

- non-breeding red-breasted merganser;
- non-breeding cormorant;
- non-breeding goosander (date of assessment 04/02/2001); and
- breeding common tern (date of assessment 30/06/2000) (SNH 2016b).

6.3.6 Parts of the site are thought vulnerable to developmental pressures including land claim and waste disposal (Joint Nature Conservation Committee (JNCC) 2016a). There is also disturbance to the interests through the cumulative impacts of a range of small-scale activities including bait digging and wildfowling.

6.3.7 The Inner Moray Firth SPA lies to the north of the proposed Scheme and at its nearest point lies approximately 54m away at approximately ch800 (between Inverness Retail and Business Park roundabout). The SPA is hydrologically linked to the area of the proposed Scheme by a number of watercourses including ones that discharge directly into the SPA area and others that discharge into the wider Moray Firth.

6.3.8 The assessment table for the Inner Moray Firth SPA can be found below in Table 6.3. For two qualifying interests – breeding common tern and breeding osprey – no LSEs were identified and therefore there were no implications for the conservation objectives of the site in relation to these interest features. For all remaining qualifying interests (wintering birds), LSEs were identified.

<u>Breeding Common Tern and Breeding Osprey</u>

6.3.9 Whiteness Head SSSI is the only part of the SPA where common terns occur (SNH 2013b). Common terns were first recorded at this location in 1969 and numbers peaked between 1980 and 2004 with an average of 226 birds being recorded within this period; the SPA citation indicates the presence of 310 pairs (2% of the population) (SNH 1999a). The species was last assessed in 2000 when its condition was determined to be *Unfavourable No Change*. There are currently thought to be in low numbers at the site; SNH advised in the Appropriate Assessment for the Port of Ardersier that '*common terns no longer use Whiteness Head to a significant degree due to recent human disturbance and predation at the site*' (Marine Scotland 2014). The proposed Scheme is at least 1.6km from Whiteness Head and separated from it by a mixture of forestry and farmland therefore noise and visual disturbance would

be attenuated from the construction works and the operational scheme. Therefore, there is no disturbance pathway to qualifying species.

6.3.10 Consultation during the DMRB Stage 2 assessment did not identify any osprey nests within 500m of the proposed Scheme (Jacobs 2015a) and further consultation with RSPB at DMRB Stage 3 did not return any records. No osprey nests have been identified within 2km of the proposed Scheme.

6.3.11 Although the proposed Scheme is hydrologically connected to the SPA, standard construction practices, including SEPA PPGs (SEPA 2016), would prevent pollution originating from construction works reaching the SPA. Furthermore, the proposed Scheme includes SUDS for the operational phase to ensure road runoff undergoes appropriate levels of treatment prior to discharge to waterbodies. There would therefore be no impact on feeding resources of the common tern or osprey and as such the birds would not be affected.

Wintering Birds

6.3.12 There is the potential for the construction of the proposed Scheme to result in disturbance of non-breeding (i.e. wintering) birds utilising agricultural land adjacent to the proposed Scheme along the whole route. Pink-footed geese, for instance, use stubble fields and grassland (possibly principally rye-grass dominated fields) between autumn and spring (Mitchell 2012), whilst greylag geese use grass throughout the winter, with cereal stubbles in the autumn, and some permanent pasture, arable and spring-sown crops. The short-term and temporary disturbance resulting from construction activities could therefore result in displacement of wintering birds and affect their distribution across the wider area.

6.3.13 Disturbance of wintering birds may also occur during the operational phase of the proposed Scheme as a result of traffic, especially in offline locations.

6.3.14 There is also the potential for the operation of the proposed Scheme to result in some loss of agricultural land, which may be important supporting habitat for the qualifying interests of the SPA. This could affect the distribution of wintering birds across the site as a result of their displacement, or reduce the carrying capacity of the wider area.

6.3.15 The possibility for disturbance of wintering birds using the SPA at Longman Bay was also assessed. Between ch800 and ch3000 the proposed Scheme is adjacent to Longman Bay which is designated as part of the Inner Moray Firth SPA. At its nearest (ch800), the proposed Scheme is approximately 54m from the SPA although it is generally at least 150m away up to ch3000. Beyond this, the separation distance rapidly increases.

6.3.16 The existing A96 is separated and hidden from Longman Bay by the Aberdeen to Inverness Railway Line, a line of woodland, and small communities/farmsteads, including Seafield and Cairnlaw. In addition, the proposed Scheme is to be constructed on the landward side of the existing A96. It is therefore considered that disturbance of wintering birds using the intertidal zone (the SPA) in this area is not a realistic risk. No LSEs were identified in this regard and there were no implications for the conservation objectives of the site in relation to its qualifying interests at this location.

6.3.17 As for common tern and osprey the adherence to standard construction practices and the incorporation of SUDS, would ensure appropriate levels of treatment of road runoff prior to discharge to waterbodies, thereby feeding resources for wintering birds would not be impacted and the birds would not be affected.

Loch Flemington SPA (UK9001691, 8527)

6.3.18 Loch Flemington SPA is an area of inland water designated for its breeding population of Slavonian grebe, which represent five pairs or 7.1% of the Great Britain population (JNCC 2016b).

6.3.19 The Slavonian grebe population at Loch Flemington had increased steadily since first colonising the loch in the mid-1980s. However, Loch Flemington has suffered from nutrient enrichment and algal blooms, one of which is thought to have caused the failure of breeding in 1993 (JNCC 2016b). It is likely that the situation is exacerbated by runoff from adjacent farm land. Phosphorus (P)-rich sewage

effluent, animal waste and agricultural runoff has entered the loch over many years. The lack of a natural surface water outflow at the loch reduced the likelihood of P relinquishment and encouraged the stockpiling of P in the loch sediments, exacerbating the water quality problems (Spears and May 2009). In addition, stock grazing has resulted in localised damage to sedge beds used for nesting. Breeding has continued to decline (see Table 6.2) and Slavonian grebe has not successfully bred in recent years, having not been present since 2005. Currently, across Great Britain/UK, the breeding population is estimated at 30 pairs (Musgrove *et al*., 2013).

6.3.20 Work to understand the selection of lakes by Slavonian Grebes in Scotland indicated that the presence of small fish (their primary food) and the ability to hunt the fish (clearer water) were significant (Summers *et al.,* 2011). Presence of suitable nesting habitat was also important (sedge-beds).

Table 6.2: Slavonian Grebe Numbers (Breeding Pairs and Young) Between 2002 and 2006. Data Provided by SNH (SNH 2013a)

Year	Loch Flemington		National	
	Pairs	Young	Pairs	Young
2002	2	0	46	36
2003	1	0	44	47
2004	0	0	51	24
2005	2	0	43	23
2006	0	0	39	34
Average	*1*	*0*	*44.6*	*30.8*

6.3.21 The loch itself is of high alkalinity and shallow with a maximum depth of 2.35m (Spears and May 2009). The loch lies above an impermeable iron pan and is surrounded by an area of gravel above an impermeable till and sandstone layer. Modifications in the 19th century involved blocking the natural surface-water outflow (Spears and May 2009) and therefore discharge only occurs through groundwater via sand and gravel beds. The main water inflow to the loch is to the south-west and comes from a series of drains originating in the Croy area approximately 2km away.

6.3.22 The proposed Scheme lies to the north/northwest and the main alignment is more than 400m from the site, although the tie-in of the proposed Scheme to the B9006 Millburn Roundabout - Culcabock - Castle Hill - Culloden Moor - Croy - Gollanfield - Fort George Road at Brackley is nearer (210m). The proposed Scheme is also not hydrologically linked to Loch Flemington as it lies downhill of the site. In addition, the proposed Scheme does not intercept with the site's groundwater influence zone (McLaughlan 2016). Loch Flemington is therefore not at risk from any hydrological changes, or waterborne pollution.

6.3.23 Although not currently breeding at the site, Slavonian grebe may do so once the loch has been brought back into a good condition. Work is continuing to improve the water quality of the loch and therefore Slavonian grebe may be present during the construction and operational phases of the proposed Scheme.

6.3.24 Construction works for the main alignment are unlikely to result in disturbance due to their distance from the loch. However, vehicles accessing the B9090 Loch Flemington – Clephanton – Cawder – Nairn Road as a result of construction activities could result in disturbance to nesting Slavonian grebe as the B9090 Loch Flemington – Clephanton – Cawder – Nairn Road borders the southwestern part of Loch Flemington leading to a LSE on the qualifying interest.

6.3.25 Disturbance as a result of the operational phase of the proposed Scheme is not considered likely.

6.3.26 A potential LSE has also been identified as a result of airborne contamination from construction vehicles passing Loch Flemington especially if carrying road-fill, soil, hard-core etc.. This could affect the water quality of Loch Flemington and therefore the feeding resources of Slavonian grebe.

Moray and Nairn Coast SPA (UK9001625, 8550)

6.3.27 The Moray and Nairn Coast SPA is an intertidal and estuarine area of mainly mud flats, sand flats and saltmarshes. It is designated for:

- breeding osprey;
- eleven species of over-wintering waders and wildfowl (of which seven qualify only as part of an assemblage); and
- an assemblage of over 20,000 waterfowl.

6.3.28 The SPA is vulnerable to change and a number of modifications have occurred. In the lower River Spey and Spey Bay area (to the east of the proposed Scheme), river engineering to maintain fishing interests and to protect adjacent agricultural land has affected the natural fluvial and geomorphological processes. This has resulted in the formation of areas of bare shingle required for terns to nest (JNCC 2016c). The site is also vulnerable to disturbance by recreational users, including fishermen and wildfowlers. Nesting terns may have been predated by American mink (*Neovison vison*) and commercial cockle harvesting has historically affected the site in the past (JNCC 2016c).

6.3.29 Of the 13 SPA qualifying interests, 11 are in a Favourable Maintained condition. Non-breeding redshank are in Favourable Recovered condition (date of assessment 30/11/2008) and non-breeding bar-tailed godwit are in a Favourable Declining condition (date of assessment 30/11/2008) (SNH 2016c).

6.3.30 The Moray and Nairn Coast SPA lies to the north-east of Nairn between Nairn and Findhorn Bay. It includes the area of the Culbin Bar SAC. At its nearest point, near Auldearn, it lies approximately 1.7km from the proposed Scheme. It is hydrologically linked to the proposed Scheme through watercourses that discharge into the Moray Firth.

6.3.31 The assessment for the Moray and Nairn Coast SPA can be found below (Table 6.3). For one qualifying interest – breeding osprey – no LSEs were identified and therefore there were no implications for the conservation objectives of the site in relation to this interest feature. For all remaining qualifying interests (wintering birds), potential LSEs were identified.

Breeding Osprey

6.3.32 Consultation during the DMRB Stage 2 assessment did not identify any osprey nests within 500m of the proposed Scheme (Jacobs 2015a) and further consultation with RSPB at DMRB Stage 3 did not return any records. No osprey nests have been identified within 2km of the proposed Scheme.

6.3.33 Although the proposed Scheme is hydrologically connected to the SPA, standard construction practices, including SEPA PPGs (SEPA 2016), would prevent pollution originating from construction works reaching the SPA. Furthermore, the proposed Scheme includes SUDS during the operational phase to ensure road runoff undergoes appropriate levels of treatment prior to discharge to waterbodies. There would therefore be no impact on feeding resources of osprey and the birds would not be affected.

Wintering Birds

6.3.34 There is the potential for the construction of the proposed Scheme to result in disturbance of non-breeding (i.e. wintering) birds utilising agricultural land adjacent to the proposed Scheme. Pink-footed geese, for instance, use stubble fields and grassland (possibly principally rye-grass dominated fields) between autumn and spring (Mitchell 2012), whilst greylag geese use grass throughout the winter, with cereal stubbles in the autumn, and some permanent pasture, arable and spring-sown crops. The short-term and temporary disturbance resulting from construction activities could therefore result in displacement of wintering birds and affect their distribution across the wider area.

6.3.35 Disturbance of wintering birds may also occur during the operational phase of the proposed Scheme as a result of traffic, especially in offline locations.

6.3.36 There is also the potential for the operation of the proposed Scheme to result in some loss of agricultural land, which may be supporting habitat for the qualifying interests of the SPA. This could affect the distribution of wintering birds across the site as a result of their displacement, or reduce the carrying capacity of the wider area.

6.3.37 As for osprey, adherence to standard construction practices and the incorporation of SUDS into the design would ensure appropriate levels of treatment prior to discharge to waterbodies, and the wintering birds feeding resources would not be affected.

6.3.38 In summary, LSEs were identified as a result of potential disturbance of wintering birds utilising supporting habitat, and from the loss of that supporting habitat.

Inner Moray Firth Ramsar Site (UK13025, 8430)

6.3.39 The Inner Moray Firth Ramsar site is an intertidal and estuarine area of mainly mud flats and sand flats. The site supports a variety of important wetland habitats including intertidal flats with eelgrass Zostera beds, saltmarsh, and a sand and shingle spit (JNCC 2008a). The site also supports a wintering bird assemblage of international importance and four species which individually occur at levels of international importance.

6.3.40 No factors have been reported as adversely affecting the site's ecological character (JNCC 2008a).

6.3.41 Eight of the nine qualifying interests are in a Favourable Maintained condition. The condition of the non-breeding red-breasted merganser population is assessed as Unfavourable No change (date of assessment 04/02/2001) (SNH 2016d).

6.3.42 The site comprises four main areas; the Beauly Firth between Inverness and Beauly, Munlochy Bay (Black Isle), the south coast of the Firth between Inverness and Inverness Airport, and an area between Fort George, Whiteness Head and Nairn, and covers the same area as the Inner Moray Firth SPA.

6.3.43 The Inner Moray Firth Ramsar site lies to the north of the proposed Scheme and is located approximately 54m north at its nearest point at approximately ch800 (between Inverness Retail and Business Park roundabout). The SPA is hydrologically linked to the area of the proposed Scheme by a number of watercourses including ones that discharge directly into the SPA area and others that discharge into the wider Moray Firth.

6.3.44 The assessment table for the Inner Moray Firth Ramsar site can be found below in Table 6.3. For the four habitat interests no LSEs were identified and therefore there were no implications for the conservation objectives of the site in relation to these interest features. For all remaining qualifying interests (wintering birds), LSEs were identified.

Habitats

6.3.45 Although the proposed Scheme is hydrologically connected to the Ramsar site, standard construction practices, including SEPA PPGs (SEPA 2016), would prevent pollution originating from construction works reaching the Ramsar site. Furthermore, the proposed Scheme includes SUDS to ensure road runoff undergoes appropriate levels of treatment prior to discharge to waterbodies, and the amounts of discharge from SUDS would be low compared to the volumes of water within the Moray Firth. The designated habitats would therefore not be affected by pollution or hydrological changes.

Wintering Birds

6.3.46 There is the potential for the construction of the proposed Scheme to result in disturbance of non-breeding (i.e. wintering) birds utilising agricultural land adjacent to the proposed Scheme. Pink-footed geese, for instance, use stubble fields and grassland (possibly principally rye-grass dominated fields) between autumn and spring (Mitchell 2012), whilst greylag geese use grass throughout the winter, with cereal stubbles in the autumn, and some permanent pasture, arable and spring-sown crops. The short-term and temporary disturbance resulting from construction activities could therefore result in displacement of wintering birds and affect their distribution across the wider area.

6.3.47 Disturbance of wintering birds may also occur during the operational phase of the proposed Scheme as a result of traffic, especially in offline locations.

6.3.48 There is also the potential for the operation of the proposed Scheme to result in some loss of agricultural land, which may be important supporting habitat for the qualifying interests of the Ramsar site. This could affect the distribution of wintering birds across the site as a result of their displacement, or reduce the carrying capacity of the wider area.

6.3.49 The possibility for disturbance of birds using the Ramsar site at Longman Bay was also assessed. Between ch800 and ch3000 the proposed Scheme is adjacent to Longman Bay which is designated as part of the Inner Moray Firth SPA. At its nearest (ch800), the proposed Scheme is approximately 55m from the Ramsar site although it is generally separated by at least 150m up to ch3000. Beyond this, the separation distance rapidly increases.

6.3.50 The existing A96 is separated and hidden from Longman Bay by the Aberdeen to Inverness Railway Line, a line of woodland, and small communities/farmsteads, including Seafield and Cairnlaw. In addition, the proposed Scheme is to be constructed on the landward side of the A96. It is therefore considered that disturbance of birds using the intertidal zone (the Ramsar site) in this area is not a realistic risk. No LSEs were identified in this regard and there were no implications for the conservation objectives of the site in relation to its qualifying interests at this location.

6.3.51 In addition, the construction and operational phase pollution control measures mean that there would be no impact on feeding resources of any of the bird species and therefore they would not be affected via this pathway.

Moray and Nairn Coast Ramsar Site (UK13048, 8447)

6.3.52 The Moray and Nairn Coast Ramsar site is an intertidal and estuarine area of mainly mud flats, sand flats and saltmarshes. It is designated for three non-breeding birds (greylag goose, pink-footed goose and redshank), a non-breeding waterfowl assemblage, and a variety of habitats. The site supports important wetland features, including particularly good examples of intertidal flats, saltmarsh and floodplain alder (*Alnus glutinosa*) woodland (JNCC 2008b).

6.3.53 No factors have been reported as adversely affecting the site's ecological character (JNCC 2008b).

6.3.54 Five of the nine designated features are in a Favourable Maintained condition. Non-breeding redshank are in a Favourable Recovered condition (Date of Assessment 30/11/2008), whilst the saltmarsh, sand dune and wet woodland features are in an Unfavourable Declining condition (05/06/210, 05/06/2011, 18/08/2010 respectively) (SNH 2016e).

6.3.55 The Moray and Nairn Coast Ramsar site lies to the north-east of the town of Nairn between Nairn and Findhorn Bay and covers the same area as the Moray and Nairn Coast SPA. It also includes the area of the Culbin Bar SAC. At its nearest point, near Auldearn, it lies approximately 1.7km from the proposed Scheme. It is hydrologically linked to the proposed Scheme through watercourses that discharge into the Moray Firth.

6.3.56 The assessment for the Moray and Nairn Coast Ramsar site can be found below (Table 6.3). For the five habitat features no LSEs were identified and therefore there were no implications for the conservation objectives of the site in relation to these features. For all remaining qualifying interests (wintering birds), LSEs were identified.

Habitats

6.3.57 Although the proposed Scheme is hydrologically connected to the Ramsar site, standard construction practices, including SEPA PPGs, would prevent pollution originating from construction works reaching the Ramsar site. Furthermore, the proposed Scheme includes SUDS during the operational phase to ensure road runoff undergoes appropriate levels of treatment prior to discharge to waterbodies, and the amounts of discharge from SUDS would be low compared to the volumes of water within the Moray Firth. It should be noted that the Ramsar site lies approximately 4.3km from the nearest SUDS

location (via hydrological pathways). The designated habitats would therefore not be affected by water pollution or hydrological changes.

Wintering Birds

6.3.58 There is the potential for the construction of the proposed Scheme to result in disturbance of non-breeding (i.e. wintering) birds utilising agricultural land adjacent to the proposed Scheme. Pink-footed geese, for instance, use stubble fields and grassland (possibly principally rye-grass dominated fields) between autumn and spring (Mitchell 2012), whilst greylag geese use grass throughout the winter, with cereal stubbles in the autumn, and some permanent pasture, arable and spring-sown crops. The short-term and temporary disturbance resulting from construction activities could therefore result in displacement of wintering birds and affect their distribution across the wider area.

6.3.59 Disturbance of wintering birds may also occur during the operational phase of the proposed Scheme as a result of traffic, especially in offline locations.

6.3.60 There is also the potential for the operation of the proposed Scheme to result in some loss of agricultural land, which may be important supporting habitat for the qualifying interests of the Ramsar site. This could affect the distribution of wintering birds across the site as a result of their displacement, or reduce the carrying capacity of the wider area.

6.3.61 However, the construction and operational phase pollution control measures mean that there would be no impact on feeding resources of any of the bird species and therefore they would not be affected via this pathway.

6.3.62 In summary, LSEs were identified as a result of disturbance of birds utilising supporting habitat, and from the loss of that supporting habitat.

Moray Firth pSPA (UK9020313, 10490)

6.3.63 The Moray Firth pSPA is proposed to extend across an area of approximately 1762km^2 stretching from the Helmsdale coast in the north, to Portsoy in the east and including the outer Dornoch and Cromarty Firths, Beauly and Inverness Firths, as well as part of the wider Moray Firth (SNH 2016f). In winter, the site is important for sea ducks, velvet scoter and shags – one of the largest concentrations in Great Britain. In addition, it also holds the third largest population of scaup; and the largest Scottish non-breeding populations of common scoter and goldeneye (SNH 2016f).

6.3.64 The site would be designated for one species of breeding bird (European shag, *Phalacrocorax aristotelis*) and eleven species of non-breeding (wintering) birds, including shag.

6.3.65 The area is proposed to provide protection to important wintering grounds used for feeding, moulting and roosting by waterfowl listed above (SNH, 2016g). This area mainly encompasses the marine waters of the Moray Firth, with the addition of the inshore area in the north of site. The Moray Firth supports a wide variety of both pelagic and demersal fish and is an important spawning ground and/or nursery for several fish species (SNH, 2016g). Shellfish form part of the diverse fauna and all are important prey species for the proposed qualifying interests.

6.3.66 In general the pSPA does not include areas already designated as European/Ramsar sites.

6.3.67 The assessment for the Moray and Nairn Coast Ramsar site can be found below (Table 6.3).

6.3.68 Although the proposed Scheme is hydrologically connected to the pSPA, standard construction practices, including SEPA PPGs (SEPA 2016), would prevent pollution originating from construction works reaching the SPA. Furthermore, the proposed Scheme includes SUDS during the operational phase to ensure road runoff undergoes appropriate levels of treatment prior to discharge to waterbodies. There would therefore be no impact on feeding resources of any species, and no deterioration of the habitats, and the birds would not be affected.

6.3.69 Concentrations of breeding and non-breeding shag have been identified in three locations within the pSPA area (SNH, 2016g):

- on the Morayshire coast, (between Buckie and Portsoy); and
- at two locations in the north of the site along the coast between Brora and Berriedale.

6.3.70 All three of these sites are at a significant distance from the proposed Scheme, at least 48km, and therefore there was no risk of disturbance to the major populations of these birds, or a risk of mortality or injury as a result of the Scheme. Therefore, no potential LSEs can be identified for this species,

6.3.71 All other proposed qualifying species are present around the coast of the pSPA, and therefore could potentially be at risk from the proposed Scheme. The nearest point of the proposed Scheme to the pSPA is in the vicinity of Longman Bay where it is over 600m away. It is considered therefore that birds within the pSPA would not be at risk of disturbance, mortality or injury from works associated with construction of the proposed Scheme, or from its operation.

6.3.72 It is conceivable that supporting habitats of the pSPA could be risk from the proposed Scheme. However, as the proposed qualifying interests are mainly species of duck and diver it is considered that only areas of wetland and large water bodies would be utilised by the birds. No large areas of wetland/open water were mapped within 500m of the proposed Scheme, except Loch Flemington. Although this site has been shown to be potentially important for wintering duck species (Kalejta-Summers, 2006), none of proposed qualifying species were recorded there. It is therefore considered that there is no regularly used/suitable supporting habitat for the proposed qualifying species in close proximity to the proposed Scheme.

6.3.73 In summary, no LSEs to the pSPA could be determined as a result of the proposed Scheme.

Table 6.3: Summary Table for European/Ramsar Sites Potentially Affected by the Proposed Scheme (Green: No LSEs identified, Amber: LSEs potential)

Site ID	Site Name	Site Conservation Objectives	Qualifying Interest (SNH Sitelink)	Commentary	Screening Conclusion
UK9001624, 8515	Inner Moray Firth SPA	To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and To ensure for the qualifying species that the following are maintained in the long term: • Population of the species as a viable component of the site; • Distribution of the species within site; • Distribution and extent of habitats supporting the species; • Structure, function and supporting processes of habitats supporting the species; and • No significant disturbance of the species.	• Common tern, breeding • Osprey, breeding	The proposed Scheme is 1.6km from the only location where common terns are known to nest, and separated from it by forestry and farmland. No disturbance (or other effects pathways) could therefore be identified. No osprey nests have been identified within at least 2km of the proposed Scheme. No disturbance (or other effects pathways) could therefore be identified.	No LSEs identified
			• Bar-tailed godwit, non-breeding • Cormorant*, non-breeding • Curlew*, non-breeding • Goldeneye*, non-breeding • Goosander*, non-breeding • Greylag goose, non-breeding • Oystercatcher*, non-breeding • Red-breasted merganser, non-breeding • Redshank, non-breeding • Scaup*, non-breeding • Teal*, non-breeding • Wigeon*, non-breeding • Waterfowl assemblage, non-breeding	Wintering birds (especially geese) could use wetland, grassland and arable land for roosting and/or foraging. The proposed Scheme could therefore result in loss of this (supporting) habitat, and the disturbance of individuals whilst utilising the habitat.	LSEs predicted. Disturbance to over-wintering birds, and habitat loss (non-designated supporting habitat) during construction and operation.
UK9001691, 8527	Loch Flemington SPA	To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and To ensure for the qualifying species that the following are maintained in the long term: • Population of the species as a viable component of the site; • Distribution of the species within site; • Distribution and extent of habitats supporting the species; • Structure, function and supporting processes of habitats supporting the species; and	• Slavonian grebe, breeding	Although not currently breeding at the site, Slavonian grebe may do so in the future. The proposed Scheme is too far away to result in the disturbance of birds. However, pollution (airborne contamination) from construction vehicles using roads adjacent to the loch could result in the degradation of habitat, especially feeding resources.	LSEs predicted. Disturbance during construction. Airborne pollution (dust etc.).

Site ID	Site Name	Site Conservation Objectives	Qualifying Interest (SNH Sitelink)	Commentary	Screening Conclusion
		• No significant disturbance of the species.			
UK9001625, 8550	Moray and Nairn Coast SPA	To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and To ensure for the qualifying species that the following are maintained in the long term: • Population of the species as a viable component of the site; • Distribution of the species within site; • Distribution and extent of habitats supporting the species; • Structure, function and supporting processes of habitats supporting the species; and • No significant disturbance of the species.	• Osprey, breeding	No osprey nests have been identified within at least 2km of the proposed Scheme. No disturbance (or other effects pathways) could therefore be identified.	No LSEs identified
			• Bar-tailed godwit*, non-breeding • Common scoter *, non-breeding • Dunlin*, non-breeding • Greylag goose, non-breeding • Long-tailed duck*, non-breeding • Oystercatcher*, non-breeding • Pink-footed goose, non-breeding • Red-breasted merganser*, non-breeding • Redshank, non-breeding • Velvet scoter*, non-breeding • Wigeon*, non-breeding • Waterfowl assemblage, non-breeding	Wintering birds (especially geese) could use wetland, grassland and arable land for roosting and/or foraging. The proposed Scheme could therefore result in loss of this (supporting) habitat, and the disturbance of individuals whilst utilising the habitat.	LSEs predicted. Disturbance to over-wintering birds, and habitat loss (non-designated supporting habitat) during construction and operation.
UK13025, 8430	Inner Moray Firth Ramsar site	The Ramsar Convention's mission is "*the conservation and wise use of all wetlands through local and national actions and international cooperation, as a contribution towards achieving sustainable development throughout the world*".	• Intertidal mudflats and sandflats • Saltmarsh • Sand dune • Shingle	Standard construction practices, including SEPA PPGs, would prevent pollution originating from construction reaching habitats. SUDS to ensure road runoff undergoes appropriate levels of treatment prior to discharge to waterbodies . The volume of SUDS discharge would be low compared to the volumes of water within the Moray Firth. The designated habitats would therefore not be affected by pollution or hydrological changes.	No LSEs identified
			• Bar-tailed godwit, non-breeding • Greylag goose, non-breeding • Red-breasted merganser, non-breeding • Redshank, non-breeding • Waterfowl assemblage, non-breeding	Wintering birds (especially geese) could use wetland, grassland and arable land for roosting and/or foraging. The proposed Scheme could therefore result in loss of this (supporting) habitat, and the disturbance of individuals whilst utilising the habitat.	LSEs predicted. Disturbance to over-wintering birds, and habitat loss (non-designated supporting habitat) during construction and operation.
UK13048, 8447	Moray and Nairn Coast Ramsar site	The Ramsar Convention's mission is "*the conservation and wise use of all wetlands through local and national actions and*	• Intertidal mudflats and sandflats • Saltmarsh	Standard construction practices, including SEPA PPGs, would prevent pollution originating from construction	No LSEs identified

Site ID	Site Name	Site Conservation Objectives	Qualifying Interest (SNH Sitelink)	Commentary	Screening Conclusion
		international cooperation, as a contribution towards achieving sustainable development throughout the world".	• Sand dune • Shingle • Wet woodland	reaching habitats. SUDS to ensure road runoff undergoes appropriate levels of treatment prior to discharge to waterbodies. The volume of SUDS discharge would be low compared to the volumes of water within the Moray Firth. The designated habitats would therefore not be affected by pollution or hydrological changes.	
			• Greylag goose, non-breeding • Pink-footed goose, non-breeding • Redshank, non-breeding • Waterfowl assemblage, non-breeding	Wintering birds (especially geese) could use wetland, grassland and arable land for roosting and/or foraging. The proposed Scheme could therefore result in loss of this (supporting) habitat, and the disturbance of individuals whilst utilising the habitat.	LSEs predicted. Disturbance to over-wintering birds, and habitat loss (non-designated supporting habitat) during construction and operation.
UK9020313, 10490	Moray Firth proposed SPA	To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, subject to natural change, thus ensuring that the integrity of the site is maintained in the long-term and it continues to make an appropriate contribution to achieving the aims of the Birds Directive for each of the qualifying species. This contribution will be achieved through delivering the following objectives for each of the site's qualifying features: • Avoid significant mortality, injury and disturbance of the qualifying features, so that the distribution of the species and ability to use the site are maintained in the long-term; • To maintain the habitats and food resources of the qualifying features in favourable condition.	• European shag (breeding and nonbreeding))	Breeding and non-breeding shags are present at three locations, all of which are at a distance from the proposed Scheme (at least 48km). There is therefore no risk of disturbance, mortality or injury. Incorporation of good construction practices and SUDS during the operational phase will avoid the deterioration of habitats.	No LSEs identified
			• Great northern diver, non-breeding • Red-throated diver, non-breeding • Slavonian grebe, non-breeding • Scaup, non-breeding • Common eider, non-breeding • Long-tailed duck, non-breeding • Common scoter, non-breeding • Velvet scoter, non-breeding • Goldeneye, non-breeding • Red-breasted merganser, non-breeding	At its nearest point, the pSPA is over 600m from the proposed Scheme. There is therefore no risk of disturbance, mortality or injury. No regularly used/suitable supporting habitat for the proposed qualifying species was identified in the vicinity of the proposed Scheme Incorporation of good construction practices and SUDS during the operational phase will avoid the deterioration of habitats.	No LSEs identified

* indicates assemblage qualifier only

6.4 Summary

6.4.1 The Stage One (Screening) process reviewed all European/Ramsar sites and their qualifying interests assessed at DMRB Stage 2. This review also included sites and interests that had been screened out at Stage 2. It was determined that the DMRB Stage 2 conclusions remained valid.

6.4.2 For six European sites no LSEs were predicted. These sites were:

- Cawdor Woods SAC;
- Culbin Bar SAC;
- Lower Findhorn Woods SAC;
- Moray Firth SAC;
- Darnaway and Lethen Forest SPA; and
- Moray Firth pSPA

6.4.3 For five European/Ramsar sites, LSEs were predicted requiring that these sites should be taken through to the AA stage. These sites were:

- Inner Moray Firth SPA;
- Loch Flemington SPA;
- Moray and Nairn Coast SPA;
- Inner Moray Firth Ramsar site; and
- Moray and Nairn Coast Ramsar site.

6.4.4 The identified LSEs were in relation to wintering birds (Inner Moray Firth SPA and Ramsar site, Moray and Nairn Coast SPA and Ramsar site) and Slavonian grebe (Loch Flemington SPA).

6.4.5 As at DMRB Stage 2, it was assessed that not all the qualifying interests of these five sites would require further assessment at the AA stage. No LSEs were determined for:

- breeding common tern (Inner Moray Firth SPA);
- breeding osprey (Inner Moray Firth SPA, Moray and Nairn Coast SPA); and
- habitats associated with the Inner Moray Firth and Moray and Nairn Coast Ramsar sites.

6.4.6 The Stage One (Screening) process at DMRB Stage 3 determined that this assessment was still valid.

7 DMRB Stage 3 HRA: Appropriate Assessment (Stage Two)

7.1 Introduction

7.1.1 This section describes the Stage Two assessment (AA) of the HRA process. It examines those sites identified in Section 6 (DMRB Stage 3 HRA: Screening (Stage One)) as requiring further assessment.

7.1.2 For four of the five sites identified in Section 6 (DMRB Stage 3 HRA: Screening (Stage One)), the LSEs related to non-breeding (overwintering) birds and the risks resulting from disturbance and or loss of supporting habitat. These sites were:

- Inner Moray Firth SPA;
- Moray and Nairn Coast SPA;
- Inner Moray Firth Ramsar Site; and
- Moray and Nairn Coast Ramsar site.

7.1.3 The SPAs and the Ramsar sites cover the same two areas – the Inner Moray Firth area and the Moray and Nairn Coast area – and these two areas lie less than 6km apart. All four sites include greylag geese, redshank and an overwintering waterfowl assemblage in their designations, as well as other species see Table 4.1 and Appendix A (European/Ramsar Sites) for full details of the conservation objectives for the sites.

7.1.4 Wintering birds may fly a significant distance between feeding and roosting sites; information from SNH indicates that this could be up to 20km for some species of goose (SNH 2013a) (Table 7.1). Geese from the two areas, (Inner Moray Firth or the Moray and Nairn Coast), may therefore utilise the same foraging locations (i.e. areas of undesignated supporting habitat) which lie along the route of the proposed Scheme.

Table 7.1: Foraging Distances of Selected Bird Species during the Winter Season (SNH 2013a)

Species	Foraging range from night roost during winter season
Barnacle goose	Core range of 15km, with maximum recorded distance of up to 25km.
Greenland white-fronted goose	Core range of 5-8km.
Greylag goose*	Core range of 15-20km.
Pink-footed goose*	Core range of 15-20km.

* Qualifying species of the Inner Moray Firth/Moray and Nairn Coast SPAs and/or Ramsar sites

7.1.5 The four sites listed above have therefore been assessed together, as some of the overwintering bird species may use the entire area within which the proposed Scheme lies as a single foraging resource. Wintering bird surveys and an analysis of land-cover type were therefore undertaken to facilitate this understanding; details can be found in Section 7.2 (Inner Moray Firth SPA, Moray and Nairn Coast SPA, Inner Moray Firth Ramsar Site, Moray Firth and Nairn Coast Ramsar Site).

7.1.6 The fifth site – Loch Flemington SPA where the identified LSE related to breeding Slavonian grebe – was assessed separately.

7.2 Inner Moray Firth SPA, Moray and Nairn Coast SPA, Inner Moray Firth Ramsar Site, Moray Firth and Nairn Coast Ramsar Site

Methods

7.2.1 To assess the usage of the wider proposed Scheme area by geese and other species, wintering bird surveys were undertaken over two years. As well as recording all bird species, the surveys specifically looked at geese foraging and roosting; these are described in detail below. In addition, land cover across the wider area was analysed to determine the amount of habitat available to geese.

Goose Foraging Surveys

7.2.2 Surveys were conducted twice a month over two years:

- January 2014 to March 2014 (winter 2013/14); and
- October 2014 to April 2015 (winter 2014/15).

7.2.3 Surveys of the birds' foraging distribution followed the procedure used by Keller *et al*. (1997) and Patterson *et al*. (2013). The surveys covered all areas of suitable foraging habitat (i.e. arable, grassland, wetlands) adjacent to the proposed Scheme such that the area covered represented the maximum that could be achieved when surveying during midwinter. The total area (including non-suitable habitats) within the survey area was approximately 10,683ha.

7.2.4 Two surveyors (one predominantly driving and one lead surveyor) drove along roads within the survey area while scanning for flocks of foraging geese. The surveyors also stopped at suitable vantage points that allowed for surveying of a wide area. The starting point of the survey area was alternated between the western and eastern extent to avoid any systematic bias in relation to the time of day when each part of the area was visited. The survey commenced no earlier than one hour after dawn and continued until no later than dusk.

7.2.5 All other wintering bird species, including species not listed as qualifying interests of any of the four sites, were also recorded.

7.2.6 Full details can be found in the A96 Dualling Inverness to Nairn (including Nairn Bypass): Wintering Birds Report (Jacobs 2015b).

Goose Roosting Surveys

7.2.7 Goose counts were undertaken at identified roosts within 20km of the goose foraging survey area. Information on the location of goose roost sites in the area was obtained from published surveys and studies (Mitchell and Hearn 2004; Mitchell 2012; Mitchell 2013; Mitchell 2014). Roost sites were chosen for survey based on proximity to the goose foraging survey area and likely size of the roosting population. This process produced the following sites for survey: Castle Stuart Bay; Munlochy Bay; Loch Flemington; Nairn Sand Bar, and; Findhorn Bay.

7.2.8 Goose roost counts commenced in November 2014 and continued until April 2015. Not all roost sites were surveyed every month as roost sites that supported no or low numbers of geese for multiple visits were abandoned and effort focused on confirmed large roosts.

7.2.9 Optimal vantage points were determined during the initial site visits in 2014. The observations started at least 45 minutes before sunrise and ended when all the geese had departed the roost or one hour after sunrise. The geese were counted as they flew out of the roosts and their departure directions were recorded as one of the eight compass points (N, NE, E etc.).

7.2.10 Full details can be found in the A96 Dualling Inverness to Nairn (including Nairn Bypass): Wintering Birds Report (Jacobs 2015b).

Land Cover Analysis

7.2.11 The area of suitable habitat within 20km of the European/Ramsar sites was calculated using European Nature Information System (EUNIS) data. The EUNIS data layer was taken from the SNH online resource (SNH 2016h) which was last updated in 2015.

7.2.12 All habitat types within 20km of the selected European/Ramsar sites were identified for their likely use by foraging geese. The habitat types identified as suitable were:

- Type 1: Agriculturally-improved, re-seeded and heavily fertilised grassland, including sports fields and grass lawns;
- Type 2: Arable land and market gardens; and
- Type 3: Grasslands and lands dominated by forbs, mosses or lichens.

7.2.13 These habitat types would also be used by other qualifying wildfowl and waders.

7.2.14 The area of EUNIS habitat suitable for geese within 20km of selected European/Ramsar sites was calculated using ArcGIS 10.2.1 using the steps below.

- Step 1 – The EUNIS data layer was clipped to the SPA data layer including a 20km buffer.
- Step 2 – Using the ‘select by location’ tool, the goose data layer was selected as the ‘target layer’ and the clipped EUNIS data layer was selected as the ‘source layer’. From this, all goose data points which intersected the EUNIS data layer were selected and then exported into a new data layer.
- Step 3 – The ‘calculate areas’ spatial statistics tool was used to calculate the area of EUNIS habitat in the new data layer.
- Step 4 – The same steps were repeated to calculate the area of suitable habitat used by other wildfowl and waders recorded in the study area.

Designated Species within the Sites

7.2.15 As indicated above, for the purposes of this AA stage of the HRA, these four sites were assessed together. A summary of bird species either designated in their own right or as part of the assemblage across all sites is presented in Table 7.2. Two species – greylag goose and redshank – are a feature of all sites whilst pink-footed goose is a feature of two sites, the Moray and Nairn Coast SPA and Ramsar site.

Table 7.2: Qualifying Bird Species of the European/Ramsar Sites

Species	Inner Moray Firth SPA	Moray and Nairn Coast SPA	Inner Moray Firth Ramsar	Moray Firth and Nairn Coast Ramsar
Bar-tailed godwit	✓	✓*	✓	
Common scoter		✓*		
Cormorant	✓*			
Curlew	✓*			
Dunlin		✓*		
Goldeneye	✓*			
Goosander	✓*			
Greylag goose	✓	✓	✓	✓
Long-tailed duck		✓*		
Oystercatcher	✓*	✓*		
Pink-footed goose		✓		✓
Red-breasted merganser	✓	✓*	✓	
Redshank	✓	✓	✓	✓
Scaup	✓*			
Teal	✓*			
Velvet scoter		✓*		
Wigeon	✓*	✓*		
Waterfowl assemblage	✓	✓	✓	✓

* Assemblage qualifier only

7.2.16 Table 7.3 shows the number of individual birds (and assemblage) comprising the citation taken from the SNH SiteLink website and the JNCC SPA review data (Stroud *et al*., 2001). The JNCC review updated the assessment of selected UK SPAs published in 1992 to take into account new bird data available. This resulted in the publication of amended information for some qualifying species populations. The information in this HRA uses that listed on SNH SiteLink; the review data is only used where no other information is available.

Table 7.3: Numbers of qualifying bird species present in the Inner Moray Firth and Moray and Nairn Coast SPAs (n/d = no data, — = not applicable)

Qualifying Species	Inner Moray Firth SPA		Moray and Nairn Coast SPA	
	SNH[1]	JNCC[1]	SNH[1]	JNCC[1]
Geese				
Pink-footed goose	—	—	7,538 (4%)	139 (<0.1%)
Greylag goose	2,651 (3%)	1,731 (1.7%)	3,023 (3%)	2,679 (2.7%)
Seabirds				
Cormorant	409 (3%)	418 (3.2%)[2]	—	—
Waders				
Bar-tailed godwit	1,090 (2%)	1,155 (2.2%)	(2%)	1,156 (2.2%)[2]
Curlew	1,262 (1%)	1,337 (1.2%)[2]	—	—
Dunlin	—	—	n/d	2,689 (0.5%)[2]
Oystercatcher	n/d	3,063 (0.9%)[2]	n/d	2,171 (0.65)[2]

Qualifying Species	Inner Moray Firth SPA		Moray and Nairn Coast SPA	
	SNH[1]	JNCC[1]	SNH[1]	JNCC[1]
Redshank	1,621 (1%)	1,811 (1.2%)	1,690 (2%)	1,690 (1.1%)
Ducks				
Common scoter	—	—	n/d	531 (1.95)[2]
Goldeneye	218 (1.0%)	199 (1.2%)[2]	—	—
Goosander	325 (4%)	397 (4.4%)[2]	—	—
Long-tailed duck	—	—	n/d	277 (1.2%)[2]
Red-breasted merganser	1,184 (12%)	1,731 (1.4%)	(1%)	216 (2.2%)[2]
Scaup	118 (1%)	97 (<0.1%)	—	—
Teal	2,066 (1%)	1,849 (1.4%)[2]	—	—
Velvet scoter	—	—	(3%)	133 (4.4%)[2]
Wigeon	7,310 (3%)	6,800 (2.5%)[2]	n/d	2,600 (0.9%)[2]
Waterfowl assemblage				
Waterfowl assemblage	26,800 (16,800 wildfowl 10,000 waders)	20,000	24,000 (14,500 wildfowl 9,500 waders)	20,000

[1] SNH and JNCC have reported the % of wintering population values to a different number of decimal places

[2] Data taken from JNCC Species Accounts (Stroud *et al*., 2001) where information not provided in citation.

Results of Wintering Bird Surveys

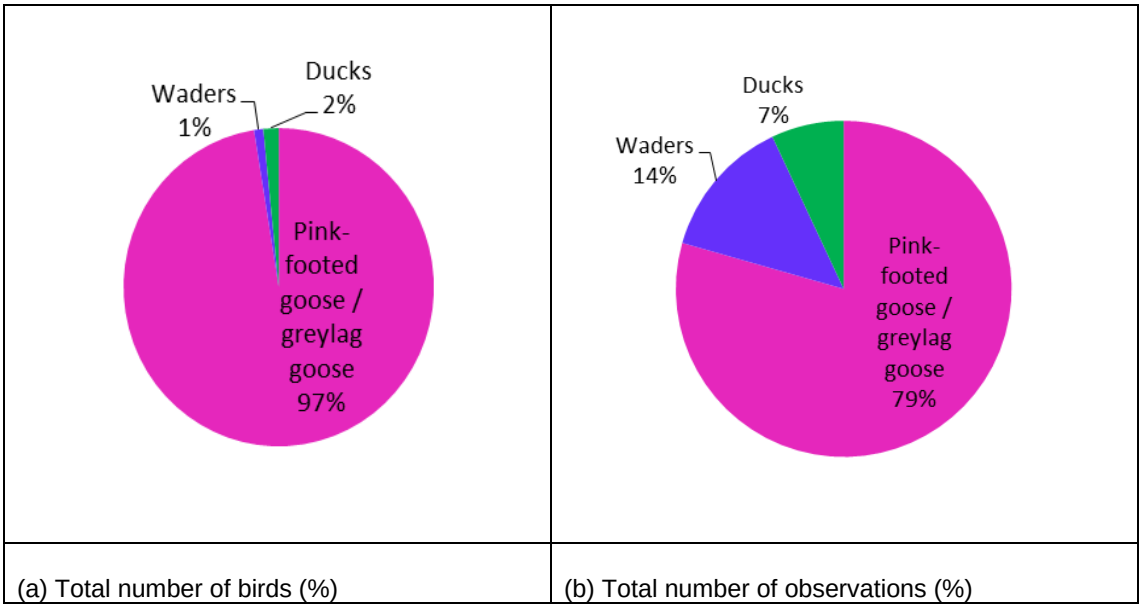
Species and Numbers Recorded Within the Study Area

7.2.17 Of the 17 qualifying bird species listed above, seven were recorded during wintering bird surveys; three species of duck, both qualifying goose species and two species of wader. The species were:

- curlew;
- goldeneye;
- greylag goose;
- oystercatcher;
- pink-footed goose;
- teal; and
- wigeon.

7.2.18 Over 97% of all birds recorded and 79% of all observations (flocks) were either pink-footed or greylag goose (Diagram 7.1). Waders (curlew and oystercatcher) and ducks (goldeneye, teal and wigeon) accounted for 3% of all birds and 21% of all observations.

Diagram 7.1: Breakdown of qualifying wintering bird species recorded, (a) number of birds and (b) number of flocks



(a) Total number of birds (%)

(b) Total number of observations (%)

7.2.19 A more detailed breakdown of the species can be seen in Table 7.4 and also in Appendix B (Species Recorded during Wintering Bird Surveys), Table B1. As indicated, the two geese species were the most abundant species, with numbers of pink-footed goose greater than all other species combined (Table 7.4). Pink-footed goose was also observed on more occasions than any other species (160 times). Goldeneye was the least abundant species and was recorded the least number of times.

Table 7.4: Number and Frequency of Qualifying Species Recorded in Descending Order

Qualifying Species	No. of Birds Recorded	No. of Observations	Maximum Peak Monthly Count	% of SNH Cited Population*
Pink-footed goose	123,688	160	18,370	244%
Greylag goose	6,677	56	1,306	13%
Wigeon	1,534	8	600	8%[1]
Curlew	1,236	30	216	17%
Teal	817	10	200	10%
Oystercatcher	178	7	75	1%[2]
Goldeneye	2	1	2	<1%
Total	**134,132**	**272**	—	—

*Cited population refers to the sum of that for Inner Moray Firth and Moray and Nairn Coast SPAs where a species occurs in both

[1] Cited population for Moray and Nairn Coast SPA from Stroud *et al*. (2001)

[2] Cited population for both SPAs from Stroud *et al*. (2001)

7.2.20 Ten other non-qualifying bird species were also recorded: Brent goose, barnacle goose, white-fronted goose, whooper swan, shelduck, mallard, golden plover, lapwing, common gull and herring gull (see Table B2 and Appendix B: Species Recorded during Wintering Birds Surveysfor full details).

7.2.21 The species and number of individuals recorded reflected those waterfowl most likely to use inland areas during the wintering period. Geese species make use of lowland grassland sites during winter, with their diet often having a large grass component (BirdLife International 2016a; 2016b).

7.2.22 Unlike species of goose, most of the nine qualifying duck species (see Table 7.3) are likely to spend the majority of their time at sea during the non-breeding period, although teal and wigeon would spend time in inland wetland areas, including agricultural fields if flooded (BirdLife International 2016c

2016d). Goldeneye, which was recorded only once during the surveys, winters mainly at sea or in coastal waters (BirdLife International 2016e).

7.2.23 Of the waders, only bar-tailed godwit is regarded as almost entirely coastal in its wintering distribution (Stroud *et al*., 2001 (Volume 2, A6.71)). Oystercatchers are chiefly coastal outside of the breeding season frequenting estuarine mudflats, saltmarshes and sandy and rocky shores (BirdLife International 2016f), but may utilise fields near the coast for feeding. Observations along the Moray Firth have indicated that the species tends to remain adjacent to its main feeding areas and was unlikely to move to another part of the Firth (Rehfisch *et al*. 1993). Cliff top recreational grasslands such as golf courses and other recreational grasslands have been found to be an important resource for wintering oystercatchers, with pasture less likely to be used (Furnell and Hull 2014). Curlews frequent coastal areas, but also utilise wet grassland and arable fields (BirdLife International 2016g) (Townshend 1981).

7.2.24 Dunlin and redshank may also similarly utilise inland sites but these species were not recorded during the surveys suggesting that the two species do not make significant use of terrestrial habitats in the vicinity of the proposed Scheme.

7.2.25 A summary of the peak monthly counts for all qualifying species recorded can be found in Table 7.5. There was clearly some annual and seasonal variation between species. Overall, more birds were recorded in January to March 2015 (48,419) than in January to March 2014 (37,604. Furthermore, this was also true for the number of observations (128 and 78 respectively) (for full details of the number of birds and observations/flocks see Appendix B: Species Recorded during Wintering Birds Surveys).

7.2.26 The annual variation was also evident in individual bird species; the peak monthly count for pink-footed goose was over 18,370 birds in March 2015 but only 8,500 in March 2014 (Table 7.5). Similarly, the wigeon peak monthly count was 600 in January 2015 and zero in January 2014.

7.2.27 Large numbers of pink-footed geese were observed throughout the survey period although numbers peaked in the spring. Greylag geese were recorded in late winter/early spring, but were virtually absent during October to December. Teal and wigeon were mainly absent in autumn/early winter, as were oystercatchers. Curlew generally arrived earlier, with peak numbers between December and January. Seasonal variations also differed slightly across the two years.

7.2.28 Oystercatchers, teal and wigeon were recorded at relatively few locations (Table 7.4 and Diagram 7.1). Although the largest flocks recorded represented up to 10% of the cited population (teal, for example, see Table 7.3), large flocks (>100) were rarely observed over the two years of survey, suggesting that these species utilise the area only occasionally.

Diagram 7.1: Flock sizes of qualifying wader and duck species

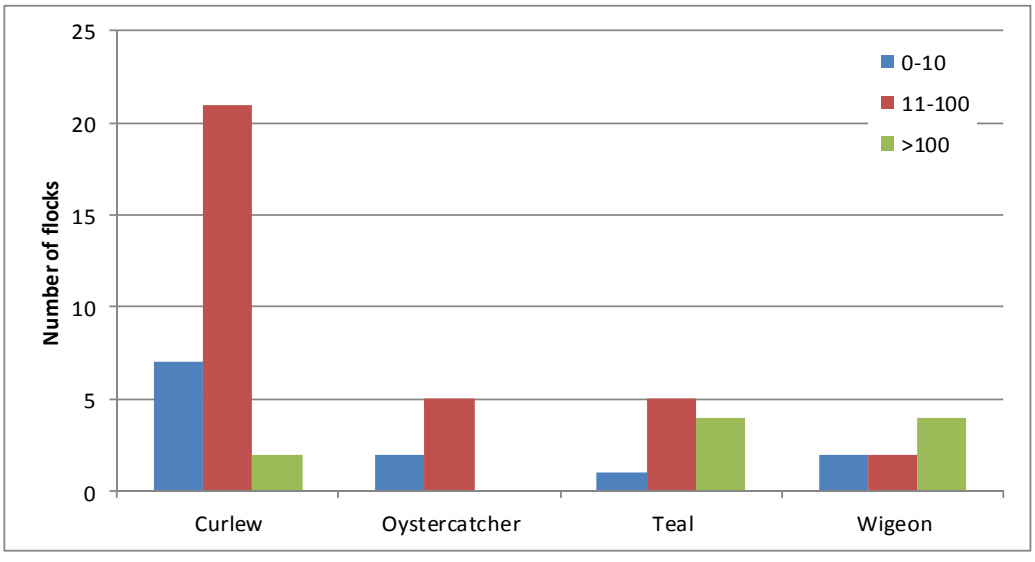


Table 7.5: Peak Monthly Counts and Total Numbers of all Qualifying Species Recorded

Species	Jan 2014	Feb 2014	Mar 2014	Oct 2014	Nov 2014	Dec 2014	Jan 2015	Feb 2015	Mar 2015	Apr 2015
Geese										
Pink-footed and greylag[1]	3,663	8,290	9,008	5,500	4,001	5,652	5,593	6,421	19,676	11,220
Greylag goose	240	630	508	0	1	2	468	874	1,306	238
Pink-footed goose	3,500	7,660	8,500	5,500	4,000	5,652	5,223	6,013	18,370	11,110
Ducks										
Teal	0	15	12	0	0	200	200	170	150	60
Wigeon	0	10	20	0	0	0	600	550	150	20
Goldeneye[2]	0	0	0	0	0	0	2	0	0	0
Waders										
Curlew	75	85	62	0	125	200	216	16	82	61
Oystercatcher	0	45	75	0	0	0	0	16	40	2
Total number recorded	**7,371**	**12,499**	**17,734**	**9,520**	**5,041**	**11,788**	**10,086**	**10,043**	**28,290**	**21,760**

[1] As two surveys were undertaken each month, the peak monthly counts for individual species may come from different surveys. The combined goose peak monthly count is the peak count of birds recorded in one survey visit and therefore may not be a sum of the two individual species counts.

Area Utilised and Distribution of Qualifying Species

7.2.29 The total area utilised by the species recorded can be found in Table 7.6. Unsurprisingly, the largest area utilised was by pink-footed geese (2111ha) and the least by goldeneye (13ha). An examination of the data indicated that the total area utilised was more closely related to the total number of observations recorded than the total number of birds.

Table 7.6: Total Area (ha) Utilised by Qualifying Species in Descending Order

Qualifying Species	Area Utilised (ha)	No. of Observations	No. of Birds Recorded
Pink-footed goose	2,111	160	123,688
Greylag goose	774	56	6,677
Curlew	239	30	1,236
Teal	98	10	817
Wigeon	81	8	1,534
Oystercatcher	71	7	178
Goldeneye	13	1	2

7.2.30 Figures showing the distribution of species across the study area can be found in Figures 2 to 7. The two geese species are considered to be the most mobile of the designated species and have a large foraging range (Table 7.1). As a comparison, redshank are known to be site-faithful and generally roost near to their feeding grounds (Toomer and Clark 1993; Rehfisch *et al*., 1993) and waders in general appear to frequent more widely fields within 500m of the coast (Bright *et al*., 2009).

7.2.31 Neither pink-footed goose nor greylag goose (the two species recorded in greatest numbers, Figures 2 and 3) exhibited any significant fidelity to particular fields; the same field was used a maximum of four times during the 20 surveys. Furthermore, 76% and 77% of recorded fields, for pink-footed geese and greylag geese respectively, were utilised only once. Field fidelity between 2014 and 2015 was also low as only 12% and 9% of fields utilised by pink-footed geese and greylag geese, respectively, were common to both years.

7.2.32 Curlews were observed foraging throughout the extent of the study area (Figure 4). The species was recorded in 21 different fields, although curlew was recorded only once at 18 of these sites (86%). However, at one location to the north of Auldearn curlews were observed on eight occasions (27% of all curlew records) (Figure 4d), with observations split between 2014 and 2015. Only three of the 30 observations were adjacent to the main alignment with the remainder at least 300-350m away; three of these were adjacent to proposed side roads. The most utilised field was approximately 630m from any part of the proposed Scheme.

7.2.33 All the fields utilised by curlew were no more than 2.6km from the Moray Firth: 90% were situated within 2km and the average distance was 1.2km. Five (23%) of the fields utilised were 500m or less than from the Moray Firth.

7.2.34 Curlew is a qualifying interest of the Inner Moray Firth SPA. Generally, curlews were recorded in fields within 4km of the SPA, although they were also observed in fields to the east of Nairn up to 7km from the SPA (Figure 4c). This included the field where most observations of curlew were made.

7.2.35 Observations of oystercatcher were recorded in six fields scattered across the study area and only one field was utilised twice (Figure 5).

7.2.36 One field was adjacent to a proposed farm access at Milton of Gollanfield (Figure 5b) but all other fields used were at least 260m from the proposed Scheme and at least 400m from the main alignment.

7.2.37 Teal flocks were observed on ten occasions using a total of six fields. Two fields were observed being used twice, and one field three times (Figure 6). Three fields were adjacent to the Aberdeen to Inverness Railway Line, whilst another two were adjacent to the existing A96 including the field used

three times (Figure 6b). Two of the fields adjacent to the railway were also adjacent to Inverness Airport.

7.2.38 Wigeon were recorded eight times across four fields; in two fields the species was recorded three times (Figure 7). The two largest flocks observed (550 and 600 birds) were recorded in the same field in late January/early February 2015 adjacent to the Aberdeen to Inverness Railway Line and the proposed Scheme near Meikle Kildrummie (Figure 7c).

7.2.39 The single record of goldeneye was observed in the same field as the large flocks of wigeon. This field was also used by teal and pink-footed goose. This particular location lies partly within the Kildrummie Kames SSSI there is a series of wetland habitats including ponds, swamps and marshy grassland in this vicinity (to the south and east of Blàr nam Fiadh). These habitats are likely to be attractive to waterfowl (see paragraphs 7.2.22 and 7.2.23).

Crop-type Preference

7.2.40 Both species of goose appeared to show a preference for semi-improved grassland. For pink-footed geese, 61% of records (observations) were from semi-improved grassland, whilst 27% and 6% were from of arable stubble and arable grass (young cereal crops/young grass) respectively (Diagram 7.2). Of the 56 records of greylag geese, 70% were recorded from semi-improved grassland, with 16% from arable stubble and 12% from arable grass (Diagram 7.3).

Diagram 7.2: Pink-footed goose crop preference

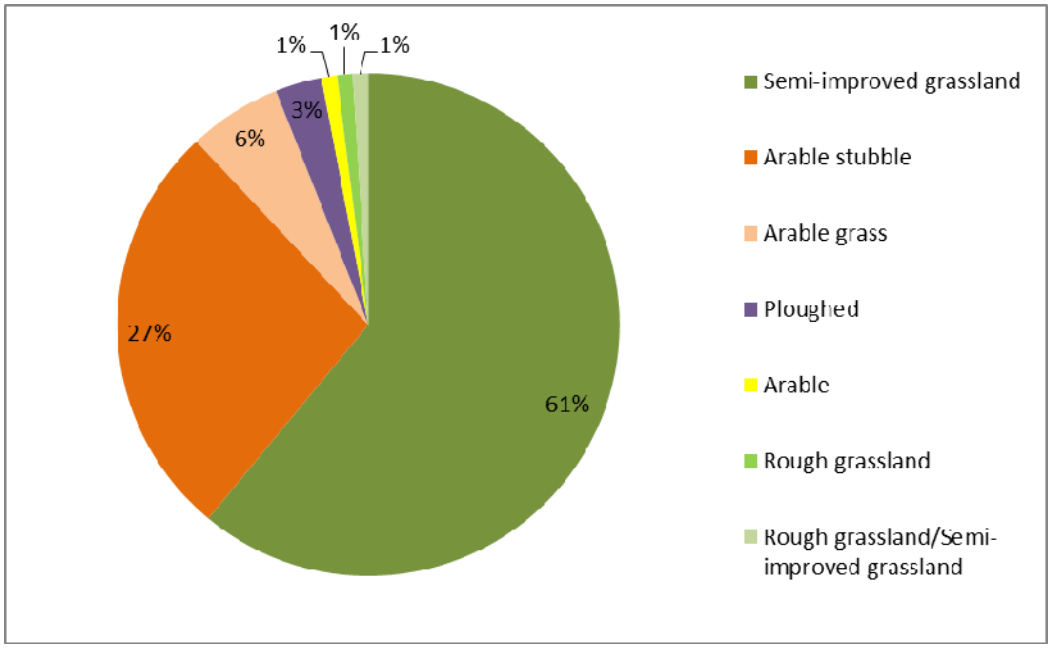
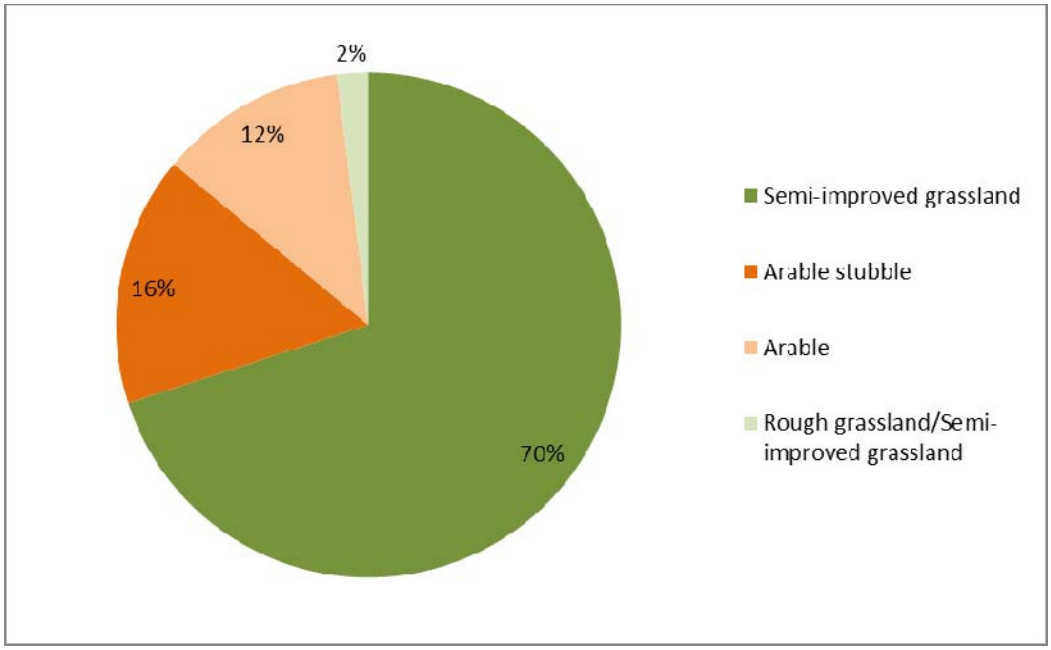


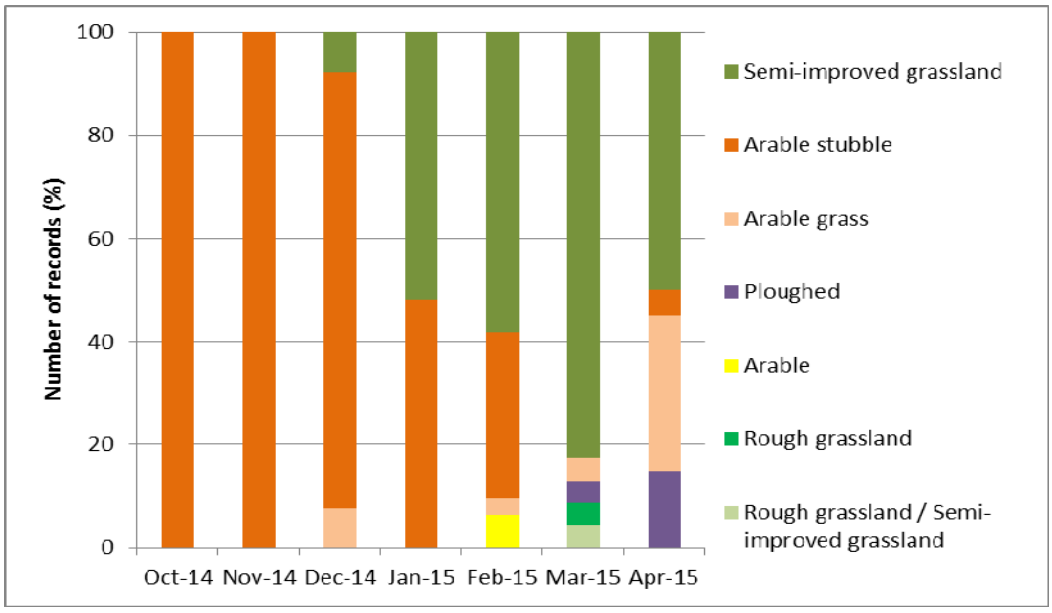
Diagram 7.3: Greylag goose crop preference



7.2.41 However, crop-type preference also followed a seasonal variation with the two goose species appearing to exhibit clear differences; pink-footed geese utilised arable habitat types, whilst greylag geese were mainly observed in semi-improved grassland during the 2014-2015 winter period. Mitchell (2012) noted that greylag geese may also use arable (root crop) fields during winter, with grasslands important in spring.

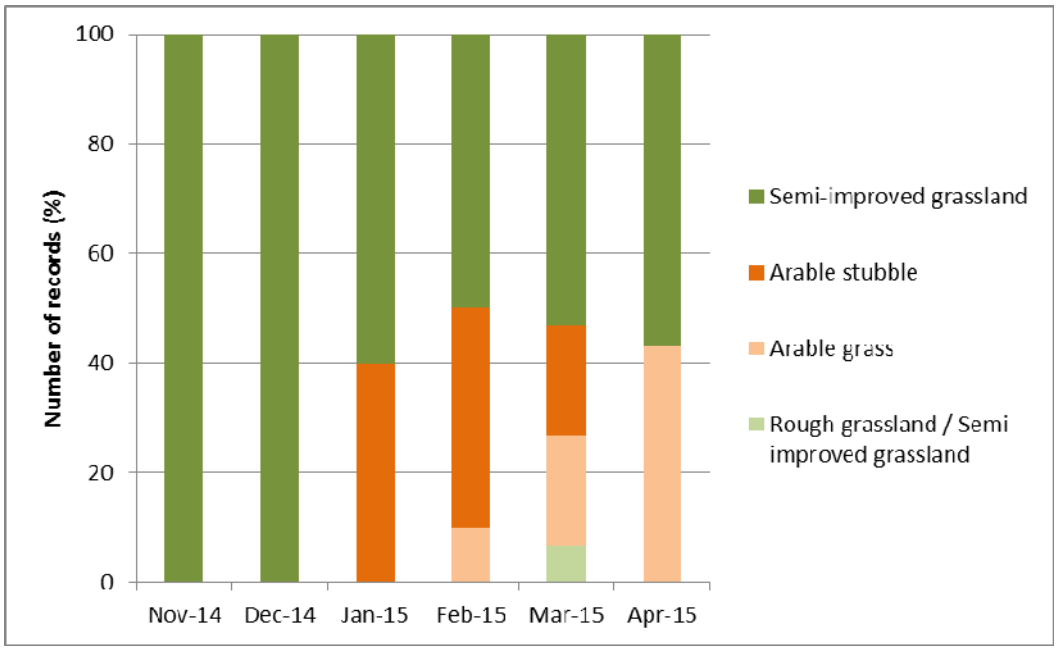
7.2.42 In October and November 2014 100% of pink-footed goose records were observed from arable stubble fields (Diagram 7.4). This dropped to 85% in December 2014 and then continued to decline, from 48% in January 2015 to 5% in April 2015. The decline in use of arable stubble fields coincided with an increase in use of grassland habitats of 52% in January 2015 (semi-improved grassland) and 80% in April 2015 (semi-improved grassland and arable grass).

Diagram 7.4: Pink-footed goose foraging seasonal variation



7.2.43 No greylag geese were recorded in October 2014. In November and December 2014 all greylag geese were recorded foraging on semi-improved grassland (Diagram 7.5), dropping to 60% and 57% by January and April 2015 respectively. Arable stubble accounted for 40% in January 2015 and 43% for arable grass in April 2015.

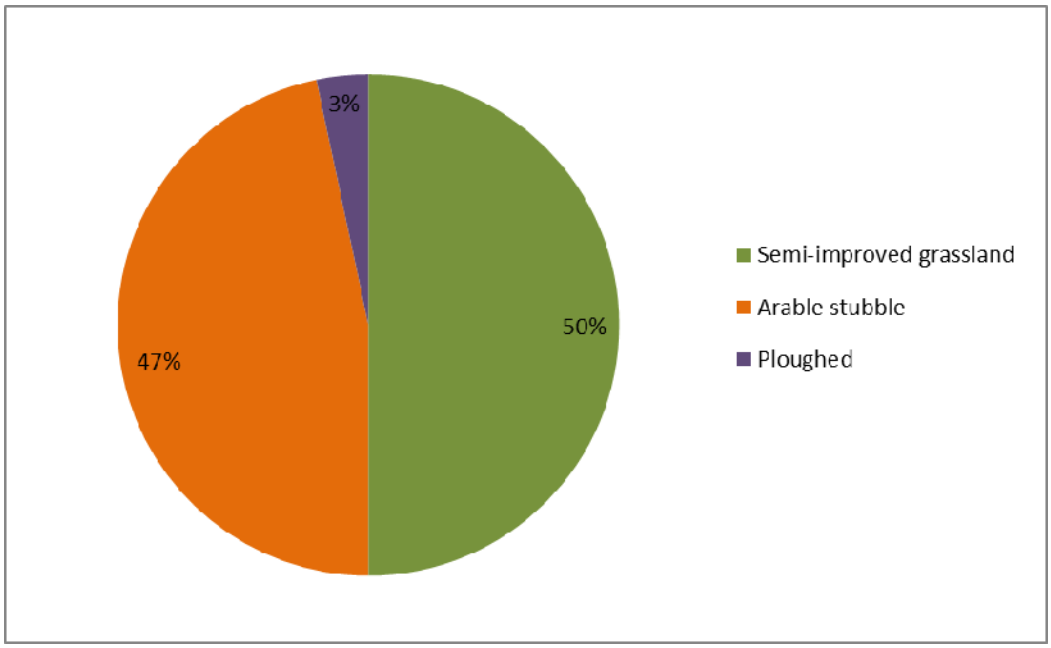
Diagram 7.5: Greylag goose foraging seasonal variaion



7.2.44 Greylag and pink-footed geese are known to utilise lowland farmland in open country including improved or fertilised grasslands, stubble fields, pastures and newly sown cereal fields (Bell 1988; BirdLife International 2016a; 2016b; Mitchell and Hearn 2004). However, both species are said to prefer arable stubble in the autumn with a move towards grass through the winter and spring (Forrester *et al.*, 2012). Mitchell (2012) indicated that pink-footed geese use stubble fields in autumn, with grassland predominating afterwards. Greylag geese are said to use grass throughout the winter, although cereal stubbles may also be used in the autumn (Forrester *et al*., 2012). The goose feeding surveys presented here broadly follow the pattern of feeding discussed above.

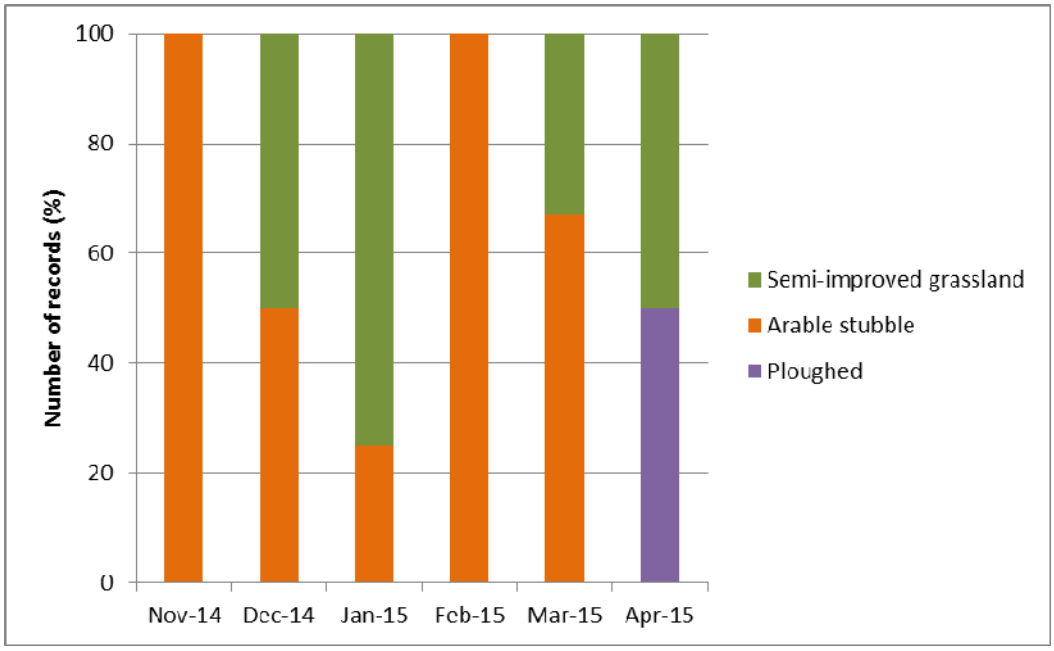
7.2.45 Curlew records were also evenly split between semi-improved grassland and arable stubble, although this species was also recorded utilising ploughed fields (3% of records, Diagram 7.6). An analysis of crop preference for other qualifying bird species recorded has not been undertaken due to the low number of records.

Diagram 7.6: Curlew crop preference



7.2.46 In winter, the majority of curlews forage on or near the coast on sandy shores and adjacent farmland. In the case of soil-invertebrate feeding species such as curlew, crop-type preference varies and does not appear to consistently change with seasonal variation (Diagram 7.7). Studies that have looked at common waders of grassland in winter (such as curlew), have shown that they prefer pasture with short swards (Atkinson *et al*., 2004) and therefore crop height was likely to determine which fields curlew were recorded in.

Diagram 7.7: Change in Curlew crop preference across the 20154/2015 wintering period



Geese Roosting and Flightlines

7.2.47 Large numbers of pink-footed geese were recorded at roost sites (Table 7.7), but numbers of greylag goose were low (Table 7.8). Furthermore, Findhorn Bay was the largest roost site with 13,930 pink-footed geese recorded in April 2015, followed by Munlochy Bay and Nairn Sand Bar (Table 7.7). Loch Flemington supported a maximum of 200 pink-footed geese over the period surveyed and no roosting geese were recorded at Castle Stuart Bay. Of the records that were confirmed as greylag goose, a peak of 320, 300 and 10 were recorded at Nairn Sand Bar, Findhorn Bay and Munlochy Bay respectively.

7.2.48 Findhorn Bay has been identified as the primary pink-footed goose roost for the Moray and Nairn Coast SPA (Mitchell 2012). This is supported by the information provided here. The main greylag goose roost for this SPA has also been identified as Findhorn Bay (Mitchell 2012) although the author also indicated that the number of geese using the roost site has declined since the early 2000s, possibly reflected in the generally low numbers.

7.2.49 For the Inner Moray Firth SPA, the main greylag goose roosts are Castle Stuart Bay, the Beauly Firth and Munlochy Bay, although numbers have declined (Mitchell 2012). The data in Table 7.7 indicate that, in these surveys, Castle Stuart Bay was not identified as an important roosting location. Whilst pink-footed goose is not a qualifying interest of the Inner Moray Firth SPA, the data in Mitchell (2012) indicate the species does make use of fields adjacent to Castle Stuart Bay adjacent to the SPA. However, these fields also fall well within 20km of the Moray and Nairn Coast SPA and it is therefore conceivable that birds recorded in that area roost in that SPA, at the Nairn Sand Bar for instance.

7.2.50 Approximately two thirds of all geese from Findhorn Bay flew either south or south east from the roost and 15% flew either west or south west. Approximately 90% of all geese flew south from the Nairn Sand Bar roost and 90% of geese few either east or north east from the Munlochy Bay roost.

7.2.51 The flightlines recorded from Findhorn Bay are therefore in line with existing information, which indicates that the main pink-footed goose feeding areas are to the south and east of Findhorn Bay (Mitchell 2012).

7.2.52 Feeding was also reported near Auldearn and although these birds may have originated from Findhorn Bay, Mitchell (2012) stated that it was more likely that they roosted in the Moray Firth area (Inner Moray Firth SPA and Ramsar) or at Loch Flemington. Greylag goose feeding areas for this SPA are said to include the southern shore of the Inner Moray Firth, and arable/grass land between Findhorn and Lossiemouth (east of Nairn).

Table 7.7: Pink-footed Goose

Roost Site	Nov 2014	Dec 2014	Jan 2015	Feb 2015	Mar 2015	Apr 2015
Findhorn Bay	-	6,786	6,710	5,570	8,750	13,930
Nairn Sand Bar	-	2,800	1,700	720	3,370	2,600
Munlochy Bay	-	-	-	2,450	2,010	4,080
Loch Flemington	200	160	0	-	-	-
Castle Stuart Bay	0	0	0	0	-	-

Table 7.8: Greylag Goose

Roost Site	Nov 2014	Dec 2014	Jan 2015	Feb 2015	Mar 2015	Apr 2015
Findhorn Bay	-	3	300	0	0	0
Nairn Sand Bar	-	0	320	0	0	0
Munlochy Bay	-	-	-	0	10	0
Loch Flemington	1	0	0	-	-	-
Castle Stuart Bay	0	0	0	0	-	-

Qualifying Bird Species Included in the AA

7.2.53 The two qualifying geese species of the European/Ramsar sites identified were recorded in large numbers within the survey area. Of the other five qualifying wintering species recorded, only curlew was regularly observed; goldeneye, oystercatcher, teal and wigeon were infrequently recorded and only in low numbers. The ten remaining qualifying wintering bird species of the four European/Ramsar sites were not recorded during the wintering bird surveys.

7.2.54 It is considered that those species occurring infrequently or in low numbers, or absent, do not utilise the area surveyed to any great extent, mainly because these species would normally utilise coastal areas and/or habitat types not represented within the survey area (such as saltmarshes). As a result, it is considered that these species are therefore not at risk from the proposed Scheme as a result of the effects pathways considered in Section 5 (Potential Effects of the Proposed Scheme).

7.2.55 A summary of qualifying interests included in the AA can be found in Table 7.9. Orange shaded rows indicate which species are considered to be potentially at risk. Green shaded rows indicate species recorded during surveys but not included in the Stage Two assessment. Species in the grey shaded rows were not recorded and are therefore also not included in the assessment.

7.2.56 Curlew is a qualifying species of the Inner Moray Firth only, whilst pink-footed goose is a qualifying species of the Moray and Nairn Coast SPA and Ramsar site. Greylag goose is a qualifying species of all four European/Ramsar sites.

7.2.57 Whilst assemblage qualifying species are listed for the two SPAs, individual species are not identified for the Ramsar site assemblages. For the purposes of this Stage Two assessment, it is therefore assumed that any/all other listed species could form part of the assemblage. All three species identified above could therefore contribute to the 'waterfowl assemblage' qualifying interest which is a feature of all four sites.

7.2.58 Furthermore, it is considered that any identified effects on these species would also be an identified effect on the waterfowl assemblage and any mitigation required to avoid the species effect would also avoid the effect on the assemblage. Therefore no separate assessment on the waterfowl assemblage was undertaken. It should be noted that the two geese species accounted for 97% of all birds recorded and 79% of all observations (Diagram 7.1 and Table 7.4).

Table 7.9: Qualifying Interests to be Included in the AA

Qualifying Interest	Commentary
Curlew	Species frequents coasts, bays and estuaries (mudflats and sandflats) but also utilises wet grassland and arable fields. Curlew were recorded within the study area.
Greylag goose	Geese frequently use inland sites for roosting and feeding. Large numbers recorded using agricultural land.
Pink-footed goose	Geese frequently use inland sites for roosting and feeding. Large numbers recorded using agricultural land.
Goldeneye[1]	A coastal species. Recorded only once (two birds) during wintering bird surveys.
Oystercatcher	Largely coastal during winter, but may be observed inland. Some birds recorded using agricultural land on a small number of occasions.
Teal	Occurs along the coast, including saltmarshes and intertidal mudflats and estuaries. Some birds recorded using agricultural land on a small number of occasions.
Wigeon	Inland pastures noted as important habitats (Owen and Williams 1976). Some birds recorded using agricultural land on a small number of occasions.
Cormorant	Largely coastal; species not recorded.
Bar-tailed godwit×	Almost entirely coastal; species not recorded.
Dunlin	Mainly prefers estuarine mudflats and wetlands. Can be seen inland but the species not recorded.
Redshank	Largely coastal during winter. Can be seen inland but the species not recorded.
Common scoter[1]	Strong preference for sandy substrates and shallow waters. Species not recorded.
Goosander	Often found on the lower reaches of rivers and on lochs and reservoirs. Species not recorded.
Long-tailed duck[1]	Favours exposed offshore waters.

Qualifying Interest	Commentary
Red-breasted merganser[1]	Often occurs in very large flocks in the firths and estuaries. Species not recorded.
Scaup[1]	Forages over sandy or muddy substrates in shallow waters, regularly feeding at night. Species not recorded.
Velvet scoter[1]	Similar to common scoter in habitat use. Species not recorded.

[1]These species are also (proposed) qualifying species of the Moray Firth pSPA

Habitat Loss

7.2.59 As indicated in Section 5 (Potential Effects of the Proposed Scheme), the proposed Scheme would not result in any loss of European/Ramsar site habitat, but the alignment would traverse arable and grassland habitats that might be used by qualifying bird species of the European/Ramsar sites. This section examines the potential risk to qualifying bird species and the integrity of the sites in relation to the possible loss of supporting habitat.

7.2.60 This loss of supporting habitat could have implications for the following conservation objectives:

- To ensure for the qualifying species that the following are maintained in the long term:
- Population of the species as a viable component of the site;
- Distribution of the species within site; and
- Distribution and extent of habitats supporting the species.

7.2.61 A summary of the assessment can be found in Table 7.10.

Greylag/Pink-footed Geese

7.2.62 Within the study area, approximately 6,964ha (EUNIS data) were available for use by wintering geese (and other species), equivalent to 65% of the surveyed area (10,683ha). The area predicted to be lost under the footprint of the proposed Scheme was calculated as 173ha (or 195ha according to the Phase 1 habitat data), representing a loss of approximately 2.5% of the area available.

7.2.63 However, within 20km of the four European/Ramsar sites nearly 115,000ha of suitable supporting habitat for geese was identified (EUNIS data), representing a significant area of habitat potentially available. The area of suitable habitat surveyed for wintering geese and other qualifying species therefore was only 6% of the total available, and the area lost under the proposed Scheme was approximately 0.15% of this available habitat.

7.2.64 The wintering bird surveys indicated that, within the vicinity of the proposed Scheme, pink-footed goose made use of 2,111ha whilst greylag geese used 774ha (Table 7.4), approximately 30% and 11% respectively of the available habitat (within the surveyed area). This is also equivalent to 1.8% and 0.7% of the available habitat respectively within 20km of the European/Ramsar sites.

7.2.65 It is recognised, however, that not all the 'available habitat' would be likely to be used by geese and other wintering species. For instance, areas close to habitation or subject to regular disturbance would be less likely to be used than more isolated sites. In addition to disturbance risk and distance from the roost, field preference is influenced by crop type (Forrester *et al*., 2012) and clearly changed over the survey period. The amount of suitable habitat would therefore also change over a season as the birds' feeding preferences change (paragraphs 7.2.40 to 7.2.46), and also annually as fields move in and out of different cropping regimes.

7.2.66 Given the large area of available habitat throughout the likely flight area (up to 20km) relative to the amount lost under the proposed Scheme footprint, it is considered that loss of goose supporting habitat is not significant.

7.2.67 Therefore it is concluded that the potential loss of supporting habitat would not compromise the conservation objectives indicated above for geese species.

Curlew

7.2.68 Curlew utilised 239ha of the study area (Table 7.6, Figure 4a). In general, curlew will make use of a similar range agricultural and grassland habitat types as geese and therefore it is likely that the birds would utilise the same 6,964ha of habitat identified as suitable for geese. Consequently, the area actually observed as being utilised was only 3.4% of that available.

7.2.69 Roost fidelity of shorebirds has been indicated to be closely related to the choice of feeding grounds (see for instance Rehfisch *et al.,* 1993). Studies undertaken in the Moray Firth indicated that curlew was faithful to specific sections of the firth and was one of the least mobile species recorded in the study (Rehfisch *et al.,* 2003), moving 0.7-1.3km between roosts on average. In a review, Bright *et al.* (2009) reported that fields less than 500m from the sea were most likely to be used, with fields more than 2.5km from the sea least used. Data from the wintering bird surveys broadly fits in with the literature; all fields recorded as being used by curlew were less than 2.6km from the sea with an average of 1.2km. However, only 23% were at a distance of 500m or less.

7.2.70 Curlew is only a qualifying interest of the Inner Moray Firth SPA. A majority of the fields (62%) recorded as used by curlew fell within 2.5km of the SPA, with some fields to the east of Nairn up to 7km away. It is likely that at least some of the fields were utilised by curlew originating from areas outwith the Inner Moray Firth SPA. Indeed, the three fields nearest the coast (0.05-0.15km), in the vicinity of Inverness Airport and the community of Ardersier (Figure 4b), were an average of 2.4km from the SPA and it is highly likely that the birds originated from the adjacent intertidal area around the bay at Ardersier. Similarly, the curlew observed to the east of Nairn may have originated from the adjacent Culbin Sands area rather than the Inner Moray Firth SPA.

7.2.71 However, it should be noted that those birds utilising inter-tidal habitats within the Moray Firth but not within the Inner Moray Firth SPA would form part of a wider population of curlew that would support the populations within the SPA area.

7.2.72 It is considered that the area observed to be used by curlew, including those fields falling under the footprint of the proposed Scheme, is a small proportion of the available area and therefore loss of curlew supporting habitat would not compromise the conservation objectives for this species.

Disturbance (Construction and Operation)

7.2.73 As indicated in Section 6, short-term and temporary disturbance of geese using supporting habitat as a result of construction activities could occur. This could result in the displacement of geese affecting their distribution across the wider area, and specifically across and within the SPA/Ramsar sites. In the long term, this avoidance could result in the reduction of the usable area of supporting habitat. Additionally, new offline road sections could also result in disturbance and avoidance, and a reduction of the usable area of supporting habitat.

7.2.74 This disturbance could have implications for following conservation objectives:

- To ensure for the qualifying species that the following are maintained in the long term:
- Distribution of the species within site; and
- No significant disturbance of the species.

7.2.75 A summary of the assessment can be found in Table 7.10.

Greylag/Pink-footed Geese

7.2.76 In their review, Bright *et al*. (2009) indicated that a variety of geese species including greylag and pink-footed geese will avoid roads. Larsen and Madsen (2000) noted an avoidance distance of 150m for pink-footed geese from large roads and Keller (1991) showed that whilst geese in north-east Scotland maybe found within 100m of a road, the median distance was 400m with a maximum of 1,100m. Keller (1991) also pointed out, however, that at a distance where geese didn't react to passing cars, they would be disturbed should the vehicles stop, or where there were walking people.

7.2.77 During the wintering bird surveys, both species were observed utilising fields adjacent to the existing A96 and/or near areas of habitation. Some of the larger pink-footed goose flocks were observed adjacent to the A96 at Mid Coul, Gollanfield and Blackcastle, or by Inverness Airport (Figure 3). However, it should be noted that in many cases the fields were of a sufficient size that birds could still be at least 100m from the roadside.

7.2.78 It is likely that birds will avoid individual fields, especially during the construction period. During the operational phase of the proposed Scheme, birds may also avoid fields adjacent to offline sections of the alignment. However, both species utilised fields across the full extent of the survey area but, as indicated above, using only a relatively small proportion of the available habitat with little site fidelity. In addition, birds in the area are already accustomed to vehicles utilising the existing A96. It is therefore considered that some short-term disturbance may occur but there is sufficient alternative habitat throughout the area such that there would be no long-term significant effect.

7.2.79 Therefore it is concluded that the potential disturbance would not compromise the conservation objectives indicated above for geese species.

Curlew

7.2.80 Curlew have been indicated as being less tolerant of disturbance than other species (Smit and Visser 1993), although Wright *et al.* (2010) found that curlew were the most tolerant of four species exposed to noise (air horn). Other evidence highlights that curlew are sensitive to movement disturbance (Brett 2012; Rehfisch *et al*., 1993; Stillman *et al.,* 2012; Swann 2007) with as little as 100m causing disturbance as a result of walking people. However, this was related to the levels of background disturbance, such that birds were more sensitive in undisturbed areas, and potentially more tolerant in cultivated grasslands than in saltmarshes (Smit and Visser 1993).

7.2.81 As indicated in paragraph 7.2.32 only three of the 21 fields utilised by curlew were within 100m of the proposed Scheme (the remainder were at least 300m-350m away) and all were only utilised once. One field at the proposed Balloch Junction is adjacent to the existing A96 (Figure 4a) whilst the others are adjacent to a B road near Nairn (Figure 4c). The three fields are also 1.2km, 2.0km and 2.6km from the sea. The low utilisation and low numbers of birds recorded suggest that the proposed Scheme is unlikely to have a significant disturbance effect on the species, especially given the availability of habitat across the area.

7.2.82 Therefore it is concluded that the potential disturbance would not compromise the conservation objectives indicated above for curlew.

Table 7.10: Assessment Table for the Inner Moray Forth SPA/Ramsar site and Moray and Nairn Coast SPA/Ramsar site

Qualifying Interest (SNH Sitelink)	Likely Significant Effect	Conservation Objectives Likely to be Affected	Avoidance and Mitigation	AA Determination after Mitigation
Bar-tailed godwit Common scoter Cormorant Dunlin Goosander Long-tailed duck Red-breasted merganser Redshank Scaup Velvet scoter	None identified. The species listed were not recorded using habitats within the study area. Therefore, it was considered that there were no effects pathways on the populations of these species as a result of the proposed Scheme.	Not applicable	None required	No adverse effect on site integrity
Goldeneye Oystercatcher Teal Wigeon	None identified. The species listed were recorded using the area only infrequently and/or in low numbers. Therefore, it was considered that there were no effects pathways on the populations of these species as a result of the proposed Scheme.	Not applicable	None required	No adverse effect on site integrity
Greylag goose Pink-footed goose	*Loss of supporting habitat* It is predicted that there would be a loss of 173ha of supporting habitat under the footprint of the proposed Scheme, approximately equivalent to 2.5% of the area available in the wintering birds survey area, and approximately 0.15% of the total area available within 20km of the designated sites. Given the large amount of habitat available and low site fidelity of the species, it is considered that the loss of supporting habitat is not significant.	To ensure for the qualifying species that the following are maintained in the long term: • Population of the species as a viable component of the site; • Distribution of the species within site; and • Distribution and extent of habitats supporting the species.	None required	No adverse effect on site integrity
	Disturbance (visual, noise, vibration, traffic) Geese species may avoid roads, with an avoidance distance of 100-150m. Surveys indicated that geese readily forage in fields adjacent to the existing A96 or other areas likely to be a potential disturbance source. Given the large amount of habitat available and low site fidelity of the species, it is considered that the potential for disturbance is not significant.	To ensure for the qualifying species that the following are maintained in the long term: • Distribution of the species within site; and • No significant disturbance of the species.	None required	No adverse effect on site integrity
Curlew (Inner Moray Firth only)	*Loss of supporting habitat* It is predicted that there would be a loss of 173ha of supporting habitat under the footprint of the proposed Scheme, approximately equivalent to 2.5% of the area available in the wintering birds	To ensure for the qualifying species that the following are maintained in the long term: • Population of the species as a viable	None required	No adverse effect on site integrity

Qualifying Interest (SNH Sitelink)	Likely Significant Effect	Conservation Objectives Likely to be Affected	Avoidance and Mitigation	AA Determination after Mitigation
	survey area. The area utilised by curlew was calculated as 3.4% of that available and furthermore, most of the observations were from fields not adjacent to the proposed Scheme. Given the large amount of habitat available, low site fidelity and low usage within the vicinity of the proposed Scheme, it is considered that the loss of supporting habitat is not significant.	component of the site; • Distribution of the species within site; and • Distribution and extent of habitats supporting the species.		
	Disturbance (visual, noise, vibration, traffic) Curlew may have a low tolerance to certain types of disturbance. However, only three fields utilised by curlew were within 100m of the proposed Scheme. Given the large amount of habitat available, low site fidelity and low usage within the vicinity of the proposed Scheme, it is considered that the potential for disturbance is not significant.	To ensure for the qualifying species that the following are maintained in the long term: • Distribution of the species within site; and • No significant disturbance of the species.	None required	No adverse effect on site integrity

Effects on the Water Assemblage Interest

7.2.83 As indicated in paragraph 7.2.58, no separate assessment for the waterfowl assemblage was undertaken. However, of the 17 waterfowl species specified across the four sites, only seven species were recorded in surveys, and only three of these were taken forward for detailed assessment at Stage Two due to their numbers and/or frequency.

7.2.84 Implications for the conservation objectives for these three species (curlew, greylag goose, pink-footed goose) could not be identified and therefore it is considered that there would also be no adverse effect on site integrity in relation to the waterfowl assemblage.

7.3 Loch Flemington SPA

7.3.1 The proposed Scheme lies to the north/north-west and downhill of the SPA (Figure 1). The main alignment is approximately 420m north-west of the SPA whilst the tie-in to the B9006 Millburn Roundabout - Culcabock - Castle Hill - Culloden Moor - Croy - Gollanfield - Fort George Road is approximately 210m away. The proposed Scheme is not hydrologically linked to the SPA and additionally does not intercept with the site's groundwater influence zone (McLaughlan 2016).

7.3.2 The DMRB Stage 2 HRA considered that disturbance from construction work was potentially a risk to Slavonian grebe, should they resume breeding at the site. The DMRB Stage 3 screening assessment agreed with this (Section 6).

7.3.3 However, as the main works for the proposed Scheme are over 400m away from the SPA at their nearest and downhill of the site, further assessment considered that disturbance from construction of the main alignment is unlikely to be a risk. The overbridge extending from the proposed Scheme to the B9006 Millburn Roundabout - Culcabock - Castle Hill - Culloden Moor - Croy - Gollanfield - Fort George Road is nearer to the SPA and therefore there is greater potential for disturbance during construction, especially as the SPA western boundary runs along the adjacent B9090 Loch Flemington – Clephanton – Cawdor – Nairn Road (Figure 7) which could be used as a works access/haul route.

7.3.4 In addition, should construction plant use the section of B9090 Loch Flemington – Clephanton – Cawdor – Nairn Road between Brackley and Clephanton, or the unclassified road running to the north of Loch Flemington as a haul route, this could result in the contamination of Loch Flemington through dust pollution, leading to a decline in the function of the waterbody to support Slavonian grebe through loss of water clarity and/or food resources.

7.3.5 Although no Slavonian grebe are presently breeding at Loch Flemington, there is the potential that the species may be breeding in the future during construction and operation of the proposed Scheme. The proposed Scheme was therefore considered to have the potential to affect the following conservation objectives:

- to avoid significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained;
- to ensure for the qualifying species that the following are maintained in the long term; and
- structure, function and supporting processes of habitats supporting the species.

7.3.6 Disturbance as a result of operation of the proposed Scheme was not considered to be a risk due to the separation of the main alignment from the SPA. As a result, the following conservation objectives were not considered to be at risk:

- to ensure for the qualifying species that the following are maintained in the long term:
- population of the species as a viable component of the site;
- distribution of the species within site;
- distribution and extent of habitats supporting the species; and

- no significant disturbance of the species.

7.3.7 A summary of the DMRB Stage 3 assessment can be found in Table 7.11.

Table 7.11: Assessment Table for Loch Flemington SPA

Qualifying Interest (SNH Sitelink)	Likely Significant Effect	Conservation Objectives Likely to be Affected	Avoidance and Mitigation	AA Determination after Mitigation
Slavonian grebe, breeding	*Disturbance (visual, noise, vibration)* Construction noise and vibration and the movement of people and vehicles during construction of the B9090 Loch Flemington – Clephanton – Cawder – Nairn Road tie-in could result in the disturbance of breeding Slavonian grebe.	• To avoid significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained.	All construction activities during the Slavonian grebe breeding season (late March to August inclusive or as agreed with SNH) would be undertaken within the constraints of a Construction Environmental Management Plan (CEMP), which would be developed by the Contractor and which would apply appropriate management measures in relation to noise and vibration. The plan will be developed in consultation with relevant stakeholders including SNH.	No adverse effect on site integrity
	Water pollution Dust from vehicles and the transport of fill material could pollute Loch Flemington resulting in a decline in water quality, leading to loss of clarity and food resources.	• To ensure that structure, function and supporting processes of habitats supporting the species is maintained in the long-term.	Construction vehicles would be prohibited from using the section of B9090 Loch Flemington – Clephanton – Cawder – Nairn Road between Brackley and Clephanton, or the unclassified road running to the north of Loch Flemington. Should usage be unavoidable, a CEMP will be developed by the Contractor. This would apply appropriate management measures in relation to dust management, and would be strictly adhered to by all construction vehicles using the roads during the Slavonian grebe breeding period (late March to August inclusive or as agreed with SNH).	No adverse effect on site integrity

7.4 Summary of Stage Two Assessment

7.4.1 Five European/Ramsar sites were identified as requiring further consideration (Stage Two: AA). These sites were:

- Inner Moray Firth SPA;
- Moray and Nairn Coast SPA;
- Inner Moray Firth Ramsar Site;
- Moray and Nairn Coast Ramsar site; and
- Loch Flemington SPA.

7.4.2 The sites were investigated for the potential for the identified LSEs to result in an adverse effect on site integrity for the European/Ramsar sites. The Inner Moray Firth SPA/Ramsar site and Moray and Nairn Coast SPA/Ramsar sites were examined together to assess the potential for the proposed Scheme to have an effect on the wintering birds.

7.4.3 The fifth site – Loch Flemington SPA where the identified LSE related to breeding Slavonian grebe – was assessed separately.

7.4.4 Wintering bird survey data and an analysis of EUNIS habitats were examined to assess the usage of supporting habitat within the vicinity of the proposed Scheme by certain qualifying bird species. This was undertaken to determine the possible effects occurring as a result of either loss of supporting habitat or from disturbance.

7.4.5 Upon conclusion of the examination it was considered that the proposed Scheme would not result in an adverse effect on site integrity on the Inner Moray Firth SPA/Ramsar site and Moray and Nairn Coast SPA/Ramsar sites.

7.4.6 Although Slavonian grebe are not currently known to breed at Loch Flemington, for the purposes of the assessment it was assumed that the species would be breeding during construction and operation of the proposed Scheme.

7.4.7 LSEs had been identified during the construction phase as a result of either disturbance from plant movements, or from airborne pollution from the transfer of construction materials. However, with appropriate mitigation in place it was concluded that there would be no adverse effects on site integrity.

8 In-combination Assessment

8.1.1 Although no adverse effects on site integrity could be identified at the end of Section 7 (DMRB Stage 3 HRA: Appropriate Assessment (Stage Two)) for any European/Ramsar site, it was predicted that some birds would be displaced during the construction phase of the proposed Scheme, and that there would be some reduction in the amount of available roosting habitat. Therefore, it was considered that an in-combination assessment should be undertaken as part of the HRA process. A number of relevant plans and projects were identified as relevant to the assessment and are discussed in this section.

8.1.2 Policies and proposed mitigation within the Highland-wide Local Development Plan (HwLDP) and the Inner Moray Firth Local Development Plan (IMFLDP) will ensure no LSEs, and therefore no implications for the conservation objectives of the European/Ramsar sites.

8.1.3 Seven projects were identified, and a review of the relevant documents, including the Environmental Statements and an AA, did not identify any implications for the conservation objectives of the assessed European/Ramsar sites, provided planned mitigation was adhered to.

8.1.4 A9/A96 Inshes to Smithton DMRB Stage 2 assessment is currently underway, investigating route options between Inshes and the proposed Smithton Junction on the A96. A HRA is being undertaken in parallel.

8.1.5 The wider A96 dualling proposal (Auldearn to Aberdeen) is also considered within the in-combination assessment. The Tier 1 Strategic Environmental Assessment (SEA) (Halcrow 2014a) did not identify any implications for the conservation objectives of the assessed European/Ramsar sites as these were to be developed in the Tier 2 SEA. The Tier 2 SEA was then published in May 2015 (CH2M 2015) although the Inverness to Nairn (including Nairn Bypass) section was not included as the preferred option had been announced in October 2014. The exclusion of the Inverness to Nairn (including Nairn Bypass) section included the HRA screening element of the SEA for this section of the A96. The outcome of the Appropriate Assessment stage of HRA has been reported in the SEA Post Adoption Statement (CH2M 2016) and included key strategic avoidance/mitigation measures and/or monitoring recommendations for Auldearn to Aberdeen excluding the Inverness to Nairn (including Nairn Bypass) section.

8.1.6 Permission in principle for the Tornagrain New Town proposal was initially given in 2013, and an application for the first phase of this is currently under consideration. SNH were consulted at the masterplan stage and considered that the proposal was unlikely to significantly affect nearby designated sites and therefore had no objection to the project.

8.1.7 A mixed use development is proposed at Delnies to the west of Nairn. The project has been granted permission in principle and no detailed designs are available. The Highland Council did put forward requirements that would need consideration at detailed design stage which would also need to go through the planning stage, including consultation. These provisions included development of an Access Management Plan which would need to contain mitigation and monitoring mechanisms taking into account the qualifying interest of the Inner Moray Firth SPA/Ramsar site.

8.1.8 Inverness Airport Business Park (IABP) has been granted outline planning permission. At the consultation stage, SNH raised concerns regarding the potential for pollution on the Inner Moray Firth SPA and Ramsar site and on the Moray Firth SAC. The ES for the project provided detailed information on the collection and treatment of run-off, and also showed that there was no evidence of SPA qualifying species using the area proposed for development. As a result, SNH did not raise any objections to the application.

8.1.9 The Aberdeen to Inverness Rail improvements project incorporated a range of interventions of which one, a new railway station at Dalcross, was identified to be in the vicinity of the A96 Dualling Inverness to Nairn (including Nairn Bypass) Scheme. An Environmental Impact Assessment Screening Opinion was submitted to The Highland Council in July 2015 (The Highland Council 2015c). It was concluded that a Screening Application EIA was not required. In the submission, no potential effects on the environment were identified including no adverse effects on site integrity for European/Ramsar sites or on bird species.

8.1.10 Two projects, the Port of Ardersier and Stratton new town, are no longer to be taken forward in their original form and therefore there will be no risks to European/Ramsar sites from these projects. However, development is likely to occur at these locations in the future. At such a time that a proposal is brought forward, the plans would require consultation and individual HRAs.

8.1.11 In conclusion, there are currently no in-combination effects and no implications for the conservation objectives and site integrity of the five European/Ramsar sites for the plans and projects identified.

8.1.12 The relevant plans and projects are discussed in Table 8.1.

Table 8.1: Assessment Table for European/Ramsar Sites

Plan or Project	Key Aspects of the Plan	LSE and Commentary	Implications for Conservation Objectives of the Site
Plans			
Highland-wide Local Development Plan (HwLDP)	The HwLDP was adopted on 5 April 2012 (The Highland Council 2012a). It sets out the overarching spatial planning policy for the whole of the Highland Council area, except the area covered by the Cairngorms National Park Local Plan, including the Inverness to Nairn (A96 corridor) area. The Plan sets out a vision statement and spatial strategy for the area, taking on board the outcomes of consultation undertaken during preparation, including consultation with SNH. The Plan should be read alongside the Local Plans within the Highland region (e.g. Inverness and Nairnshire Local Plans), which it mainly supersedes until such date that three Area Plans, including the IMFPLDP, are adopted. For the Inner Moray Firth area, the HwLDP has a tailored 'vision' for development up to 2030 for the growth of jobs, people and facilities especially in the A96 corridor. The vision will also have "*safeguarded and enhanced its special places"* including sites of international importance (European/Ramsar sites).	The HwLDP contains policies that require individual developments and Local Plans (where relevant) to be subject to a HRA. Furthermore, a HRA of the HwLDP was undertaken in which SNH advised that a key consideration of the HRA was '*the in-combination assessment of recreational impacts of development in the A96 corridor on European Sites*' (The Highland Council 2012b). Discussions with SNH resulted in updates to the plan to ensure that there would be no LSEs on European/Ramsar sites from the implementation of the HwLDP. Modifications were made to the HwLDP including the following points (The Highland Council, undated). • Avoidance of any adverse effects on the integrity of the Inner Moray Firth SPA and Ramsar site. • Avoidance of any adverse effects on the integrity of Loch Flemington SPA, including from cumulative recreational disturbance. • Protection of the nearby Inner Moray Firth SPA/Ramsar and Whiteness Head SSSI, including through the approval of a Recreational Access Management Plan. On the basis of the above measures, there would be no in-combination effects associated with the Plan and the proposed Scheme.	No
Inner Moray Firth Local Development Plan (IMFLDP)	The IMFLDP (The Highland Council 2015a) will form part of the Highland Council's development plans for the next 20 years. The IMFLDP adopted in July 2015. A HRA was published in May 2015 (The Highland Council 2015b). In the Inverness to Nairn area, there is a strategy for growth which includes: • Land for 18,350 homes from 2011 up to 2031 focused on existing settlements. • Provision of an effective and available land supply to support the economic growth of the area including key sites at Inverness campus, Whiteness and Inverness Airport. • A nationally important area for coordinated growth and public investment along the A96 corridor including an innovative new town at Tornagrain linked to major employment growth and an integrated transport hub.	The IMPLDP aims to identify suitable land for development in the Inverness to Nairn area, along the A96 corridor. This could result in loss of suitable supporting habitat (agricultural land) throughout the area, which could displace qualifying (over-wintering species) and/or result in a significant loss of available supporting habitat. This could result in LSEs on the Inner Moray Firth SPA and Ramsar site, and the Moray and Nairn Coast SPA and Ramsar site. In addition, a large increase in the population of the area could result in increased usage of the remaining land for recreational purposes, including increased access to coastal areas. This could result in increased disturbance to birds using intertidal areas, especially where improved access is available. The IMFLDP is a component part of the HwLDP which contains policies that require individual developments and Local Plans to be subject to a HRA (see above). All Local Plans must also comply with the over-arching policies within the HwLDP. The HRA (The Highland Council 2015b) screened out a number of sites and plans/projects. The dualling of the A96 and the Nairn Bypass were screened out from consideration within the plan as, though they were referred to, they were not proposed by the IMFLDP. Discussions took place with SNH to screen out elements of the IMFLDP that would not be likely to have a significant effect alone on European/Ramsar sites including these projects (The Highland Council 2015b). As a result of the HRA, a policy was added to the LDP to ensure that future	No

Plan or Project	Key Aspects of the Plan	LSE and Commentary	Implications for Conservation Objectives of the Site
		infrastructural expansion for waste water discharge would not have any adverse effect on the integrity of any European/Ramsar site. The Moray and Nairn Coast SPA and Ramsar site was screened out (in agreement with SNH) from further consideration (The Highland Council 2014b). With respect to the Inner Moray Firth SPA and Ramsar site, the HRA required that any development would have to demonstrate that there would be no adverse effects on the integrity of the site as a result of disturbance to or pollution of the SPA or adjacent bird feeding and roosting areas linked to the site. These effects would arise as a result of A96 corridor developments. For Loch Flemington SPA, the HRA stated that mitigation would be required to ensure no adverse effect on the integrity of the site as a result of the proposed Tornagrain New Town, by the production of a Recreation Access Management Plan. No effects were identified as a result of other A96 corridor developments. On the basis of the above measures and policies, there would be no in-combination effects associated with the Plan and the proposed Scheme.	
Projects			
A9/A96 Inshes to Smithton	The A9/A96 Inshes to Smithton is looking at the problems concerning traffic travelling between Inshes and Smithton, connecting the A9 and the A96 in Inverness in an effort to develop a potential solution to congestion and journey time reliability issues (Transport Scotland 2015a). A DMRB Stage 2 study (route option assessment) is currently underway with a preferred option expected to be announced in 2017.	Additionally, the proposal was addressed within a SEA of the STPR (Jacobs 2008) as part of intervention D16 Inverness to Nairn. The assessment identified that the Inner Moray Firth and Ramsar site had potential LSE from the proposal. However, "*at the strategic level, the Information to Inform the Appropriate Assessment concludes that it is possible to carry out the proposed intervention in a way such that there will be no adverse impact on the integrity of Inner Moray Firth SPA and Ramsar. However, it should be noted that if it is decided to consider this proposal in the future then this will be subject to the requirements of regulation 48 of the Habitats Regulations*." Evidence from the wintering bird surveys (Jacobs 2015a) indicated that none of the qualifying bird species of the European/Ramsar sites assessed in this report utilised the area of the A9/A96 Inshes to Smithton route options. Furthermore, all the route options lie to the south of the existing A96 and the proposed Scheme. At this stage, it is therefore considered that the A9/A96 Inshes to Smithton route options would not have any implications for in-combination effects. However, the DMRB Stage 2 HRA for A9/A96 Inshes to Smithton is currently in preparation and will assess in detail the potential for LSE, and for the potential for in-combination effects with other projects and plans including the proposed Scheme.	No
A96 dualling (Hardmuir to Aberdeen)	The Infrastructure Investment Plan (IIP), which provides an overview of the Scottish Government's plans for infrastructure investment over the coming decades made a commitment to complete the dualling of the A96 between Inverness and Aberdeen by 2030. On 9 May 2013 the then Minister for Transport set out how the A96 dualling programme would be taken forward. The outline strategy identified	Appendix F of the Tier 1 SEA notes that full dualling of the A96 is "*unlikely to significantly impact designated biodiversity sites, given the requirement for the HRA"*. The baseline information for the Tier 1 SEA was used to inform discussions with SNH on the HRA screening report. This report formed part of the Tier 2 SEA (CH2M 2015) although the section of the A96 between Inverness and Nairn was not included as the preferred route had been announced in October 2014. However, six	No

Plan or Project	Key Aspects of the Plan	LSE and Commentary	Implications for Conservation Objectives of the Site
	packages of design and development work to be progressed over the following few years. Further to the DMRB Stage 2 Assessment for the section of the A96 between Inverness and Nairn, the section(s) east of Auldearn to Aberdeen has undergone a preliminary engineering assessment to identify constraints and strategies, and the baseline conditions (Transport Scotland 2015b). A Tier 1 Strategic Environmental Assessment (SEA) was published in September 2014. This considered six strategic intervention options for the A96 transport corridor, including full dualling of the A96, to assess the potential for significant environmental effects at the 'plan/policy' level. The Tier 2 SEA (CH2M 2015) assessed the Preliminary Engineering Services improvement strategy options. Sixteen options (A-Q) were assessed with six taken forward for further assessment (B-E, N, P), and four (B-D, N) proposed to be taken forward to the next assessment stage. The post-adoption statement indicated that for the DMRB Stage 2 assessment, the A96 Dualling Programme would be split into three sections incorporating the four option. • A Western Section extending from the tie-in of the Inverness to Nairn (including Nairn Bypass) scheme to the east of Nairn to Fochabers (approximately 46km). • A Central Section extending from east of Fochabers to east of Huntly (approximately 31km). • An Eastern Section extending from east of Huntly to the proposed junction with the Aberdeen Western Peripheral Route (approximately 42km).	European/Ramsar sites were identified to be taken forward to the screening stage including in the strategic HRA: Darnaway and Lethen Forest SPA, Lower Findhorn Woods SAC and Moray and Nairn Coast SPA and Ramsar. The Moray Firth SAC and the Culbin Bar SAC were screened out from further assessment. In addition, it was recommended that the HRA to be revisited in discussion with SNH as further information on route/alignment options becomes available (CH2M 2015, CH2M 2016). Furthermore, detailed scheme designs for each section of the wider A96 Dualling will be required to be re-assessed for LSEs and adverse effects on site integrity at each design stage, and for the potential for in-combination effects with other projects and plans including the A96 Dualling Inverness to Nairn (including Nairn bypass) proposal.	
Tornagrain New Town	The Tornagrain site was identified by the Highland Council as part of their A96 Corridor Growth Strategy, which sought to produce a long term vision for the future growth of Inverness and Nairn. The masterplan is for up to 4,960 homes with shops, schools, employment space and other social and community infrastructure (The Highland Council 2015a). The site covers an area to the south of the A96 from Tornagrain to Drumine and includes the southern part of Tornagrain Wood and the area around Mid Coul (Moray Estates 2008). Permission in principle was granted in November 2013 (The Highland Council 2013) for a mixed use phased development extending to 168ha.	The ES indicated that the proposal did not contain any plans to facilitate public access to Loch Flemington and any such access would be subject to agreement with SNH. As a result the ES considered that any indirect effect on the SPA was unlikely (Moray Estates 2008). The ES also considered that designated habitats associated with the Moray Firth would not be affected and therefore no impacts were predicted. In addition, no evidence was found that species associated with the Inner Moray Firth SPA used the site (Applied Ecology 2008). SNH considered that the proposal was unlikely to significantly affect nearby designated sites and had no objection (The Highland Council 2012c).	No

Plan or Project	Key Aspects of the Plan	LSE and Commentary	Implications for Conservation Objectives of the Site
	The new town will be progressed on a phased basis, comprising seven main phases of development. Within the plan period (up to 2031) development should progress with no more than 344 residential units in the first phase (2012-2016), 507 in the second phase (2016-2021), 780 in the third phase (2021-2026) and 855 in the fourth phase (2026-2031) (The Highland Council 2013). Retail, business and educational facilities will also be constructed during these phases. An application for the first phase is now under consideration and is awaiting decision [12.07.16].	On the basis of the above assessment outcome, there would be no in-combination effects associated with Tornagrain New Town and the proposed Scheme.	
Inverness Airport Business Park (IABP)	Land to the south and west of Inverness Airport covering 200ha has been identified for a business park including business/research and development park, hotel and conference centre (The Highland Council 2014c). The site covers an area north of the A96, between Tornagrain and the Airport and includes part of the northern half of Tornagrain Wood. Outline planning permission was granted in in June 2011, with permission (in principle) granted in February 2014 (The Highland Council 2014c). Detailed planning applications are to be progressed. Planning permission in principle to a proposed access road within phase 1 of the IABP was given in February 2014.	As part of the EIA process, SNH indicated that there could be significant effects with regard to the potential for run-off, spilt oil and other contaminants on the Inner Moray Firth SPA and Ramsar site and on the Moray Firth SAC. They stated that the EIA should describe mitigation measures to be deployed to avoid contamination of the Moray Firth during the construction and operational phases. SNH also stated that the EIA should recognise all interests of the European/Ramsar sites and assess the likely impacts of the development on them in order to identify mitigation measures (Applied Ecology 2008). The ES did not record any evidence of SPA qualifying species using the site (Applied Ecology 2008). In addition, it did not predict any adverse effects on site integrity on any statutory wildlife sites within the area. The ES also provided detailed information with respect to the collection and treatment of road run-off and contaminants. SNH did not raise any objections to the application that was granted planning permission in principle. On the basis of the above assessment outcome, there would be no in-combination effects associated with IABP and the proposed Scheme.	No
Port of Ardersier Ltd: Offshore Renewables Masterplan	The Port of Ardersier, formerly the McDermott Fabrication Yard at Whiteness Head, extends to 160ha and includes a 1000m long deep water harbour protected by a spit of land, Whiteness Head, which is part of the Inner Moray Firth SAC. The port has been identified as a location for offshore wind manufacturing, installation staging and operations and maintenance for the Moray Firth arrays. The plans include marine channel dredging, quay realignment, repair and maintenance, erection of offices, industrial and storage buildings and associated infrastructure (including road access), delivery and export of port related cargo, temporary stockpiling of dredged material, re-grading and upfilling of landward areas and landscaping. Planning permission in principle was granted in January 2014 (The Highland Council 2014b). Full consent from the Scottish Government was given on 20 August 2014. Construction and capital dredge operations were provisionally scheduled to begin in April 2014 (Marine Scotland 2014) with the site operations originally programmed to begin in 2016. The project is now considered	To avoid impacts on nature conservation interests, conditions imposed at the in principle planning stage included: • a comprehensive scheme for understanding the potential fragmentation impact on the bottlenose dolphin (a qualifying feature of the Moray Firth SAC) resulting from underwater noise; and • the development of an Operational Environmental Management Document which would include measures to protect and safeguard SPA bird habitat at the end of the spit (at Whiteness Head) and a marine mammal protection plan. In addition, impact piling could not be used as a method for quay wall construction. An Appropriate Assessment was undertaken by Marine Scotland (Marine Scotland 2014) which concluded that there will be no adverse effect on the integrity of the Moray Firth SAC, Dornoch Firth and Morrich More SAC or Inner Moray Firth SPA. SNH advised that as long as the proposal would be undertaken strictly in accordance with the mitigation measures set out, the proposal would not adversely affect the integrity of the SPA (Marine Scotland 2014). These mitigation measures included:	No

Plan or Project	Key Aspects of the Plan	LSE and Commentary	Implications for Conservation Objectives of the Site
	unlikely to be taken forward in its current form, see Chapter 18 (Policies and Plans) of the ES (Jacobs 2016).	• submission of a Construction Method Statement for the written approval of SNH and SEPA; • submission of a site-specific Construction Environmental Management Document for the written approval of SNH and SEPA, which would include: explanations on the methods to minimise sedimentation and pollution, pollution prevention and management measures, a marine mammal protection programme and monitoring of the protected bird populations; and • adherence to the 'Statutory nature conservation agency protocol for minimising the risk of injury to marine mammals from piling noise' (JNCC 2010). Although the project is not to be taken forward, development may occur at this location. In general, the issues examined by Marine Scotland would remain a concern. Furthermore, any new proposal would be required to undergo consultation and a HRA. On the basis of the above policies and measures, there would be no in-combination effects associated with Masterplan and the proposed Scheme.	
Delnies, Cawdor Estates	Mixed use development of 300 houses; tourism and heritage, equestrian and ecological centres; hotel and conference facilities; championship golf course, clubhouse and golf academy; community woodland and country park with associated infrastructure. On land to the north of the A96 extending from the Whiteness Access Road to the Common Good Land at Nairn. Planning permission in principle was granted in 2015.	The potential development site extends towards the Moray Firth. Permission in principle included the requirement to provide full details of the proposed development including the provision of surface water drainage and, water supply and foul drainage infrastructure. Furthermore, it was required that the overall scheme design would require to be agreed prior to development with SEPA and SNH. In addition, a revised Access Management Plan would be required to be submitted for approval in consultation with SNH. Furthermore this plan would need to contain mitigation and monitoring mechanisms taking into account the qualifying interest of the Inner Moray Firth SPA/Ramsar site. On the basis of the above measures, there would be no in-combination effects associated with project and the proposed Scheme.	No
Proposed new town at Stratton and East Seafield	Development of a new town on land to the east of Inverness, including residential, retail, leisure and hotel facilities. The application extended to approximately 78ha. The application was initially put forward in 1999 and outline planning permission was granted. The application did not get taken forward at that time and an alteration to the application was given in May 2015. An application for Phase 1 of the development was put forward in May 2016, with two more phases to follow in the future. However, the project is unlikely to be taken forward in its current form, see Chapter 18 (Policies and Plans) of the ES (Jacobs 2016).	The original proposal was identified as having the potential to affect the Moray Firth SAC and the Inner Moray Firth SPA and Ramsar sites (SNH 1999b). SNH identified that the proposal could affect bottlenose dolphins in the Moray Firth SAC through accidental pollution of burns in the area (including Cairnlaw Burn) as a result of construction work. However, with the inclusion of pollution prevention measures identified in the ES and implemented by a CEMP, SNH were satisfied that there would be no significant effect. SNH also identified that qualifying bird species of the Inner Moray Firth and Ramsar site could also be affected. However, they concluded that, on the understanding that a detailed Access Management Plan would be prepared (including measures to minimise the effects of disturbance), "*the effects of the proposal on the qualifying interests are unlikely to be significant*". Although the project is now unlikely to proceed in its original form, development is proposed to take place at this location. In general terms, the concerns raised by SNH	No

Plan or Project	Key Aspects of the Plan	LSE and Commentary	Implications for Conservation Objectives of the Site
		for the original proposal would remain an issue. Furthermore, any new proposal would be required to undergo consultation and a HRA. On the basis of the above measures, there would be no in-combination effects associated with project and the proposed Scheme.	
Aberdeen to Inverness Rail Improvements	A rail improvement project to deliver significant journey time improvements and greater connectivity for both passenger and freight services operating on the Aberdeen to Inverness rail corridor (Transport Scotland 2016). The project will be delivered in phases and aims to provide incremental benefits throughout the life of the scheme, with the whole project being delivered by 2030. Phase one of the scheme aims to deliver enhanced commuter services into each city and to facilitate the construction of new stations at Kintore and Dalcross by 2019 (Transport Scotland 2016). The new station at Dalcross is currently the only improvement that falls within the extent of the proposed Scheme. The GRIP 3 report (Transport Scotland 2014) concluded that the preferred option for this improvement comprises a new two platform station immediately west of the bridge over the railway on the C1017 Airport Access Road. The proposal also recommended a station with a 100 space car park, taxi rank and bus access. Double-tracking would be required to enable this and the GRIP 3 report stated that further evaluation would be required (Transport Scotland 2014).	An application was submitted to The Highland Council in July 2015 for an Environmental Impact Assessment Screening Opinion (The Highland Council, 2015c). The proposal was for a new access road, 150 space car park with drop-off area and a new platform, although the new railway station itself was not part of the application. In October 2015, The Highland Council concluded that a Screening Application EIA was not required. The proposal is not within or adjacent to any sensitive areas (The Highland Council, 2015c). The proposal was predicted to result in the loss of approximately 2ha of agricultural land, but no effects on European/Ramsar sites or on any bird species were identified at this stage of the project development. On the basis of no potential effects on the environment having been identified that could result in the determination of LSEs, there would be no in-combination effects associated with this project and the proposed Scheme.	No

9 Summary and Conclusions

9.1.1 Ten European/Ramsar sites identified and assessed in the DMRB Stage 2 HRA (Jacobs 2015a) were reassessed for the potential of the A96 Dualling Inverness to Nairn (including Nairn Bypass) Scheme to result in LSEs.

9.1.2 These sites were assessed in relation to the preferred alignment of the proposed Scheme as part of this DMRB Stage 3 HRA. The LSEs recognised at DMRB Stage 2 were also identified a DMRB Stage 3. No additional LSEs were identified.

9.1.3 Re-screening at DMRB Stage 3 indicated that for European six sites, no LSEs were predicted, as long as in the mitigation embedded into the design (SUDS) was taken forward and that standard construction practices (including SEPA PPGs) were adhered to. These five sites were:

- Cawdor Woods SAC;
- Culbin Bar SAC;
- Lower Findhorn Woods SAC;
- Moray Firth SAC;
- Darnaway and Lethen Forest SPA; and
- Moray Firth pSPA.

9.1.4 LSEs were identified for five European/Ramsar sites. These were:

- Inner Moray Firth SPA;
- Loch Flemington SPA;
- Moray and Nairn Coast SPA;
- Inner Moray Firth Ramsar site; and
- Moray and Nairn Coast Ramsar site.

9.1.5 As at DMRB Stage 2, LSEs were not determined for all qualifying interests. This was either a result of a lack of effects pathways between the proposed Scheme and the interest feature, or because of embedded mitigation. LSEs taken forward to 'Stage Two: AA' were in relation to wintering birds (Inner Moray Firth SPA and Ramsar site, Moray and Nairn Coast SPA and Ramsar site) and Slavonian grebe (Loch Flemington SPA).

9.1.6 The Stage Two assessment examined the implications for the conservation objectives of the Inner Moray Firth SPA/Ramsar site and Moray and Nairn Coast SPA/Ramsar site as a result of:

- loss of supporting habitat; and
- disturbance of birds utilising the supporting habitat.

9.1.7 It was concluded that the loss of supporting habitat to wintering birds was insignificant when considering the amount of habitat available and how this was utilised (including the lack of fidelity of the birds to specific fields). For the same reasons, disturbance as a result of the proposed Scheme was not assessed as a significant risk to wintering birds.

9.1.8 At Loch Flemington SPA it had been identified that disturbance and water pollution could result in effects to the conservation objectives to the SPA. To avoid an adverse effect on site integrity, the following mitigation was proposed:

- all construction activities would be undertaken within the constraints of a CEMP which would be developed by the contractor in consultation with relevant stakeholders including SNH, which would apply appropriate management measures in relation to noise and vibration; and
- the CEMP would also apply appropriate management measures in relation to dust management which would be strictly adhered to by all construction vehicles using the B9090 Loch Flemington –

Clephanton – Cawdor – Nairn Road and the unclassified Lochside Road during the Slavonian grebe breeding period (late March to August inclusive or as agreed with SNH). This would potentially include the prohibition of usage of these roads by construction vehicles during the breeding period.

9.1.9 Although no minor residual effects of the proposed Scheme were identified an in-combination assessment was undertaken due to the potential for displacement of wintering birds from supporting habitat. No plans or projects were identified where there was a potential for an in-combination effect.

9.1.10 In conclusion, no adverse effects on site integrity of the proposed Scheme on any European/Ramsar sites could be identified provided that embedded and other proposed mitigation was applied.

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Appendix A: European/Ramsar Sites

This appendix details the European/Ramsar sites assessed within this HRA, their qualifying interests, conservation objectives and condition. Full details (including scientific names) are provided. All information is taken from the SNH SiteLink online resource (accessed 14 March 2016, except for Moray Firth pSPA for which access was taken 4 August 2016).

Table A1: Special Areas of Conservation

Qualifying Interest	Condition Assessment	Conservation Objectives
Cawdor Wood (UK0030112, 8222)		
• Western acidic oak woodland	• Unfavourable No change (09/09/2014)	To avoid deterioration of the qualifying habitat, thus ensuring that the integrity of the site is maintained and the site makes an appropriate contribution to achieving favourable conservation status for each of the qualifying interests; and To ensure for the qualifying habitat that the following are maintained in the long term: • Extent of the habitat on site • Distribution of the habitat within site • Structure and function of the habitat • Processes supporting the habitat • Distribution of typical species of the habitat • Viability of typical species as components of the habitat • No significant disturbance of typical species of the habitat
Culbin Bar (UK0019807, 8238)		
• Atlantic salt meadows • Coastal shingle vegetation outside the reach of waves • Shifting dunes	• Favourable Recovered (11/07/2011) • Favourable Maintained (05/06/2011) • Unfavourable Declining (05/06/2010)	To avoid deterioration of the qualifying habitat, thus ensuring that the integrity of the site is maintained and the site makes an appropriate contribution to achieving favourable conservation status for each of the qualifying interests; and To ensure for the qualifying habitat that the following are maintained in the long term: • Extent of the habitat on site • Distribution of the habitat within site • Structure and function of the habitat • Processes supporting the habitat • Distribution of typical species of the habitat • Viability of typical species as components of the habitat • No significant disturbance of typical species of the habitat
Lower Findhorn Woods (UK0030197, 8310)		
• Mixed woodland on base-rich soils associated with rocky slopes*	• Unfavourable Declining (24/09/2012)	To avoid deterioration of the qualifying habitat, thus ensuring that the integrity of the site is maintained and the site makes an appropriate contribution to achieving favourable conservation status for each of the qualifying interests; and To ensure for the qualifying habitat that the following are maintained in the long term:

Qualifying Interest	Condition Assessment	Conservation Objectives
		• Extent of the habitat on site • Distribution of the habitat within site • Structure and function of the habitat • Processes supporting the habitat • Distribution of typical species of the habitat • Viability of typical species as components of the habitat No significant disturbance of typical species of the habitat
Moray Firth (UK0019808, 3408)		
• Bottlenose dolphin (*Tursiops truncatus*) • Subtidal sandbanks	• Favourable Recovered (21/09/2010) • Favourable Maintained (12/08/2004)	*For Species:* To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained and the site makes an appropriate contribution to achieving favourable conservation status for each of the qualifying interests; and To ensure for the qualifying species that the following are established then maintained in the long term: • Population of the species as a viable component of the site • Distribution of the species within site • Distribution and extent of habitats supporting the species • Structure, function and supporting processes of habitats supporting the species • No significant disturbance of the species *For Habitats:* To avoid deterioration of the qualifying habitat thus ensuring that the integrity of the site is maintained and the site makes an appropriate contribution to achieving favourable conservation status for each of the qualifying interests; and To ensure for the qualifying habitat that the following are maintained in the long term: • Extent of the habitat on site • Distribution of the habitat within site • Structure and function of the habitat • Processes supporting the habitat • Distribution of typical species of the habitat • Viability of typical species as components of the habitat • No significant disturbance of typical species of the habitat

* Indicates priority habitat

Table A2: Special Protection Areas

Qualifying Interest	Condition Assessment	Conservation Objectives
Darnaway and Lethen Forest (UK9020292, 8672)		
• Capercaillie (*Tetrao urogallus*), breeding	• Unfavourable Declining (31/05/2011)	To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and To ensure for the qualifying species that the following are maintained in the long term: • Population of the species as a viable component of the site • Distribution of the species within site • Distribution and extent of habitats supporting the species • Structure, function and supporting processes of habitats supporting the species • No significant disturbance of the species
Inner Moray Firth (UK9001624, 8515)		
• Bar-tailed godwit (*Limosa lapponica*), non-breeding • Common tern (*Sterna hirundo*), breeding • Cormorant (*Phalacrocorax carbo*)*, non-breeding • Curlew (*Numenius arquata*)*, non-breeding • Goldeneye (*Bucephala clangula*)*, non-breeding • Goosander (*Mergus merganser*)*, non-breeding • Greylag goose (*Anser anser*), non-breeding • Osprey (*Pandion haliaetus*), breeding • Oystercatcher (*Haematopus ostralegus*)*, non-breeding • Red-breasted merganser (*Mergus serrator*), non-breeding • Redshank (*Tringa totanus*), non-breeding • Scaup (*Aythya marila*), non-breeding • Teal (*Anas crecca*), non-breeding • Waterfowl assemblage, non-breeding • Wigeon (*Anas penelope*), non-breeding	• Favourable Maintained (04/02/2001) • Unfavourable No change (30/06/2000) • Unfavourable No change (04/02/2001) • Favourable Maintained (04/02/2001) • Favourable Maintained (04/02/2001) • Unfavourable No change (04/02/2001) • Favourable Maintained (31/12/2001) • Favourable Maintained (30/06/2003) • Favourable Maintained (04/02/2001) • Unfavourable No change (04/02/2001) • Favourable Maintained (04/02/2001) • Favourable Maintained (04/02/2001) • Favourable Maintained (04/02/2001) • Favourable Maintained (31/12/2001) • Favourable Maintained (04/02/2001)	To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and To ensure for the qualifying species that the following are maintained in the long term: • Population of the species as a viable component of the site • Distribution of the species within site • Distribution and extent of habitats supporting the species • Structure, function and supporting processes of habitats supporting the species • No significant disturbance of the species
Loch Flemington (UK9001691, 8527)		
• Slavonian grebe (*Podiceps auritus*), breeding	• Unfavourable No change (30/06/2009)	To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and To ensure for the qualifying species that the following are maintained in the long term: • Population of the species as a viable component of the site • Distribution of the species within site • Distribution and extent of habitats supporting the species

Qualifying Interest	Condition Assessment	Conservation Objectives
		• Structure, function and supporting processes of habitats supporting the species • No significant disturbance of the species
Moray and Nairn Coast (UK9001625, 8550)		
• Bar-tailed godwit (*Limosa lapponica*), non-breeding • Common scoter (*Melanitta nigra*)*, non-breeding • Dunlin (*Calidris alpina alpina*)*, non-breeding • Greylag goose (*Anser anser*), non-breeding • Long-tailed duck (*Clangula hyemalis*)*, non-breeding • Osprey (*Pandion haliaetus*), breeding • Oystercatcher (*Haematopus ostralegus*)*, non-breeding • Pink-footed goose (*Anser brachyrhynchus*), non-breeding • Red-breasted merganser (*Mergus serrator*)*, non-breeding • Redshank (*Tringa totanus*), non-breeding • Velvet scoter (*Melanitta fusca*)*, non-breeding • Waterfowl assemblage, non-breeding • Wigeon (*Anas penelope*)*, non-breeding	• Favourable Declining (30/11/2008) • Favourable Maintained (30/11/2008) • Favourable Maintained (30/11/2008) • Favourable Maintained (30/11/2008) • Favourable Maintained (30/11/2008) • Favourable Maintained (30/04/2001) • Favourable Maintained (30/11/2008) • Favourable Maintained (30/11/2008) • Favourable Maintained (30/11/2008) • Favourable Recovered (30/11/2008) • Favourable Maintained (30/11/2008) • Favourable Maintained (30/11/2008) • Favourable Maintained (30/11/2008)	To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained; and To ensure for the qualifying species that the following are maintained in the long term: • Population of the species as a viable component of the site • Distribution of the species within site • Distribution and extent of habitats supporting the species • Structure, function and supporting processes of habitats supporting the species • No significant disturbance of the species
Moray Firth (proposed SPA) (UK9020313, 10490)		
• European shag (*Phalacrocorax aristotelis*), breeding and non-breeding • Common eider (*Somateria mollissima*), non-breeding • Common scoter (*Melanitta nigra*), non-breeding • Goldeneye (*Bucephala clangula*), non-breeding • Great northern diver (*Gavia immer*), non-breeding • Long-tailed duck (*Clangula hyemalis*), non-breeding • Red-breasted merganser (*Mergus serrator*), non-breeding • Red-throated diver (*Gavia stellata*), non-breeding • Scaup (*Aythya marila*), non-breeding • Slavonian grebe (*Podiceps auritus*), non-breeding • Velvet scoter (*Melanitta fusca*), non-breeding	Not applicable for a pSPA	To avoid deterioration of the habitats of the qualifying species or significant disturbance to the qualifying species, subject to natural change, thus ensuring that the integrity of the site is maintained in the long-term and it continues to make an appropriate contribution to achieving the aims of the Birds Directive for each of the qualifying species. This contribution will be achieved through delivering the following objectives for each of the site's qualifying features: • Avoid significant mortality, injury and disturbance of the qualifying features, so that the distribution of the species and ability to use the site are maintained in the long-term; • To maintain the habitats and food resources of the qualifying features in favourable condition.

* Indicates assemblage qualifier only

Table A3: Ramsar Sites

Qualifying Interest	Condition Assessment	Conservation Objectives
Inner Moray Firth (UK13025, 8430)		
• Bar-tailed godwit, non-breeding • Greylag goose, non-breeding • Intertidal mudflats and sandflats • Red-breasted merganser, non-breeding • Redshank, non-breeding • Saltmarsh • Sand dune • Shingle • Waterfowl assemblage, non-breeding	• Favourable Maintained (04/02/2001) • Favourable Maintained (31/12/2001) • Favourable Maintained (01/09/2008) • Unfavourable No change (04/02/2001) • Favourable Maintained (04/02/2001) • Favourable Maintained (23/08/2010) • Favourable Maintained (12/07/2002) • Favourable Maintained (23/08/2010) • Favourable Maintained (31/12/2001)	The Ramsar Convention's mission is "*the conservation and wise use of all wetlands through local and national actions and international cooperation, as a contribution towards achieving sustainable development throughout the world*". Where the interest features of Ramsar sites overlap with those of European sites it is Scottish Government policy to afford them the same protection (David Tyldesley and Associates, 2015). Therefore it is assumed that the conservation objectives for the Inner Moray Firth SPA would be relevant to the Inner Moray Firth Ramsar site.
Moray and Nairn Coast (UK13048, 8447)		
• Greylag goose, non-breeding • Intertidal mudflats and sandflats • Pink-footed goose, non-breeding • Redshank, non-breeding • Saltmarsh • Sand dune • Shingle • Waterfowl assemblage, non-breeding • Wet woodland	• Favourable Maintained (30/11/2008) • Favourable Maintained (01/09/2008) • Favourable Maintained (30/11/2008) • Favourable Recovered (30/11/2008) • Unfavourable Declining (05/06/2010) • Unfavourable Declining (05/06/2011) • Favourable Maintained (29/08/2001) • Favourable Maintained (30/11/2008) • Unfavourable Declining (18/08/2010)	The Ramsar Convention's mission is "*the conservation and wise use of all wetlands through local and national actions and international cooperation, as a contribution towards achieving sustainable development throughout the world*". Where the interest features of Ramsar sites overlap with those of European sites it is Scottish Government policy to afford them the same protection (David Tyldesley and Associates, 2015). Therefore it is assumed that the conservation objectives for the Moray and Nairn Coast SPA would be relevant to the Moray and Nairn Coast Ramsar site.

* Indicates assemblage qualifier only

Appendix B: Species Recorded during Wintering Bird Surveys

The following tables list the total number of birds recorded during the wintering bird surveys for qualifying bird species (Table B1) and non-qualifying bird species (Table B2).

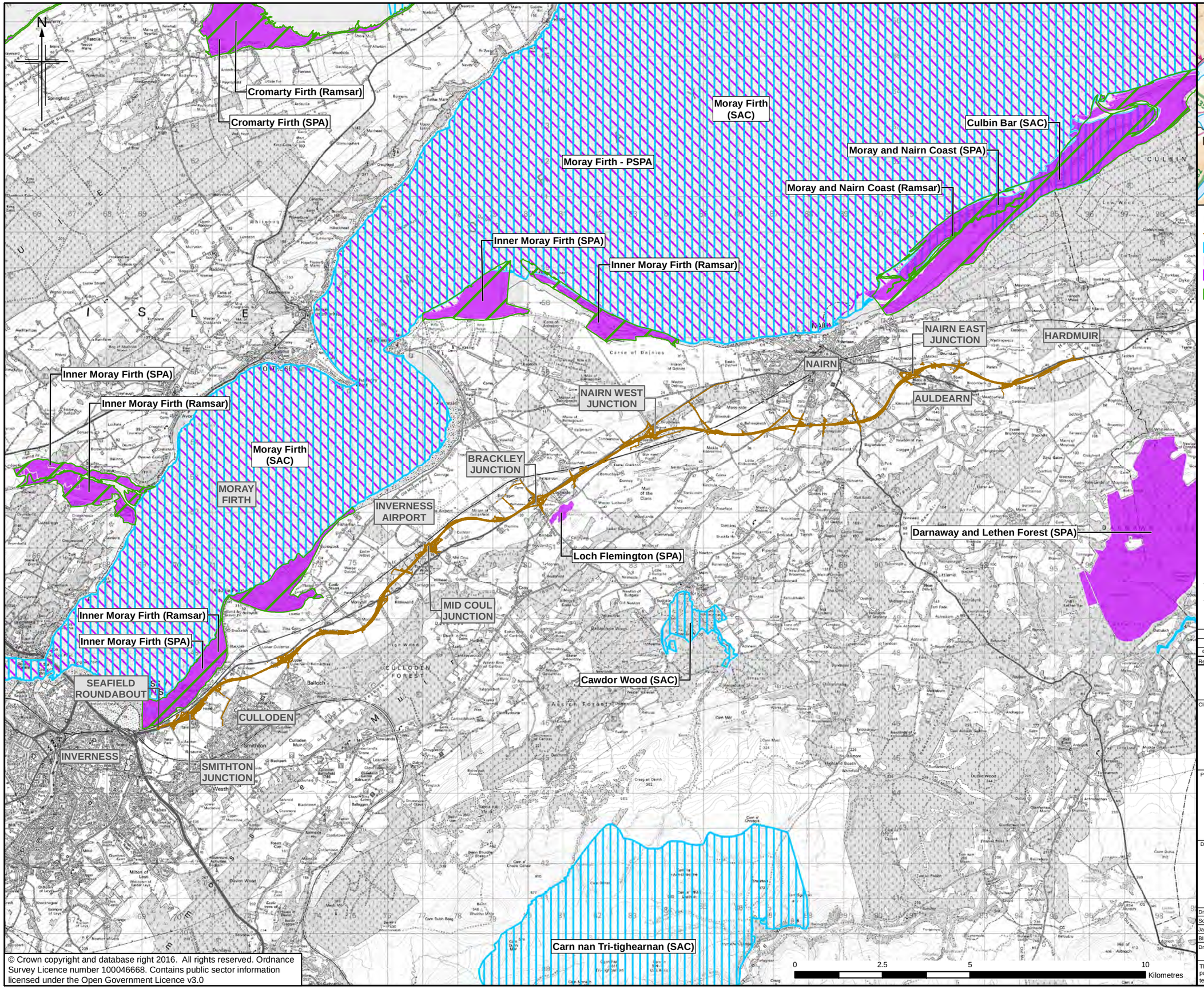
Table B1: Total number of qualifying bird species recorded during wintering bird surveys (no. of flocks in parentheses)

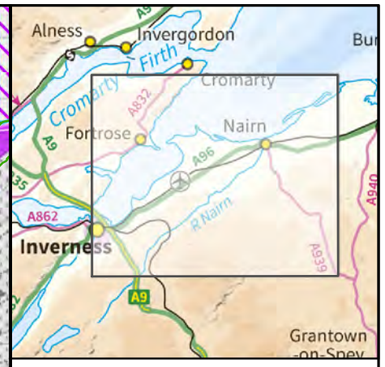
Date of Survey	Curlew	Goldeneye	Greylag Goose	Oystercatcher	Pink-footed Goose	Teal	Wigeon	Total
16/01/2014	75 (2)	0	240 (2)	0	3,423 (5)	0	0	3,738
30/01/2014	75 (2)	0	58 (2)	0	3,500 (5)	0	0	3,633
13/02/2014	85 (2)	0	445 (2)	0	3,554 (9)	0	0	4,084
26/02/2014	55 (2)	0	630 (4)	45 (2)	7,660 (8)	15 (1)	10 (1)	8,415
13/03/2014	62 (2)	0	282 (5)	75 (2)	8,275 (9)	12 (1)	20 (1)	8,714
25/03/2014	0	0	508 (2)	0	8,500 (7)	0	0	9,008
15/10/2014	0	0	0	0	5,500 (2)	0	0	5,500
28/10/2014	0	0	0	0	4,020 (2)	0	0	4,020
12/11/2014	125 (4)	0	0	0	900 (1)	0	0	1,025
27/11/2014	15 (1)	0	1 (1)	0	4,000 (4)	0	0	4,016
03/12/2014	200 (1)	0	2 (1)	0	5,600 (6)	0	0	5,802
11/12/2014	134 (3)	0	0	0	5,652 (7)	200 (1)	0	5,986
20/01/2015	0	0	370 (2)	0	5,223 (11)	0	4 (1)	5,597
28/01/2015	216 (4)	2 (1)	468 (3)	0	3,003 (10)	200 (2)	600 (1)	4,489
10/02/2015	0	0	408 (6)	0	6,013 (14)	170 (20	550 (1)	7,141
24/02/2015	16 (2)	0	874 (4)	16 (1)	1,816 (17)	0	180 (1)	2,902
11/03/2015	82 (2)	0	737 (9)	40 (1)	7,410 (11)	10 (1)	150 (1)	8,429
25/03/2015	35 (1)	0	1,306 (6)	0	18,370 (12)	150 (1)	0	19,861
08/04/2015	0	0	238 (4)	0	10,159 (11)	60 (1)	20 (1)	10,477
15/04/2015	61 (2)	0	110 (3)	2 (1)	11,110 (9)	0	0	11,283
Totals	**1,236 (30)**	**2 (1)**	**6,677 (56)**	**178 (7)**	**123,688 (160)**	**817 (10)**	**1,534 (8)**	**134,132**

Table B2: Total number of non-qualifying bird species recorded during wintering bird surveys (no. of flocks in parentheses)

Date of Survey	Brent Goose	Barnacle Goose	Common Gull	Golden Plover	Herring Gull	Lapwing	Mallard	Shelduck	White-fronted Goose	Whooper Swan	Total
16/01/2014	0	0	100 (1)	0	50 (1)	85 (1)	0	0	0	25 (1)	260
30/01/2014	0	0	0	0	0	150 (1)	0	0	0	15 (1)	165
13/02/2014	0	0	0	0	0	0	0	0	0	35 (1)	35
26/02/2014	0	0	0	0	0	150 (2)	0	0	0	0	150
13/03/2014	0	1 (1)	0	0	0	9 (2)	0	0	1 (1)	1 (1)	12
25/03/2014	5 (1)	0	0	0	0	0	0	0	0	0	5
15/10/2014	0	8 (1)	0	0	0	0	0	0	0	28 (1)	36
28/10/2014	0	0	0	0	0	0	0	0	0	150 (1)	150
12/11/2014	0	1 (1)	0	0	0	600 (1)	0	0	0	22 (1)	623
27/11/2014	0	0	0	0	0	0	0	0	0	8 (1)	8
03/12/2014	0	0	0	0	0	0	0	0	0	12 (1)	12
11/12/2014	0	0	0	0	0	0	0	0	0	23 (2)	23
20/01/2015	0	6 (1)	0	0	0	350 (3)	0	0	0	13 (2)	369
28/01/2015	0	0	0	0	0	25 (2)	0	0	0	0	25
10/02/2015	0	0	0	0	0	175 (1)	0	0	0	5 (1)	180
24/02/2015	0	2 (1)	0	0	0	480 (1)	8 (1)	0	0	5 (1)	495
11/03/2015	0	0	0	0	0	180 (3)	0	0	0	0	180
25/03/2015	0	1 (1)	0	0	0	40 (1)	0	0	0	7 (1)	48
08/04/2015	0	0	0	0	0	0	0	0	0	0	0
15/04/2015	0	0	0	150 (1)	0	5 (1)	0	2 (1)	0	1 (1)	158
Totals	**5 (1)**	**19 (6)**	**100 (1)**	**150 (1)**	**50 (1)**	**2,249 (19)**	**8 (1)**	**2 (1)**	**1 (1)**	**350 (17)**	**2,934**

Figures





Legend

- Proposed Scheme (as per Draft Orders)
- Special Area of Conservation (SAC) *
- Special Protection Area (SPA)*
- Proposed Special Protection Area (PSPA)**
- Wetlands of International Importance (Ramsar)*

* Downloaded from SNHi, July 2015.

** Downloaded from SNHi, July 2016. Proposed Special Protection Areas (PSPA) area at the consultation stage and may be subject to change prior to classification.

Rev.	Rev. Date	Purpose of revision	Orig/Dwn	Checkd	Rev'd	Apprv'd
0	NOV 2016	HRA Publication	HM	JF	PG	PS

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Drawing title

Figure 1
DMRB Stage 3
Habitats Regulations Appraisal
European/Ramsar Sites in Relation to the Proposed Scheme

Sheet 1 of 1

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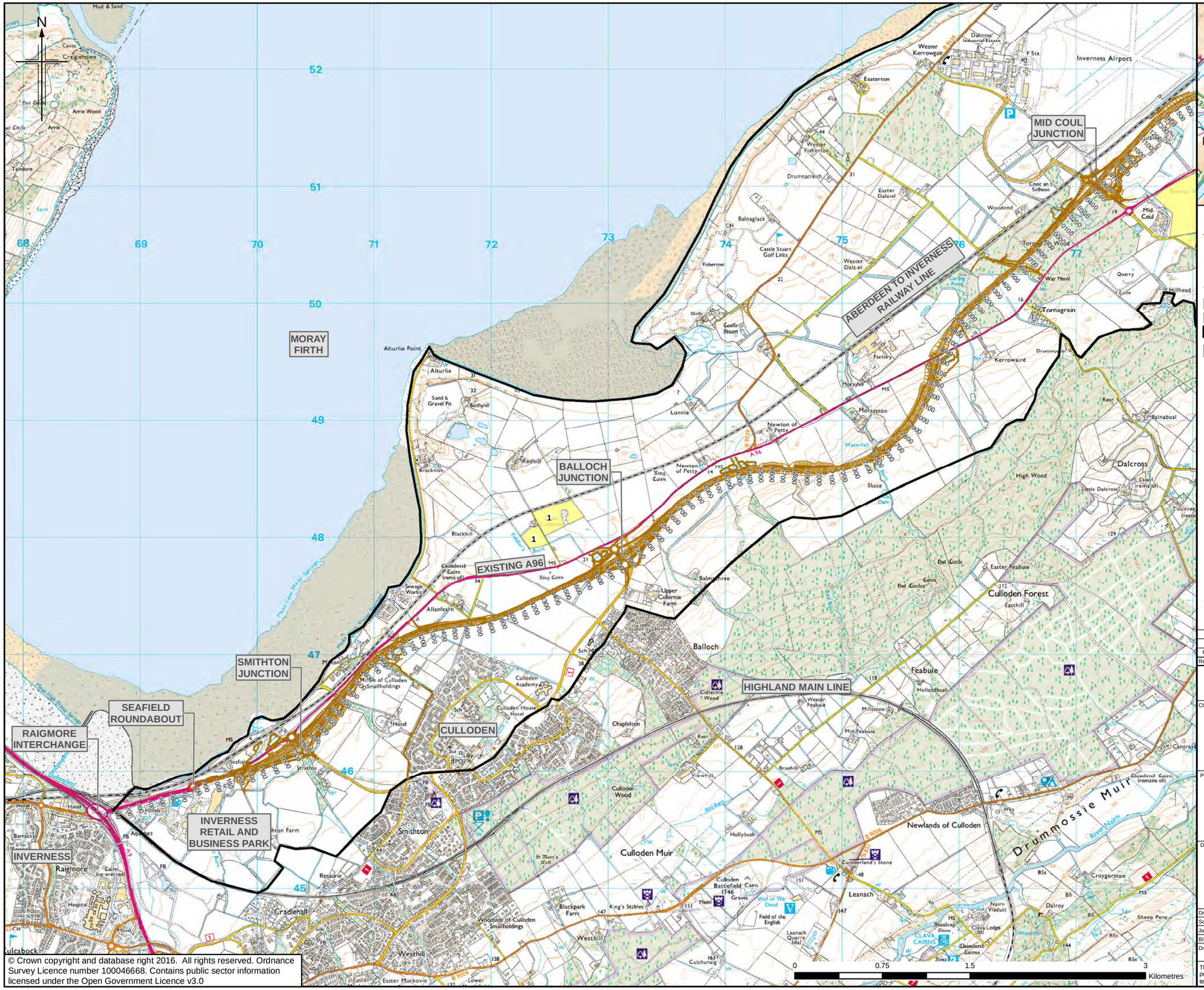

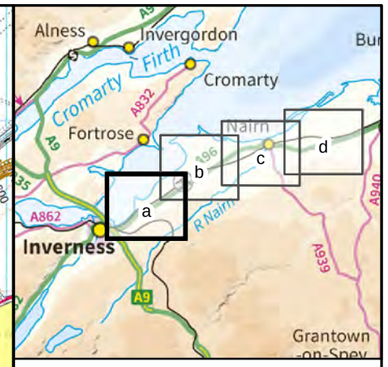

Legend

- Proposed Scheme (as per Draft Orders)
- SUDS (e.g. Basin or Pond)*

Greylag Geese

Peak Number of Geese Observed during the Survey Period

- 1-250
- 251-500
- Survey Area
- 1 — Number of Surveys in which Geese Observed in Field (n=20)

* Actual shape of pond/basin will be subject to detailed design

Rev.	Rev. Date	Purpose of revision	Orig/Dwn	Checkd	Rev'd	Apprv'd
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Drawing title

Figure 2a
DMRB Stage 3
Habitats Requlations Appraisal
Greylag Goose Foraging Distribution

Sheet 1 of 4

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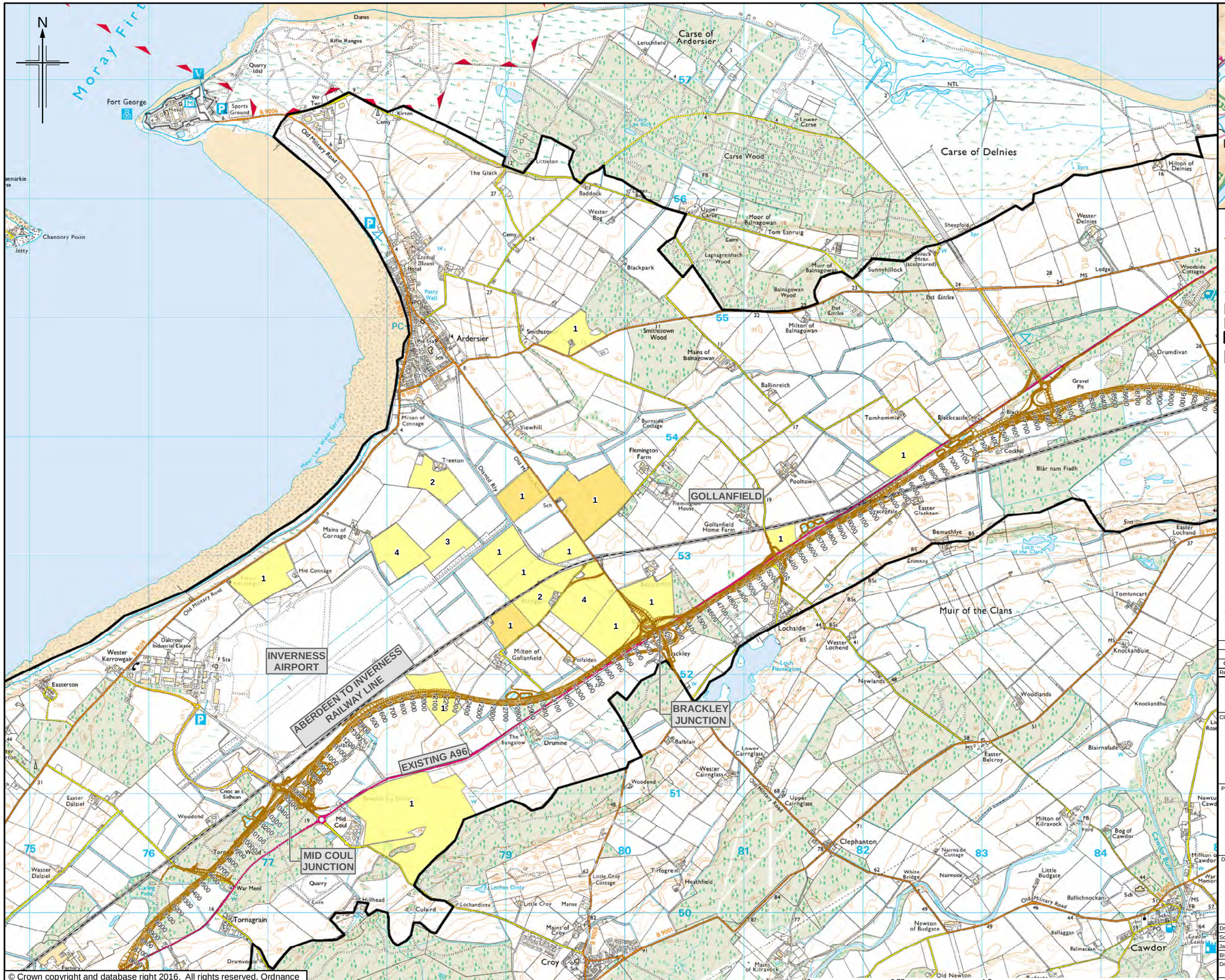

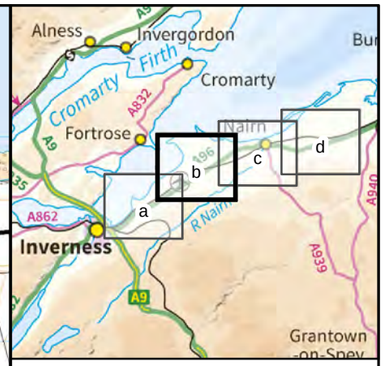

Legend

- Proposed Scheme (as per Draft Orders)
- SUDS (e.g. Basin or Pond)*

Greylag Geese

Peak Number of Geese Observed during the Survey Period

- 1-250
- 251-500
- Survey Area
- 1 — Number of Surveys in which Geese Observed in Field (n=20)

* Actual shape of pond/basin will be subject to detailed design

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Drawing title

Figure 2b
DMRB Stage 3
Habitats Regulations Appraisal
Greylag Goose Foraging Distribution

Sheet 2 of 4

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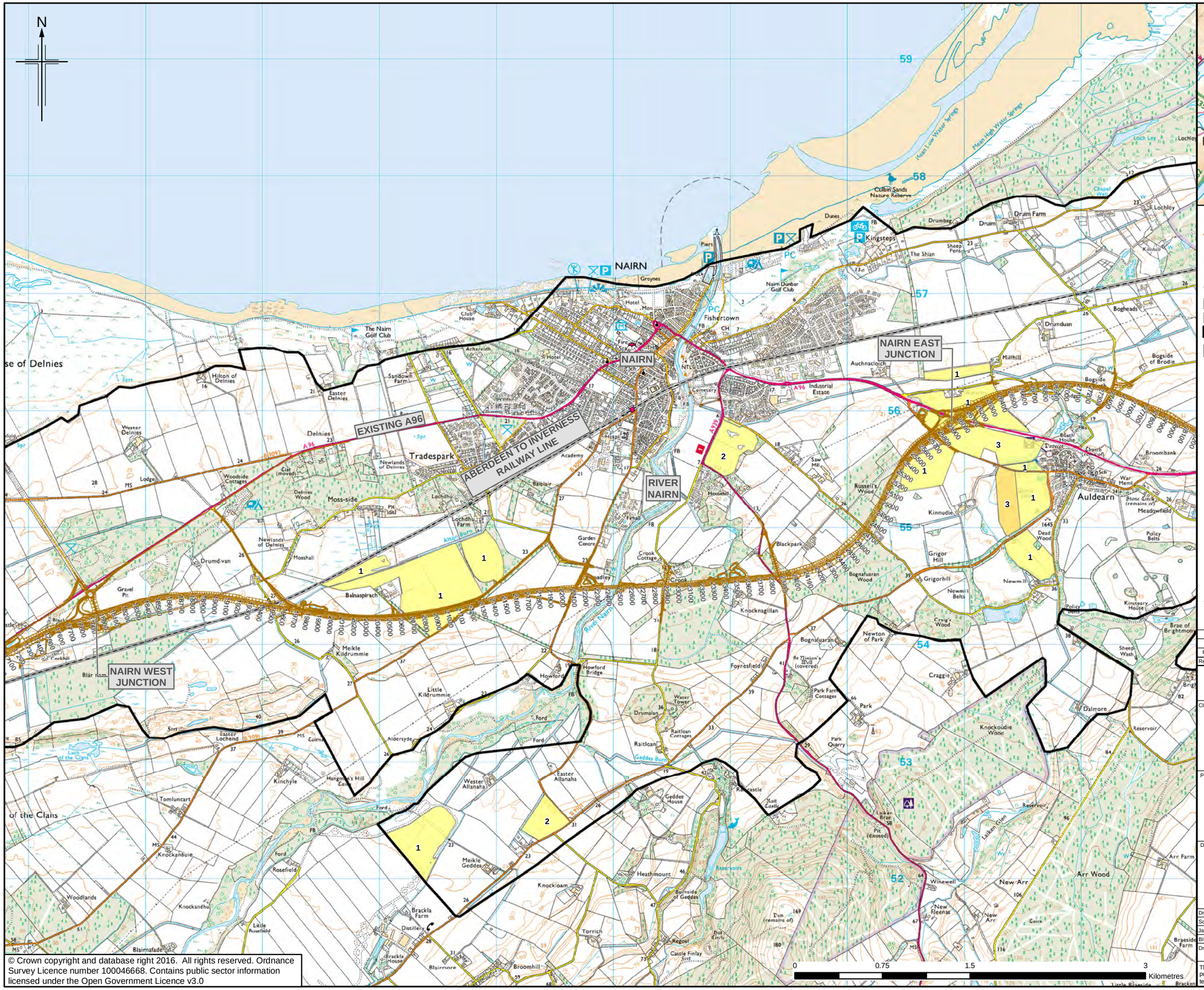

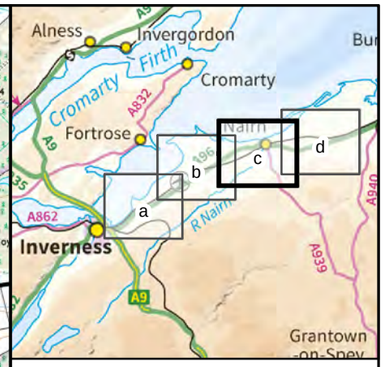

Legend

- Proposed Scheme (as per Draft Orders)
- SUDS (e.g. Basin or Pond)*

Greylag Geese

Peak Number of Geese Observed during the Survey Period

- 1-250
- 251-500
- Survey Area
- 1 — Number of Surveys in which Geese Observed in Field (n=20)

* Actual shape of pond/basin will be subject to detailed design

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Figure 2c
DMRB Stage 3
Habitats Regulations Appraisal
Greylag Goose Foraging Distribution

Sheet 3 of 4

Drawing Status	FINAL	
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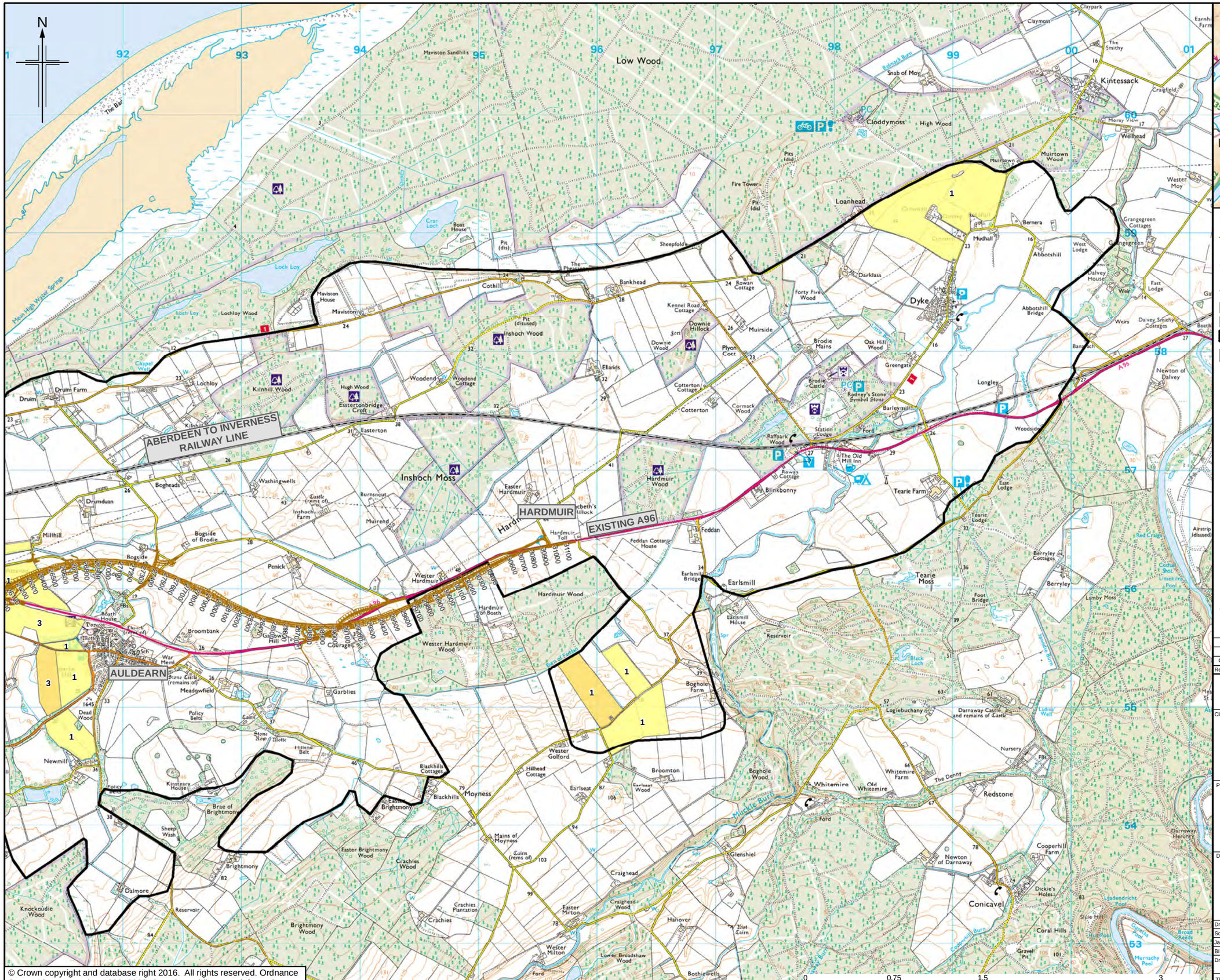

Legend

- Proposed Scheme (as per Draft Orders)
- SUDS (e.g. Basin or Pond)*

Greylag Geese

Peak Number of Geese Observed during the Survey Period

- 1-250
- 251-500
- Survey Area
- 1 — Number of Surveys in which Geese Observed in Field (n=20)

* Actual shape of pond/basin will be subject to detailed design

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Drawing title

Figure 2d
DMRB Stage 3
Habitats Regulations Appraisal
Greylag Goose Foraging Distribution

Sheet 4 of 4

Drawing Status	FINAL	
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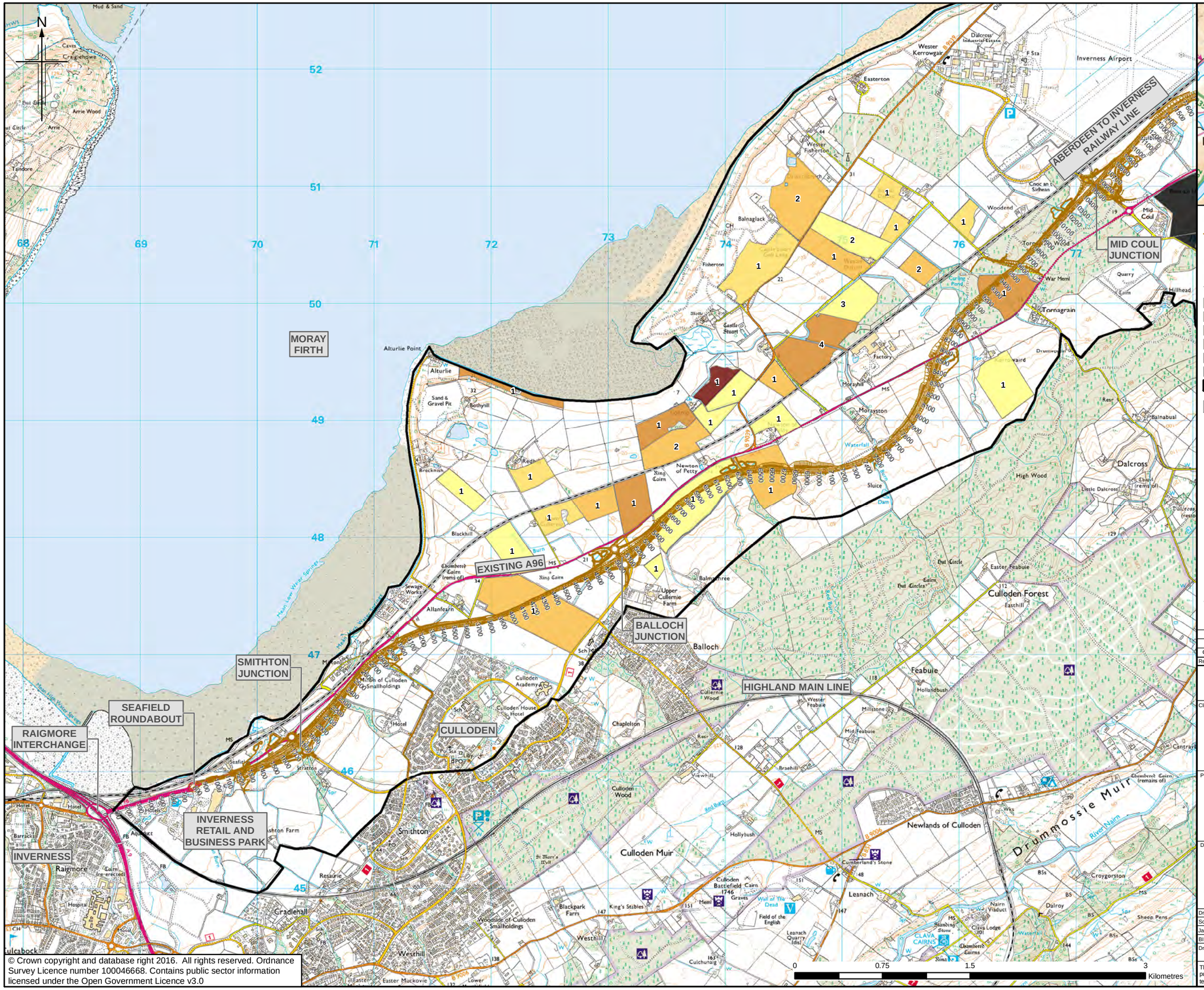
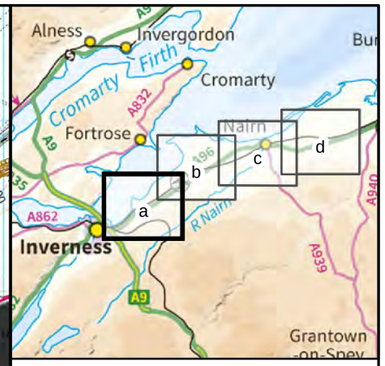
BIM No.		
Drawing number	B2103500/EN/HRA/DR/002d	Rev 0





Legend

- Proposed Scheme (as per Draft Orders)
- SUDS (e.g. Basin or Pond)*

Pink-Footed Goose

Peak Number of Geese Observed during the Survey Period

- 1 - 250
- 251 - 500
- 501 - 1000
- 1001 - 2000
- 2001 - 4000
- 4001 - 6000
- Survey Area
- 1 — Number of Surveys in which Geese Observed in Field (n=20)

* Actual shape of pond/basin will be subject to detailed design

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Drawing title

Figure 3a
DMRB Stage 3
Habitats Requlations Appraisal
Pink-Footed Goose Foraging Distribution

Sheet 1 of 4

Drawing Status	FINAL	
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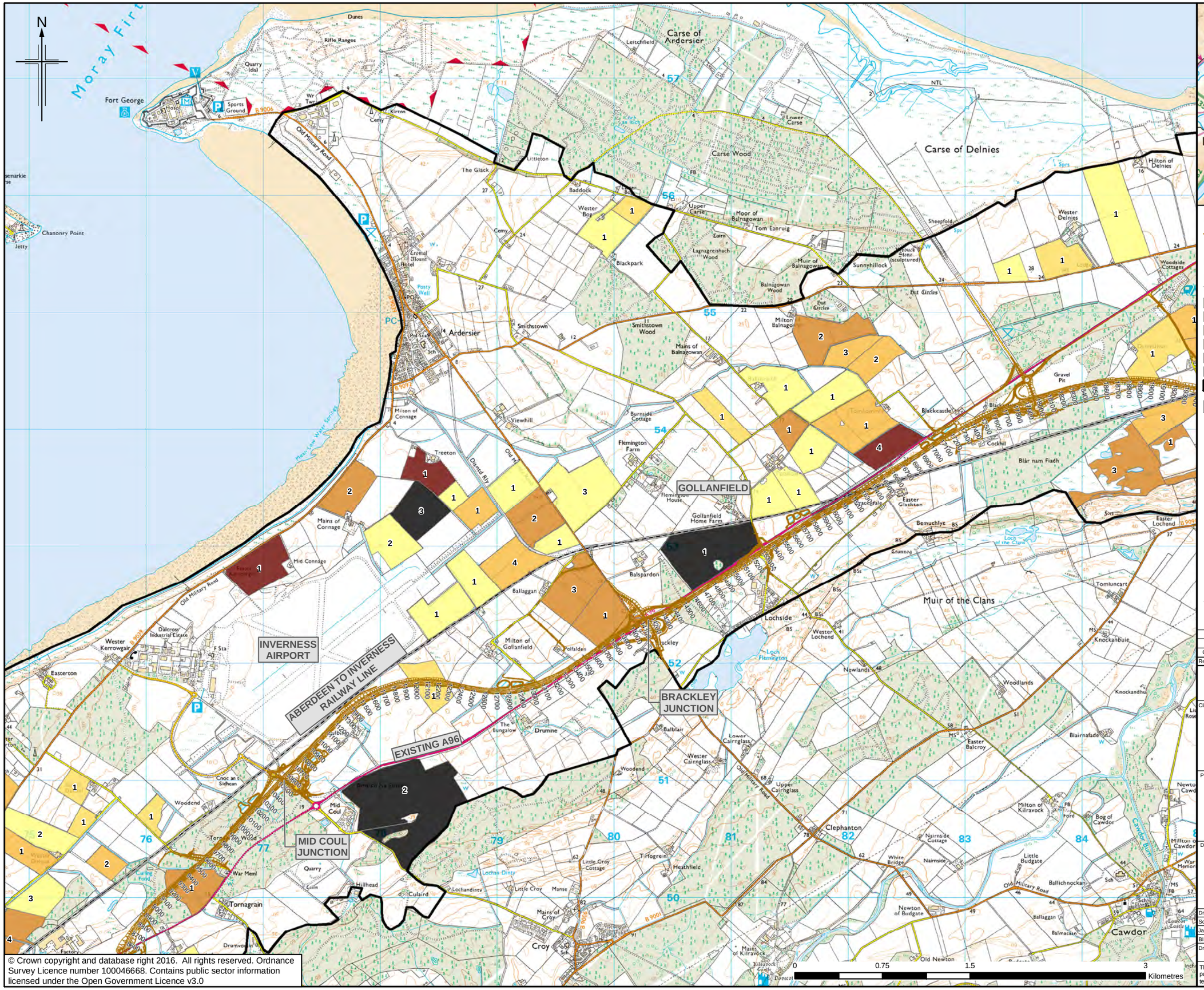

Legend

- Proposed Scheme (as per Draft Orders)
- SUDS (e.g. Basin or Pond)*

Pink-Footed Goose

Peak Number of Geese Observed during the Survey Period

- 1 - 250
- 251 - 500
- 501 - 1000
- 1001 - 2000
- 2001 - 4000
- 4001 - 6000
- Survey Area

1 Number of Surveys in which Geese Observed in Field (n=20)

* Actual shape of pond/basin will be subject to detailed design

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Drawing title

Figure 3b
DMRB Stage 3
Habitats Requlations Appraisal
Pink-Footed Goose Foraging Distribution

Sheet 2 of 4

Drawing Status	FINAL	
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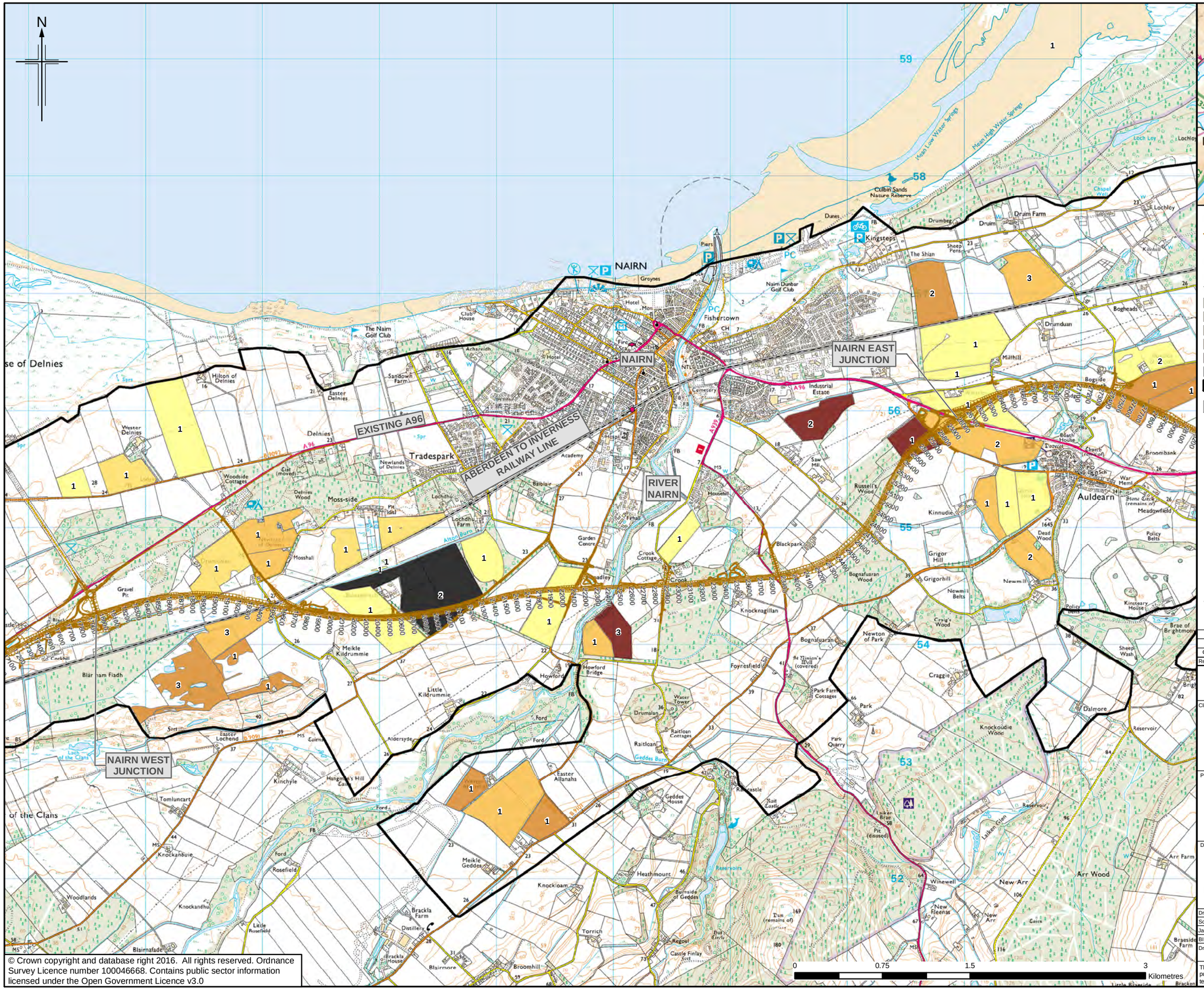
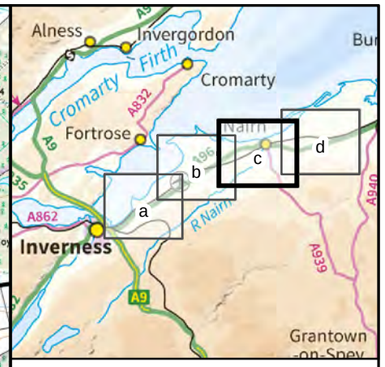
Drawing number	B2103500/EN/HRA/DR/003b	Rev 0





Legend

- Proposed Scheme (as per Draft Orders)
- SUDS (e.g. Basin or Pond)*

Pink-Footed Goose

Peak Number of Geese Observed during the Survey Period

- 1 - 250
- 251 - 500
- 501 - 1000
- 1001 - 2000
- 2001 - 4000
- 4001 - 6000
- Survey Area

1 Number of Surveys in which Geese Observed in Field (n=20)

* Actual shape of pond/basin will be subject to detailed design

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Drawing title

Figure 3c
DMRB Stage 3
Habitats Regulations Appraisal
Pink-Footed Goose Foraging Distribution

Sheet 3 of 4

Drawing Status	FINAL	
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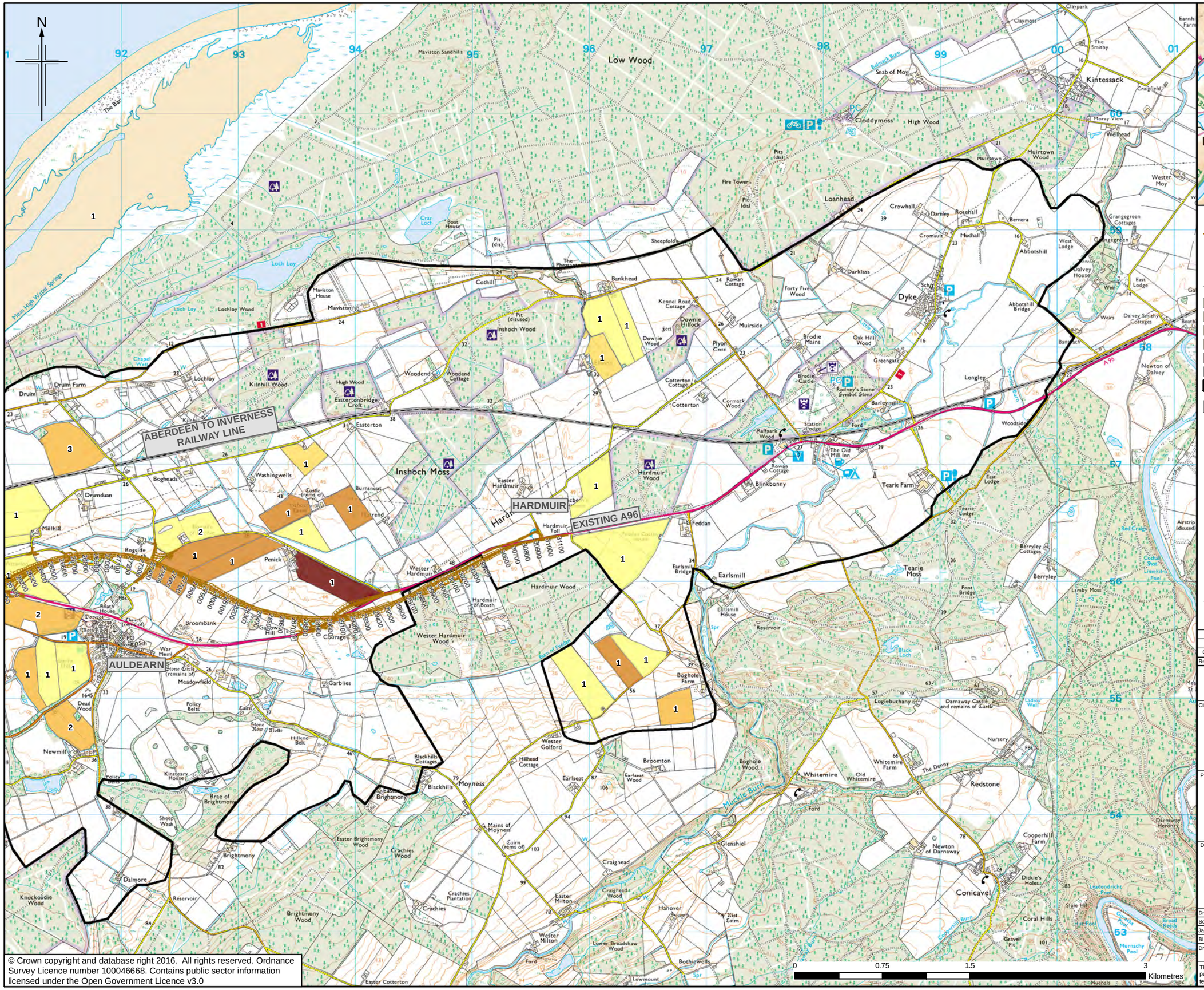

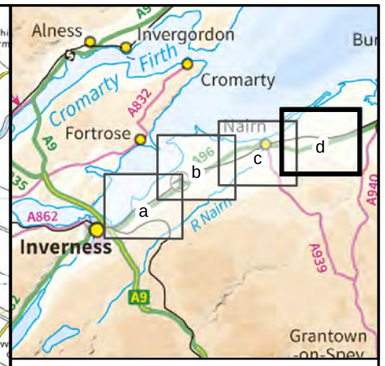

Legend

- Proposed Scheme (as per Draft Orders)
- SUDS (e.g. Basin or Pond)*

Pink-Footed Goose

Peak Number of Geese Observed during the Survey Period

- 1 - 250
- 251 - 500
- 501 - 1000
- 1001 - 2000
- 2001 - 4000
- 4001 - 6000
- Survey Area

1 Number of Surveys in which Geese Observed in Field (n=20)

* Actual shape of pond/basin will be subject to detailed design

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Drawing title

Figure 3d
DMRB Stage 3
Habitats Regulations Appraisal
Pink-Footed Goose Foraging Distribution

Sheet 4 of 4

Drawing Status	FINAL	
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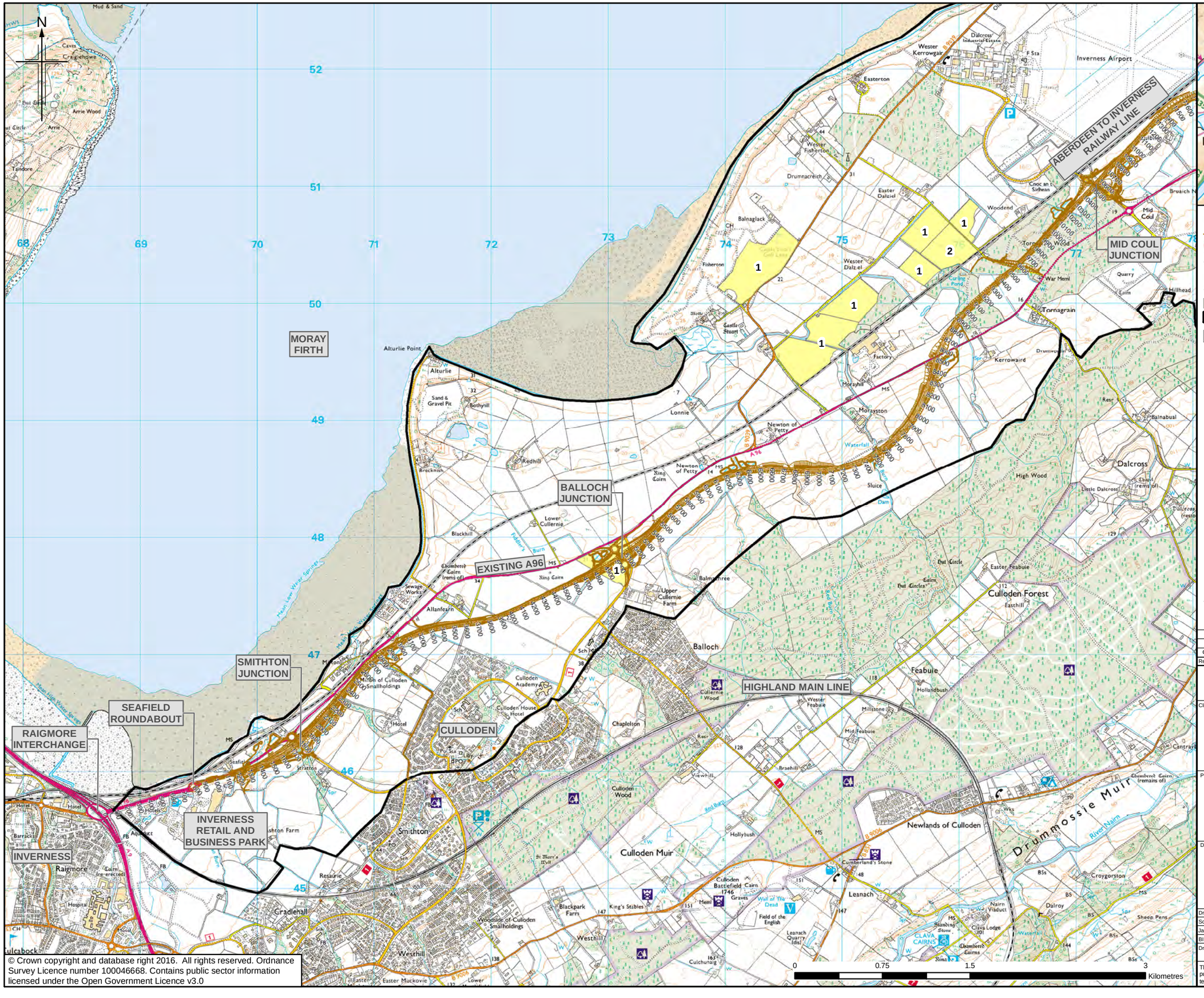

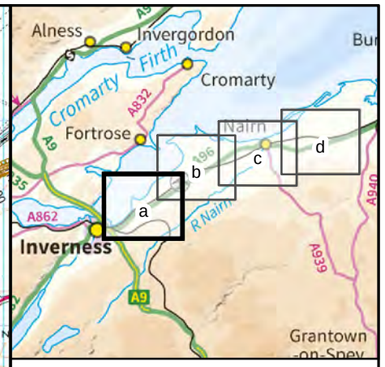

Legend

- Proposed Scheme (as per Draft Orders)
- SUDS (e.g. Basin or Pond)*

Curlew

Peak Number of Curlew Observed during the Survey Period

- 1 - 250
- Survey Area
- 1 — Number of Surveys in which Curlew Observed in Field (n=20)

* Actual shape of pond/basin will be subject to detailed design

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Drawing title

Figure 4a
DMRB Stage 3
Habitats Regulations Appraisal
Curlew Foraging Distribution

Sheet 1 of 4

Drawing Status	FINAL	
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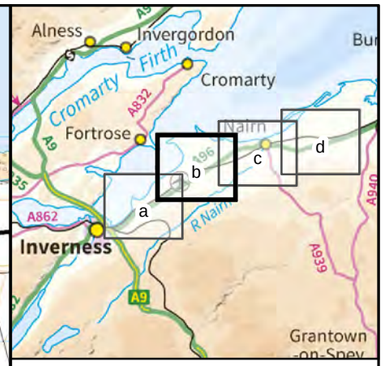

Legend

- Proposed Scheme (as per Draft Orders)
- SUDS (e.g. Basin or Pond)*

Curlew

Peak Number of Curlew Observed during the Survey Period

- 1 - 250
- Survey Area
- 1 — Number of Surveys in which Curlew Observed in Field (n=20)

* Actual shape of pond/basin will be subject to detailed design

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Drawing title

Figure 4b
DMRB Stage 3
Habitats Regulations Appraisal
Curlew Foraging Distribution

Sheet 2 of 4

Drawing Status	FINAL	
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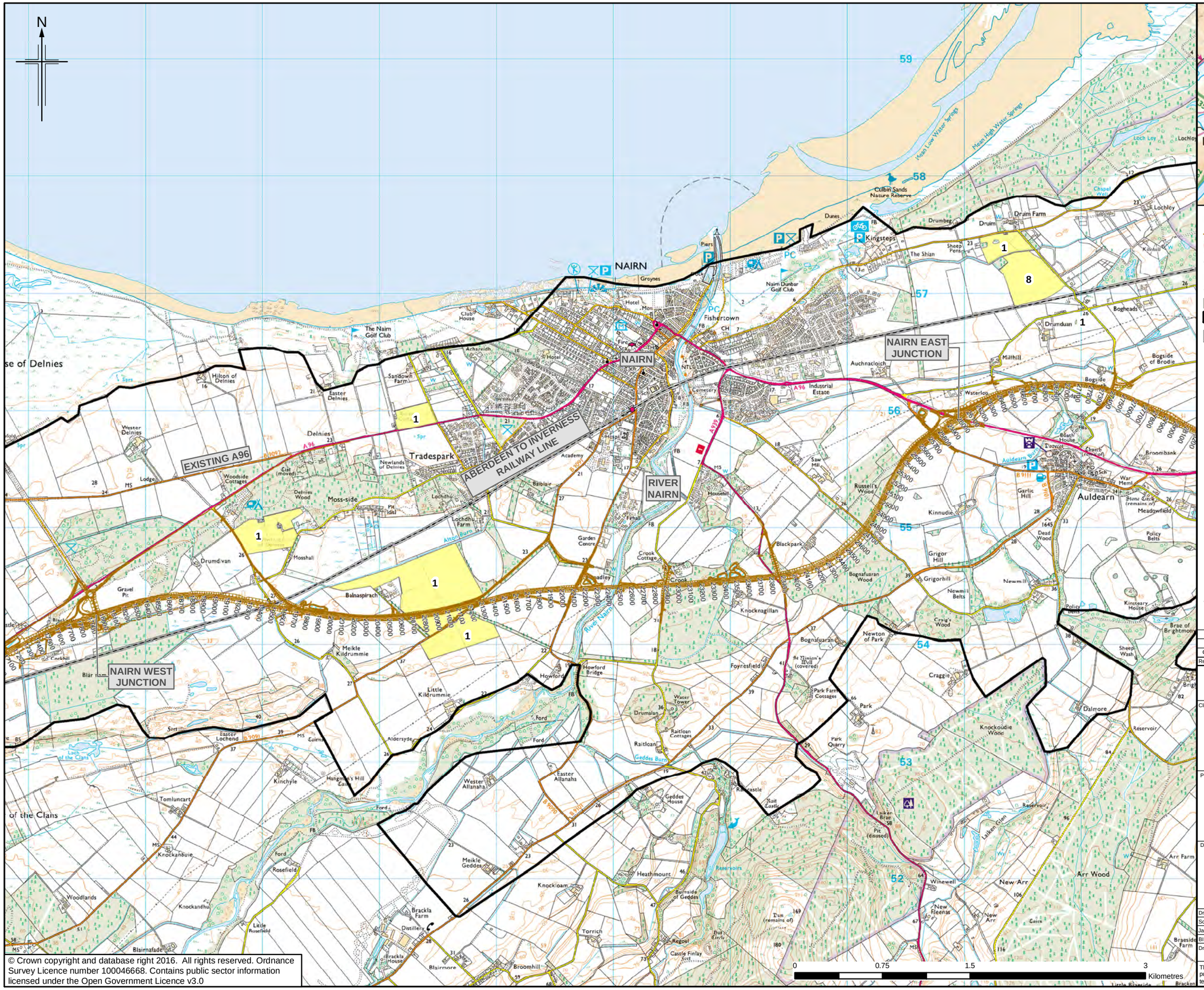

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Drawing title

Figure 4c
DMRB Stage 3
Habitats Requlations Appraisal
Curlew Foraging Distribution

Sheet 3 of 4

Drawing Status	FINAL	
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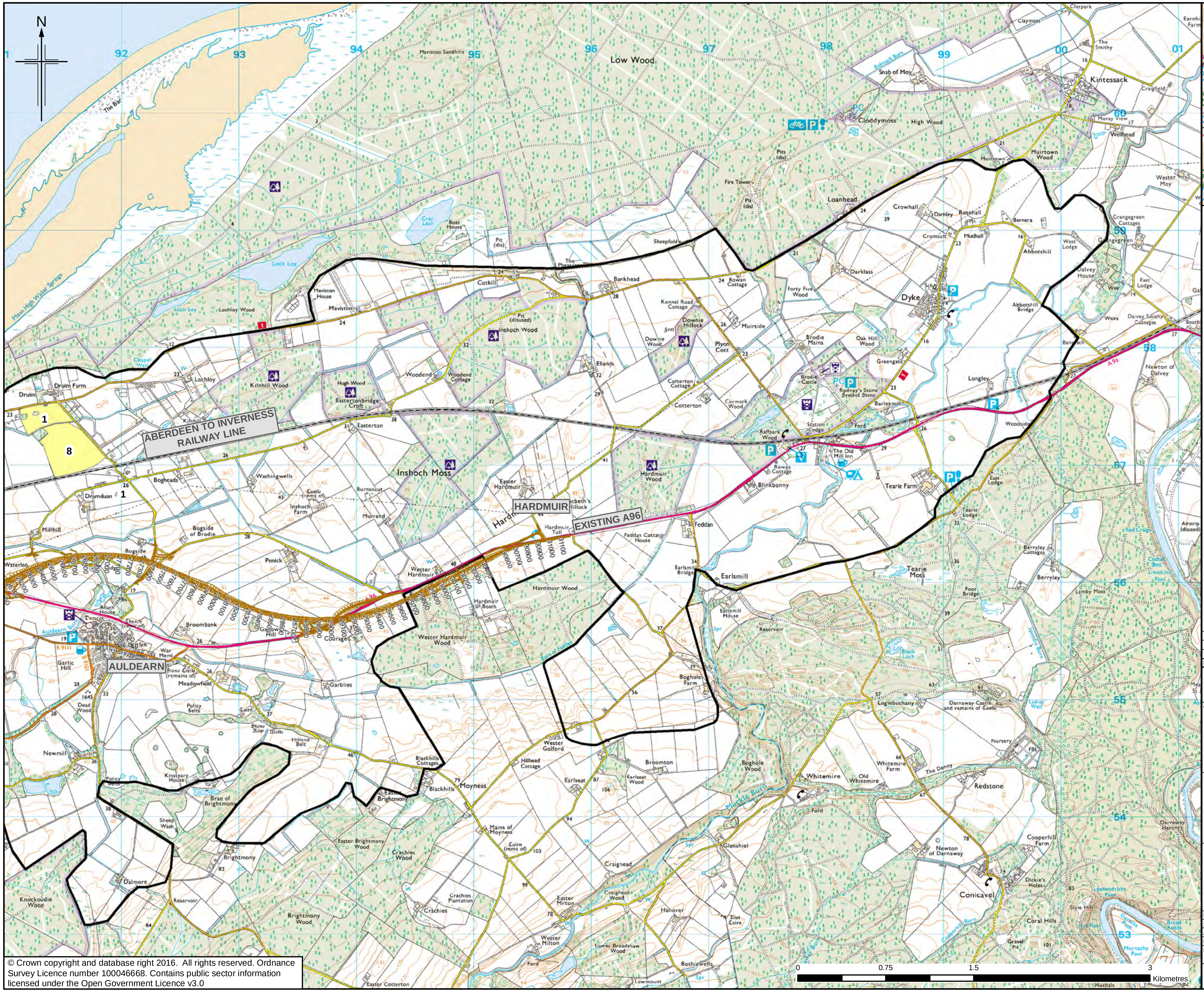

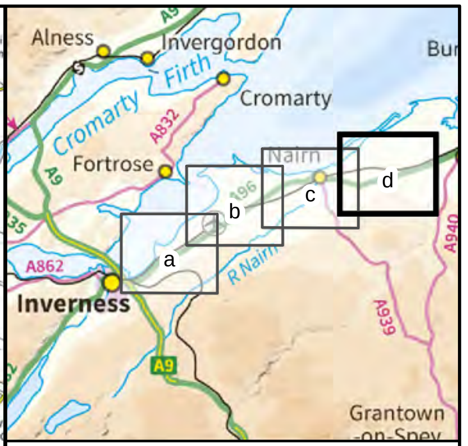

Legend

Proposed Scheme (as per Draft Orders)

SUDS (e.g. Basin or Pond)*

Curlew

Peak Number of Curlew Observed during the Survey Period

1 - 250

Survey Area

1 Number of Surveys in which Curlew Observed in Field (n=20)

* Actual shape of pond/basin will be subject to detailed design

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Project

A96 DUALLING
INVERNESS TO NAIRN
(incl. Nairn Bypass)

Drawing title

Figure 4d
DMRB Stage 3
Habitats Requlations Appraisal
Curlew Foraging Distribution

Sheet 4 of 4

Drawing Status	FINAL	
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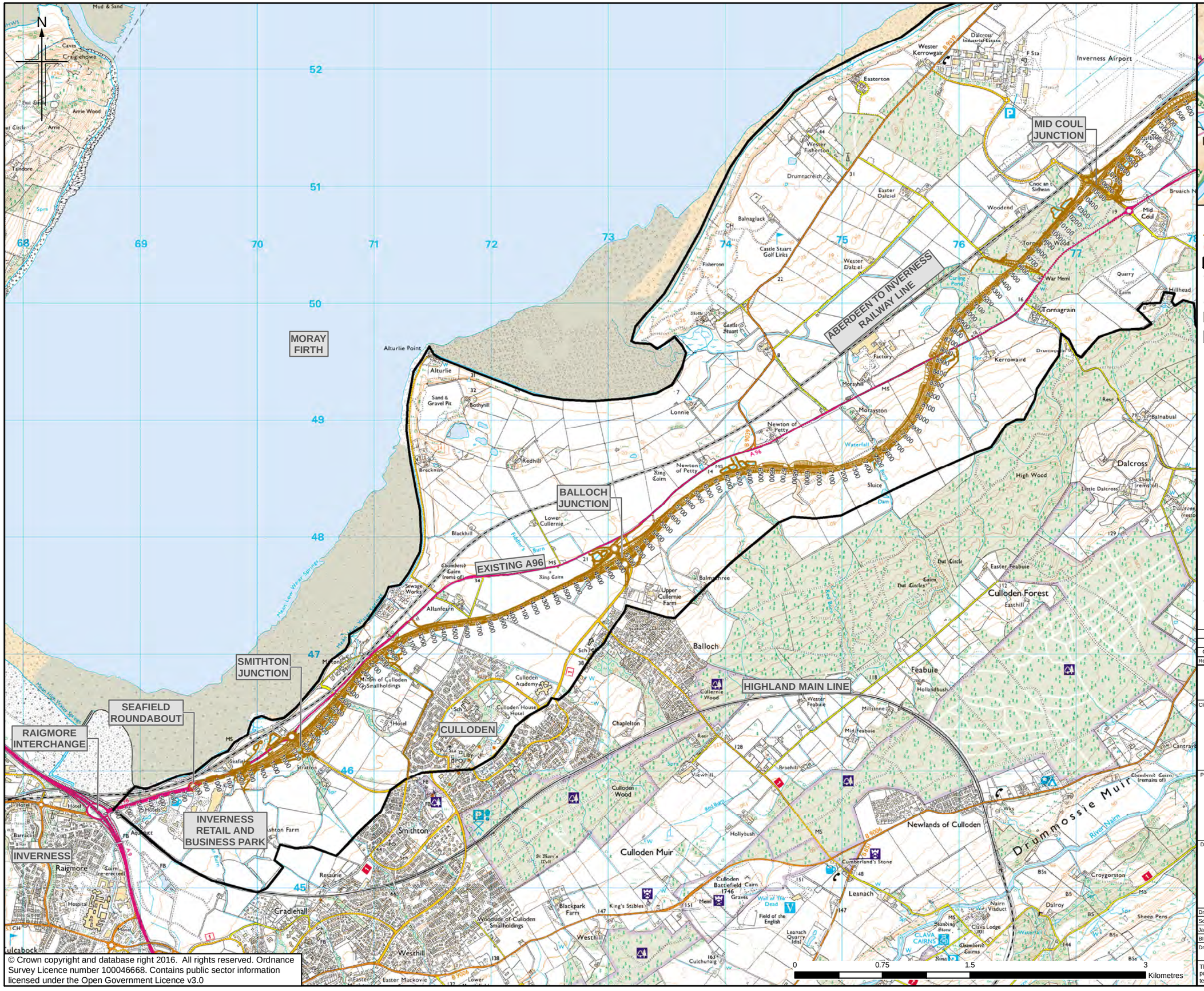
Drawing number	B2103500/EN/HRA/DR/004d	Rev 0



Legend

- Proposed Scheme (as per Draft Orders)
- SUDS (e.g. Basin or Pond)*
- Survey Area

Oystercatcher

Peak Number of Oystercatcher Observed during the Survey Period

- 1 - 250
- 1 — Number of Surveys in which Oystercatcher Observed in Field (n=20)

* Actual shape of pond/basin will be subject to detailed design

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Drawing title

Figure 5a
DMRB Stage 3
Habitats Regulations Appraisal
Oystercatcher Foraging Distribution

Sheet 1 of 4

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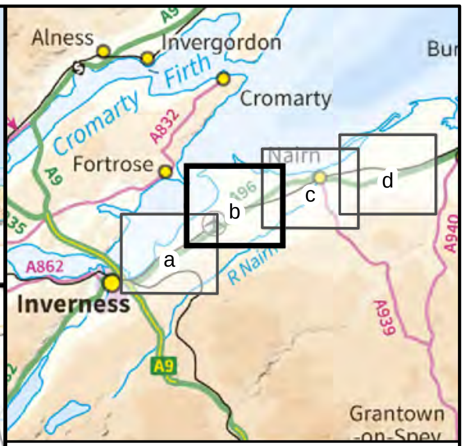
Drawing number	B2103500/EN/HRA/DR/005a	Rev 0



Legend

- Proposed Scheme (as per Draft Orders)
- SUDS (e.g. Basin or Pond)*
- Survey Area

Oystercatcher

Peak Number of Oystercatcher Observed during the Survey Period

- 1 - 250
- 1 — Number of Surveys in which Oystercatcher Observed in Field (n=20)

* Actual shape of pond/basin will be subject to detailed design

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Drawing title

Figure 5b
DMRB Stage 3
Habitats Regulations Appraisal
Oystercatcher Foraging Distribution

Sheet 2 of 4

Drawing Status	FINAL
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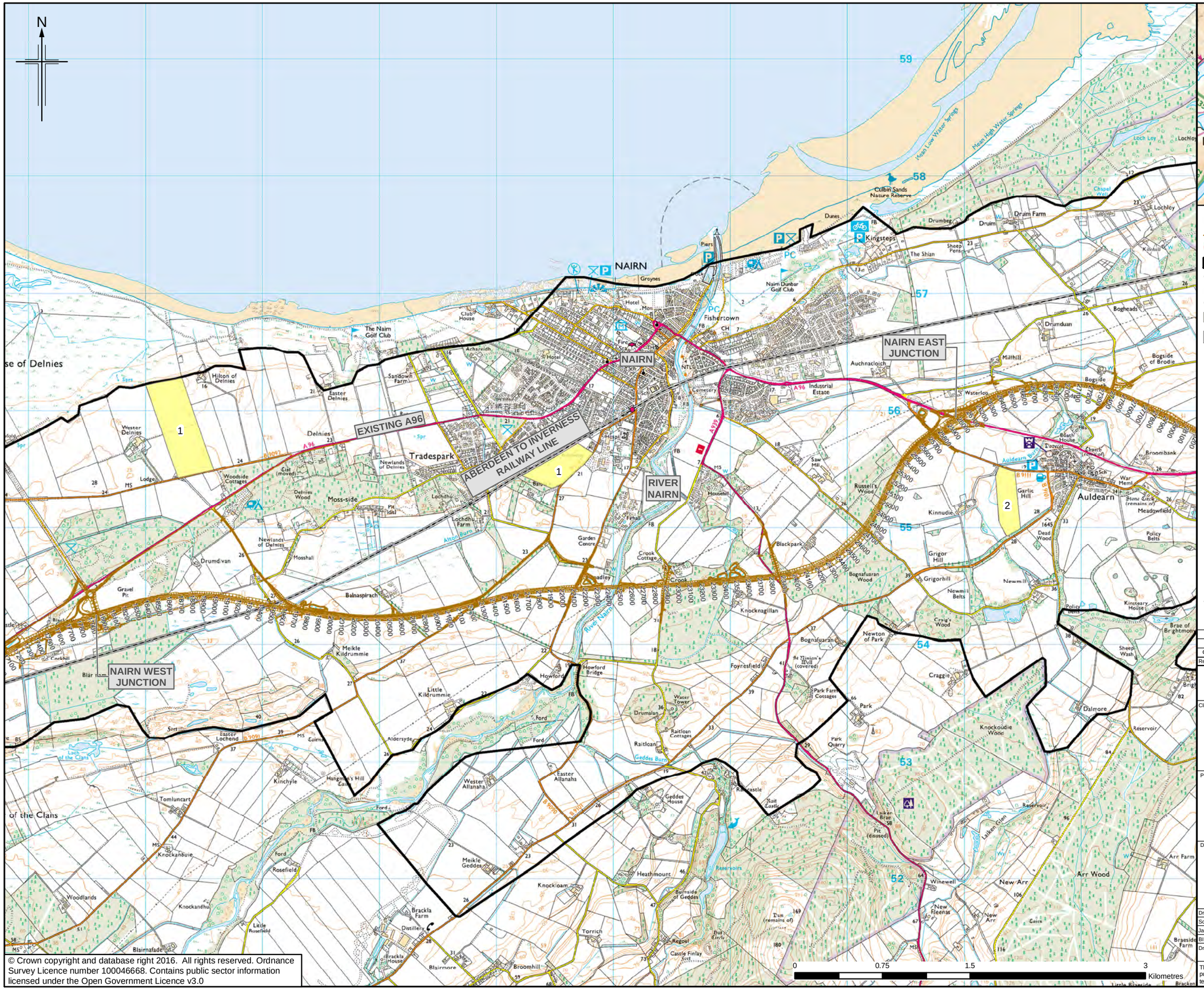
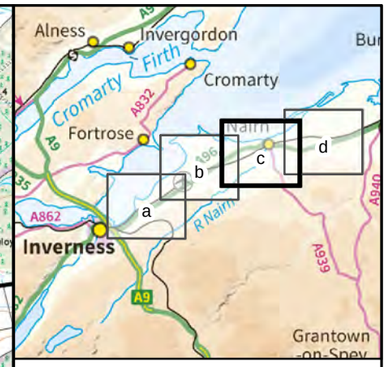
Rev	0





Legend

- Proposed Scheme (as per Draft Orders)
- SUDS (e.g. Basin or Pond)*
- Survey Area

Oystercatcher

Peak Number of Oystercatcher Observed during the Survey Period

- 1 - 250
- 1 — Number of Surveys in which Oystercatcher Observed in Field (n=20)

* Actual shape of pond/basin will be subject to detailed design

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Drawing title

Figure 5c
DMRB Stage 3
Habitats Regulations Appraisal
Oystercatcher Foraging Distribution

Sheet 3 of 4

Drawing Status	FINAL	
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Jacobs No.	B2103500	
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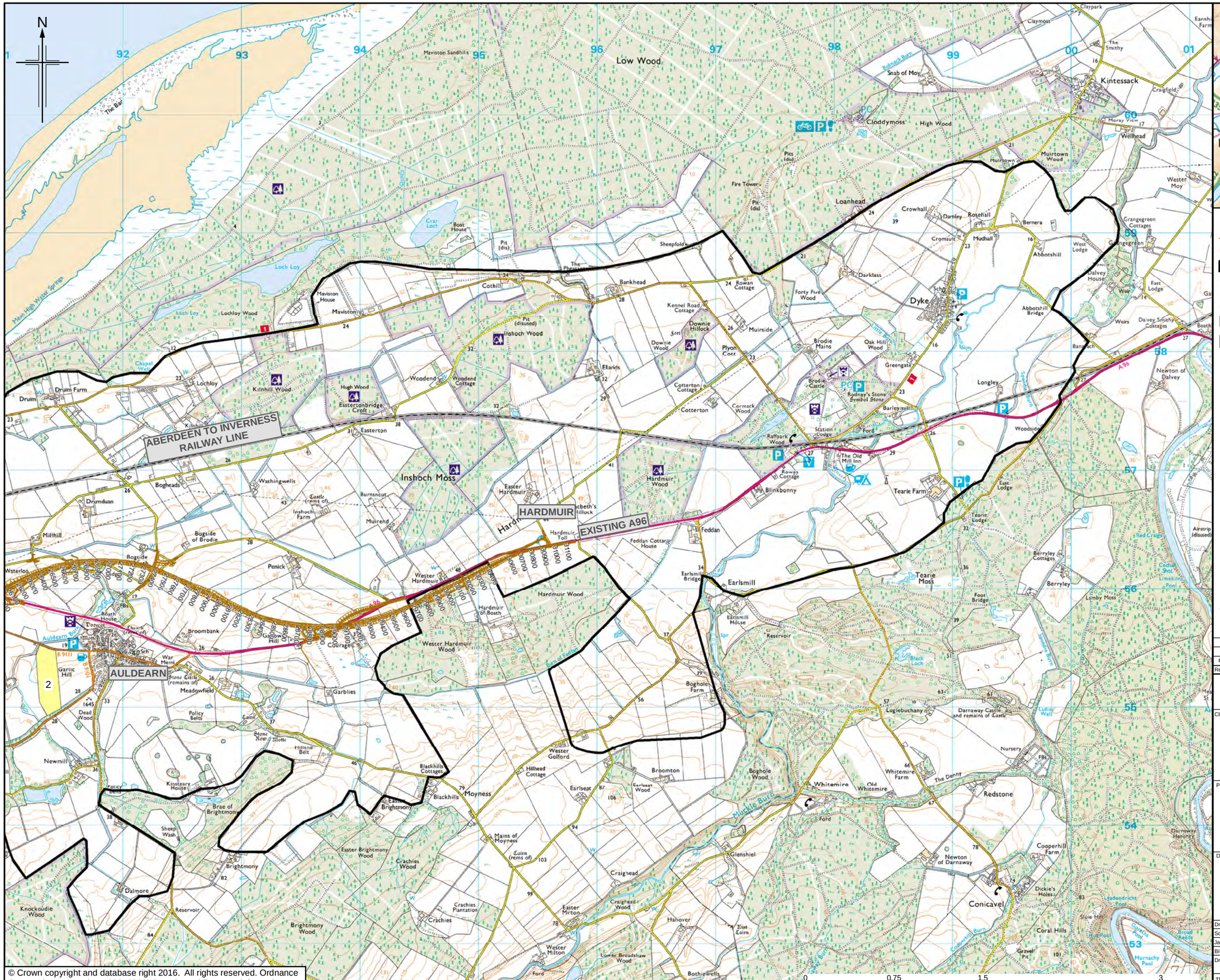

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Drawing title

Figure 5d
DMRB Stage 3
Habitats Regulations Appraisal
Oystercatcher Foraging Distribution

Sheet 4 of 4

Drawing Status	FINAL	
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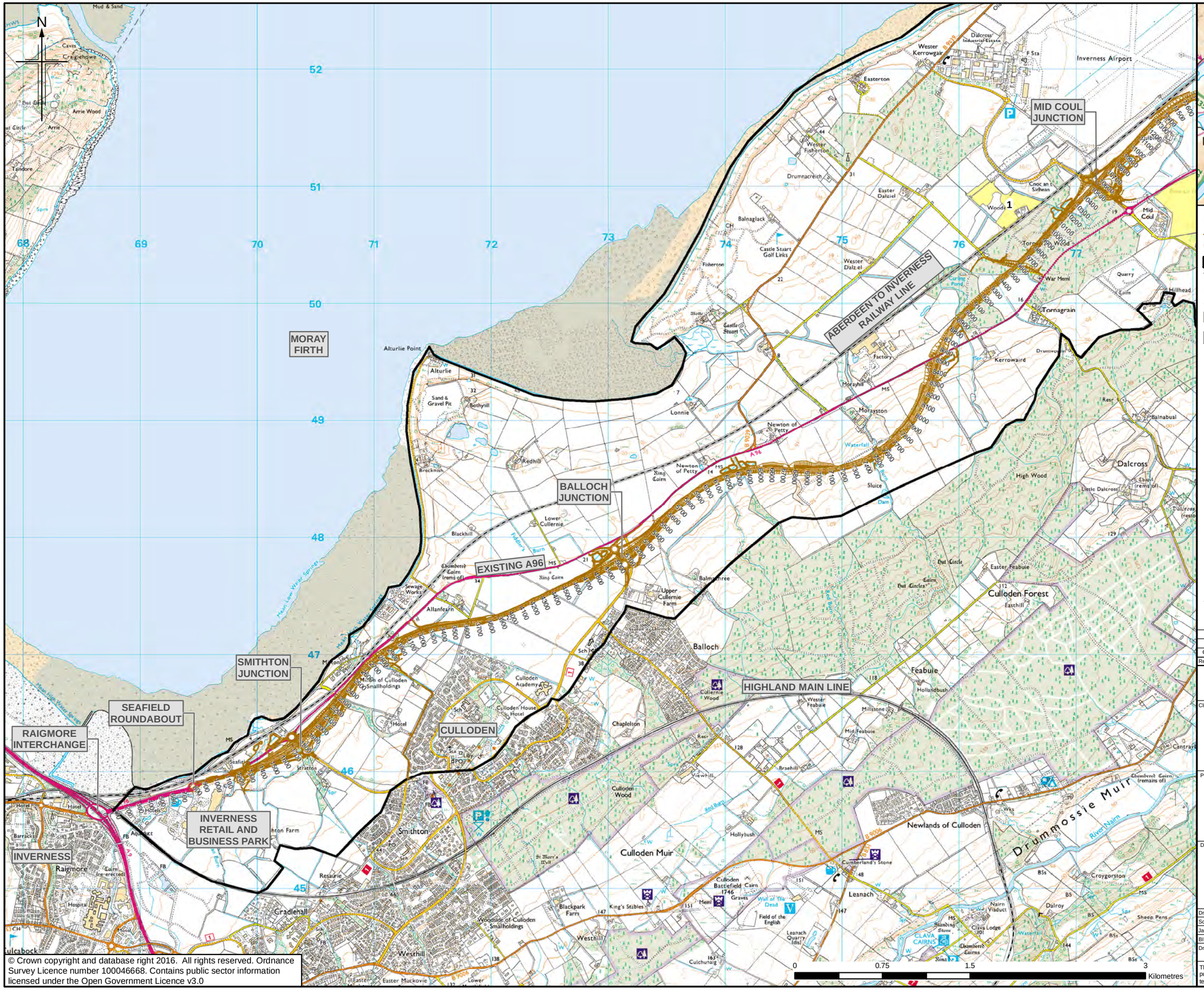

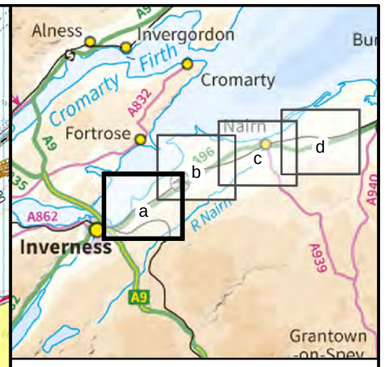

Legend

- Proposed Scheme (as per Draft Orders)
- SUDS (e.g. Basin or Pond)*
- Survey Area

Teal

Peak Number of Teal Observed during the Survey Period

- 1 - 250
- 1 — Number of Surveys in which Teal Observed in Field (n=20)

* Actual shape of pond/basin will be subject to detailed design

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Drawing title

Figure 6a
DMRB Stage 3
Habitats Regulations Appraisal
Teal Foraging Distribution

Sheet 1 of 4

Drawing Status	FINAL	
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Jacobs No.	B2103500	
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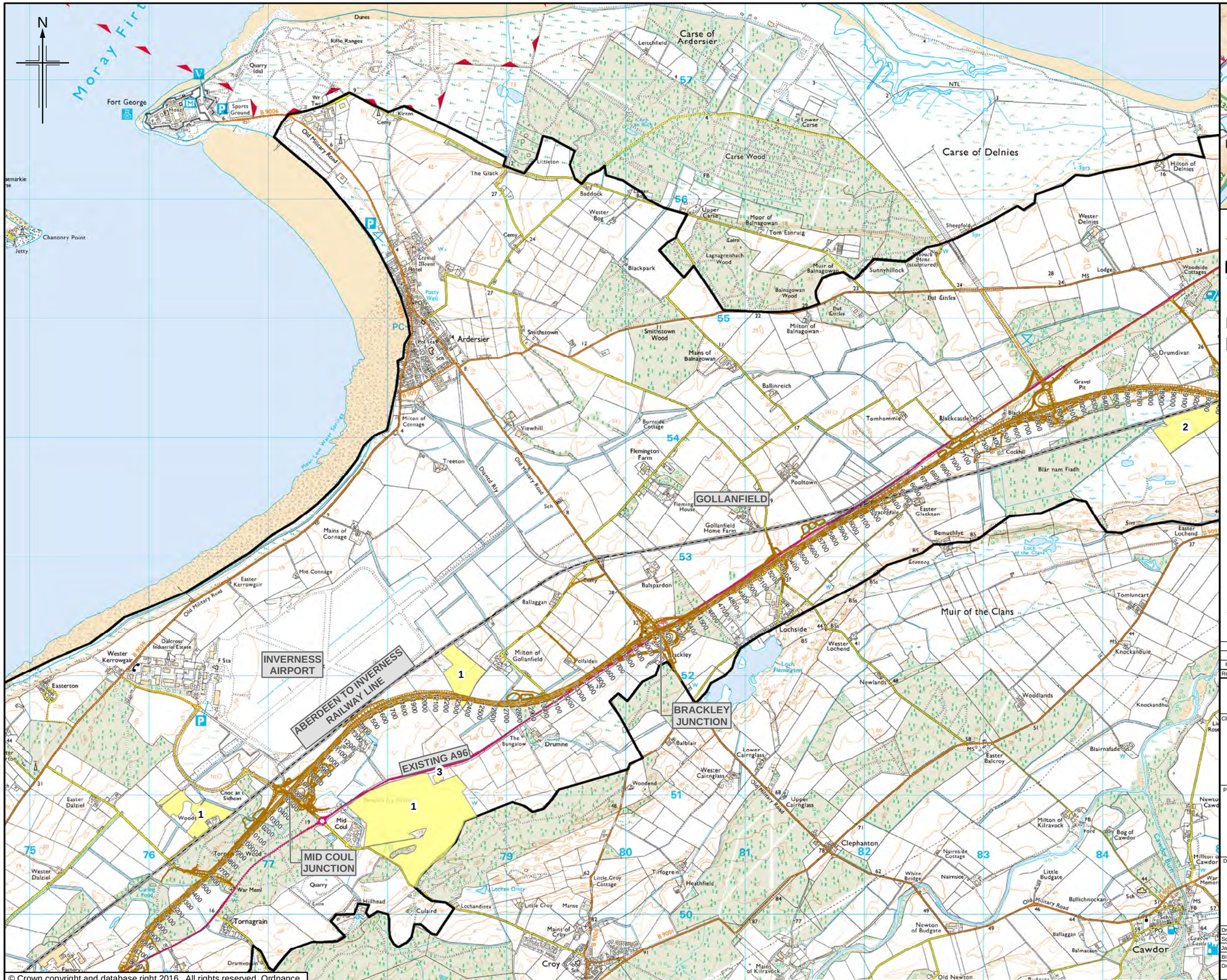

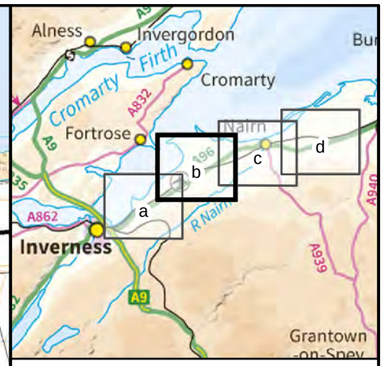

Legend

- Proposed Scheme (as per Draft Orders)
- SUDS (e.g. Basin or Pond)*
- Survey Area

Teal

Peak Number of Teal Observed during the Survey Period

- 1 - 250
- 1 — Number of Surveys in which Teal Observed in Field (n=20)

* Actual shape of pond/basin will be subject to detailed design

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Drawing title

Figure 6b
DMRB Stage 3
Habitats Requlations Appraisal
Teal Foraging Distribution

Sheet 2 of 4

Drawing Status	FINAL	
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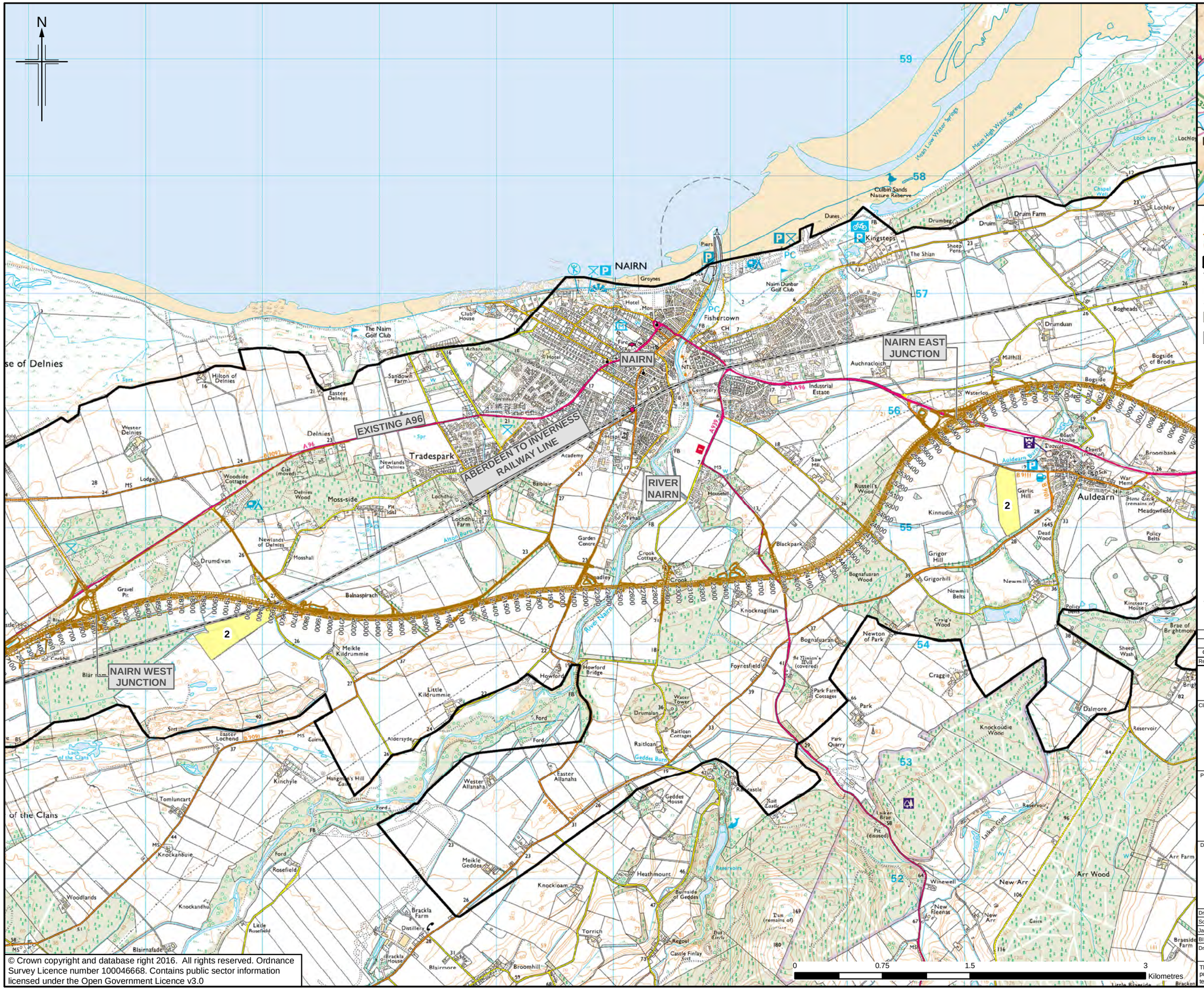

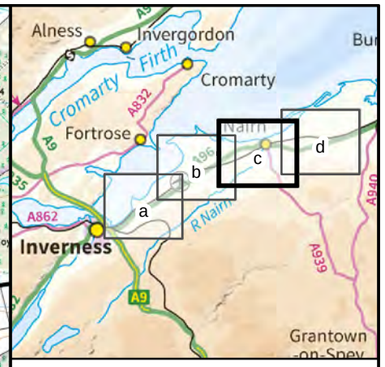

Legend

- Proposed Scheme (as per Draft Orders)
- SUDS (e.g. Basin or Pond)*
- Survey Area

Teal

Peak Number of Teal Observed during the Survey Period

- 1 - 250
- 1 — Number of Surveys in which Teal Observed in Field (n=20)

* Actual shape of pond/basin will be subject to detailed design

Rev.	Rev. Date	Purpose of revision	Orig/Dwn	Checkd	Rev'd	Apprv'd
0	NOV 2016	HRA Publication	HM	JF	PG	PS

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Project: A96 DUALLING INVERNESS TO NAIRN (incl. Nairn Bypass)

Drawing title

Figure 6c
DMRB Stage 3
Habitats Regulations Appraisal
Teal Foraging Distribution

Sheet 3 of 4

Drawing Status	FINAL	
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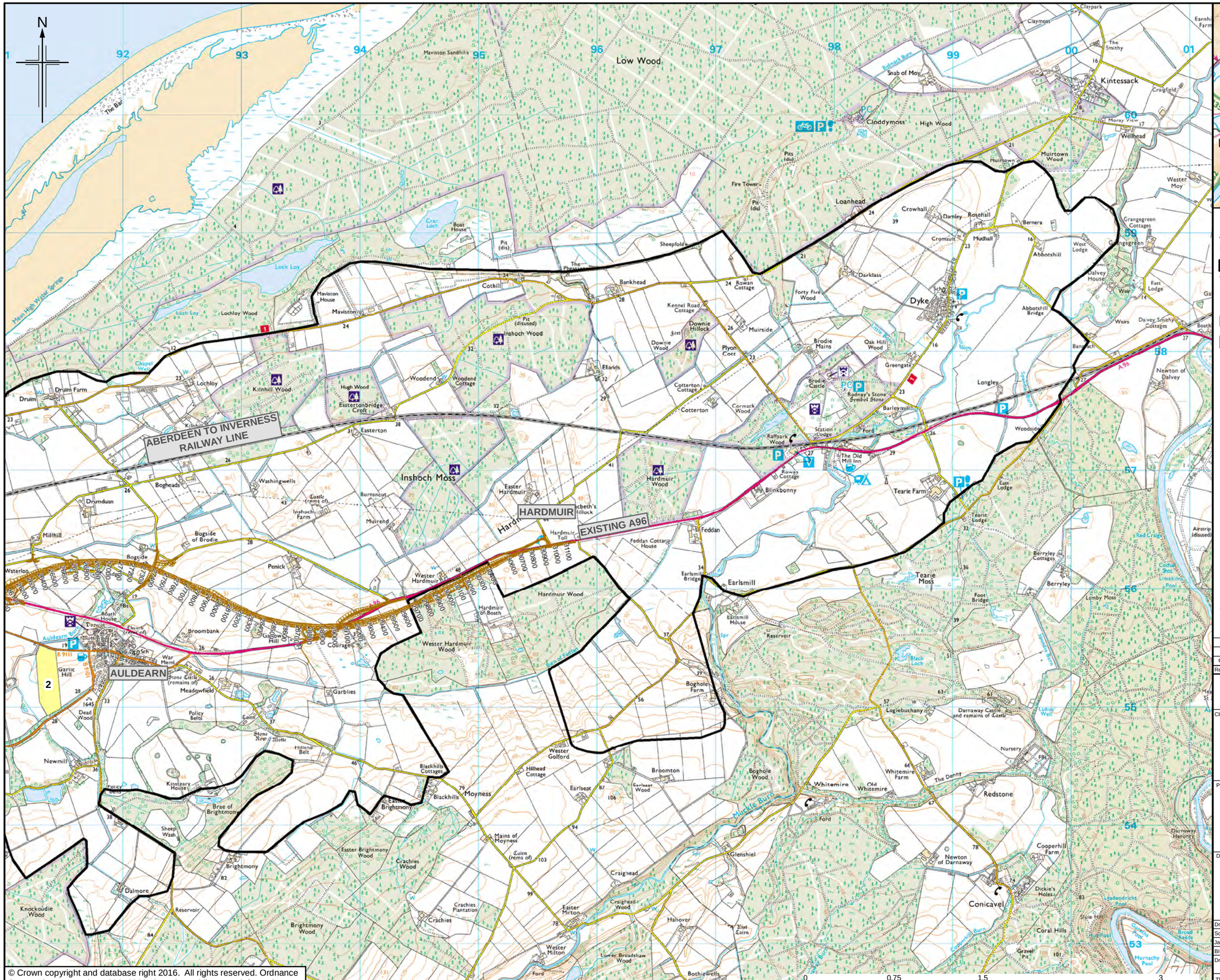
Jacobs No.	B2103500	
BIM No.		
Drawing number	B2103500/EN/HRA/DR/006c	Rev 0



Legend

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- Survey Area

Teal

Peak Number of Teal Observed during the Survey Period

- 1 - 250
- 1 — Number of Surveys in which Teal Observed in Field (n=20)

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Figure 6d
DMRB Stage 3
Habitats Regulations Appraisal
Teal Foraging Distribution

Sheet 4 of 4

Drawing Status	FINAL	
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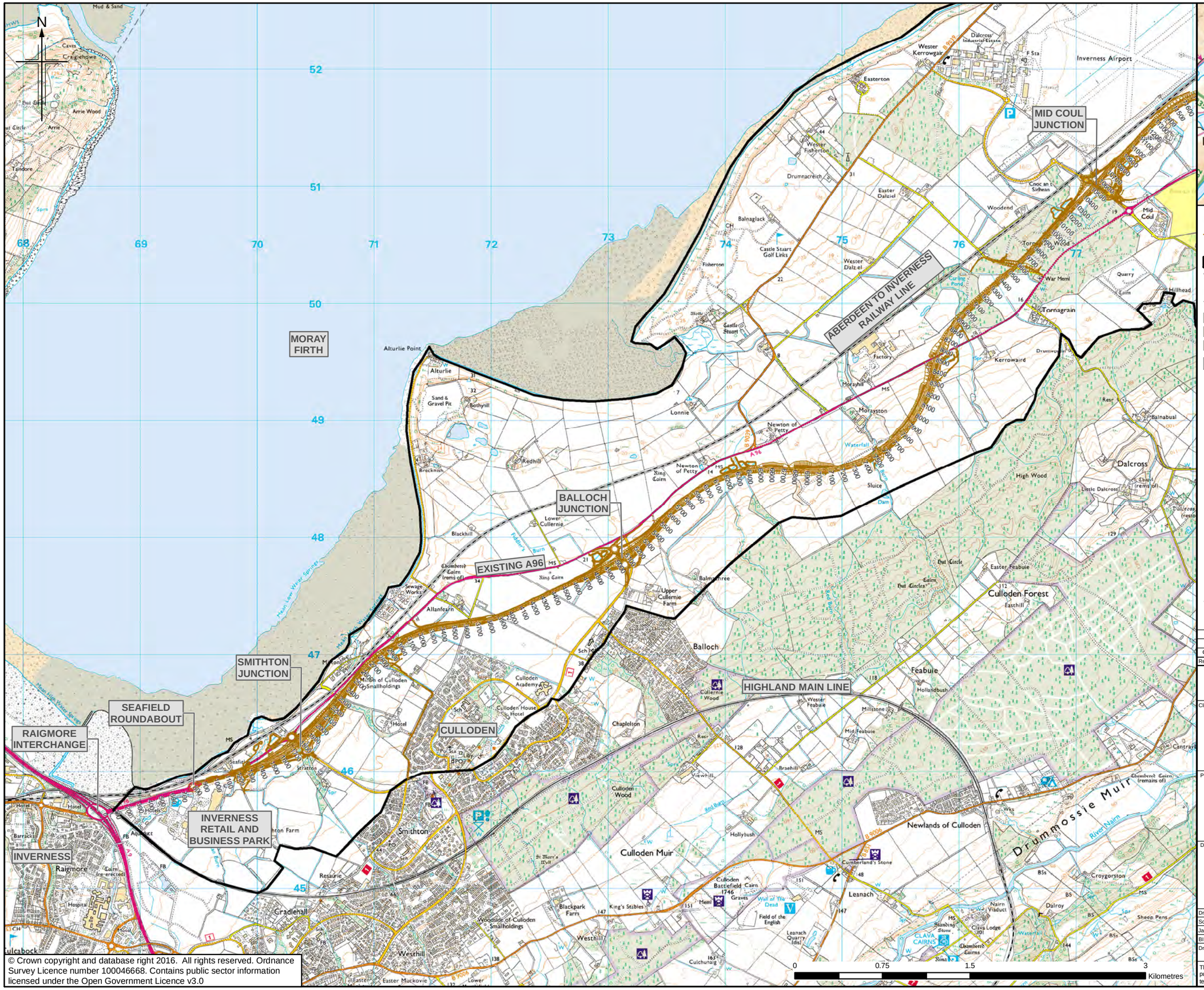

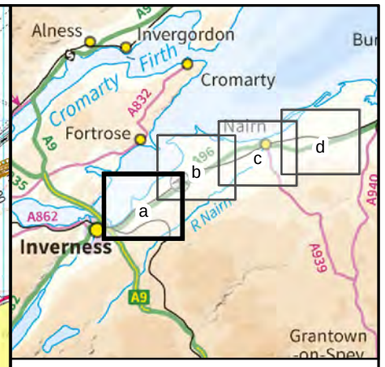

Legend

- Proposed Scheme (as per Draft Orders)
- SUDS (e.g. Basin or Pond)*
- Survey Area

Wigeon

Peak Number of Wigeon Observed during the Survey Period

- 1 - 250
- 251 - 500
- 501 - 1000
- 1 — Number of Surveys in which Wigeon Observed in Field (n=20)

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Drawing title

Figure 7a
DMRB Stage 3
Habitats Regulations Appraisal
Wigeon Foraging Distribution

Sheet 1 of 4

Drawing Status	FINAL	
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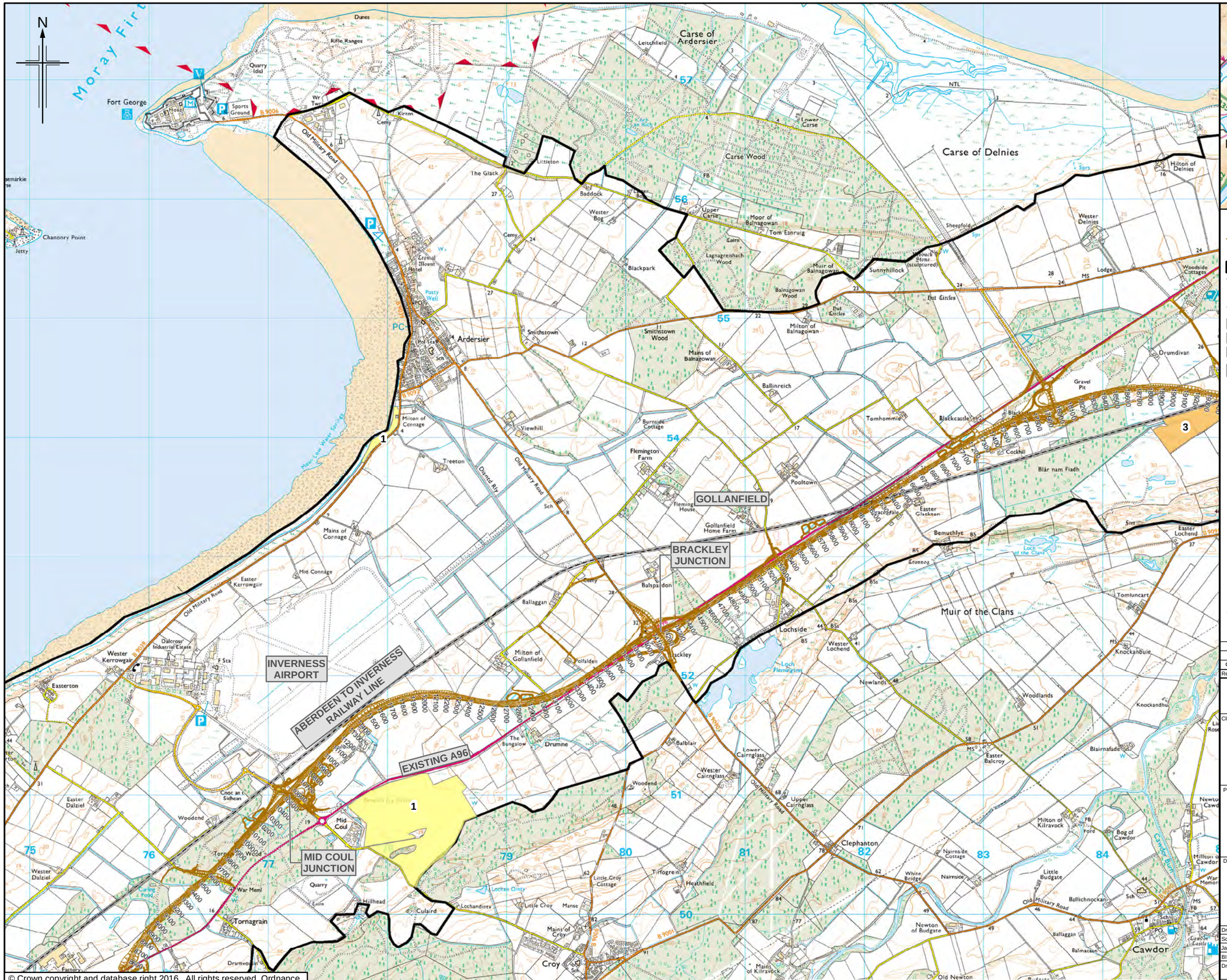

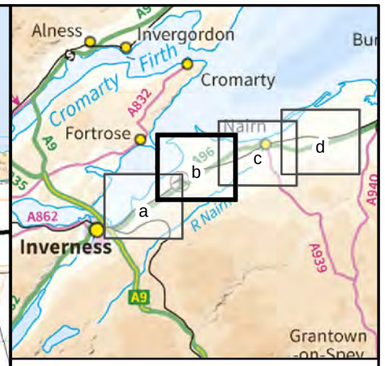

Legend

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Wigeon

Peak Number of Wigeon Observed during the Survey Period

- 1 - 250
- 251 - 500
- 501 - 1000
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Drawing title

Figure 7b
DMRB Stage 3
Habitats Regulations Appraisal
Wigeon Foraging Distribution

Sheet 2 of 4

Drawing Status	FINAL	
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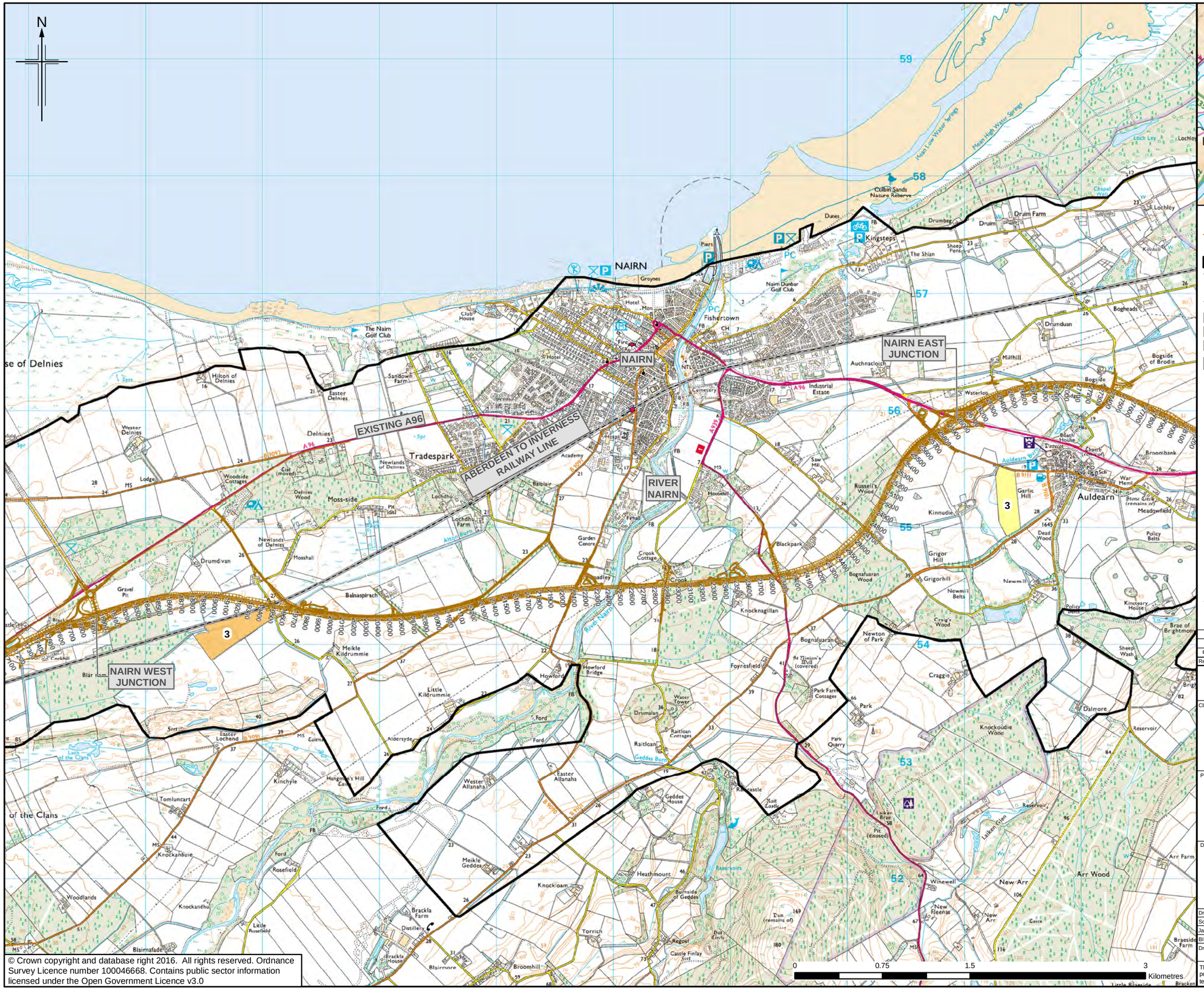
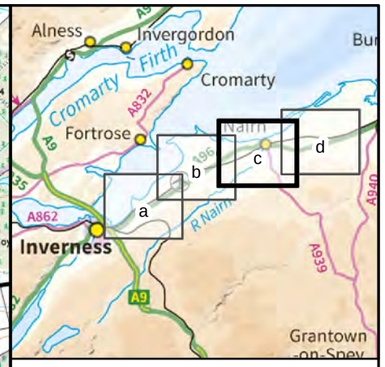
Drawing number	B2103500/EN/HRA/DR/007b	Rev 0





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Drawing title

Figure 7c
DMRB Stage 3
Habitats Regulations Appraisal
Wigeon Foraging Distribution

Sheet 3 of 4

Drawing Status	FINAL	
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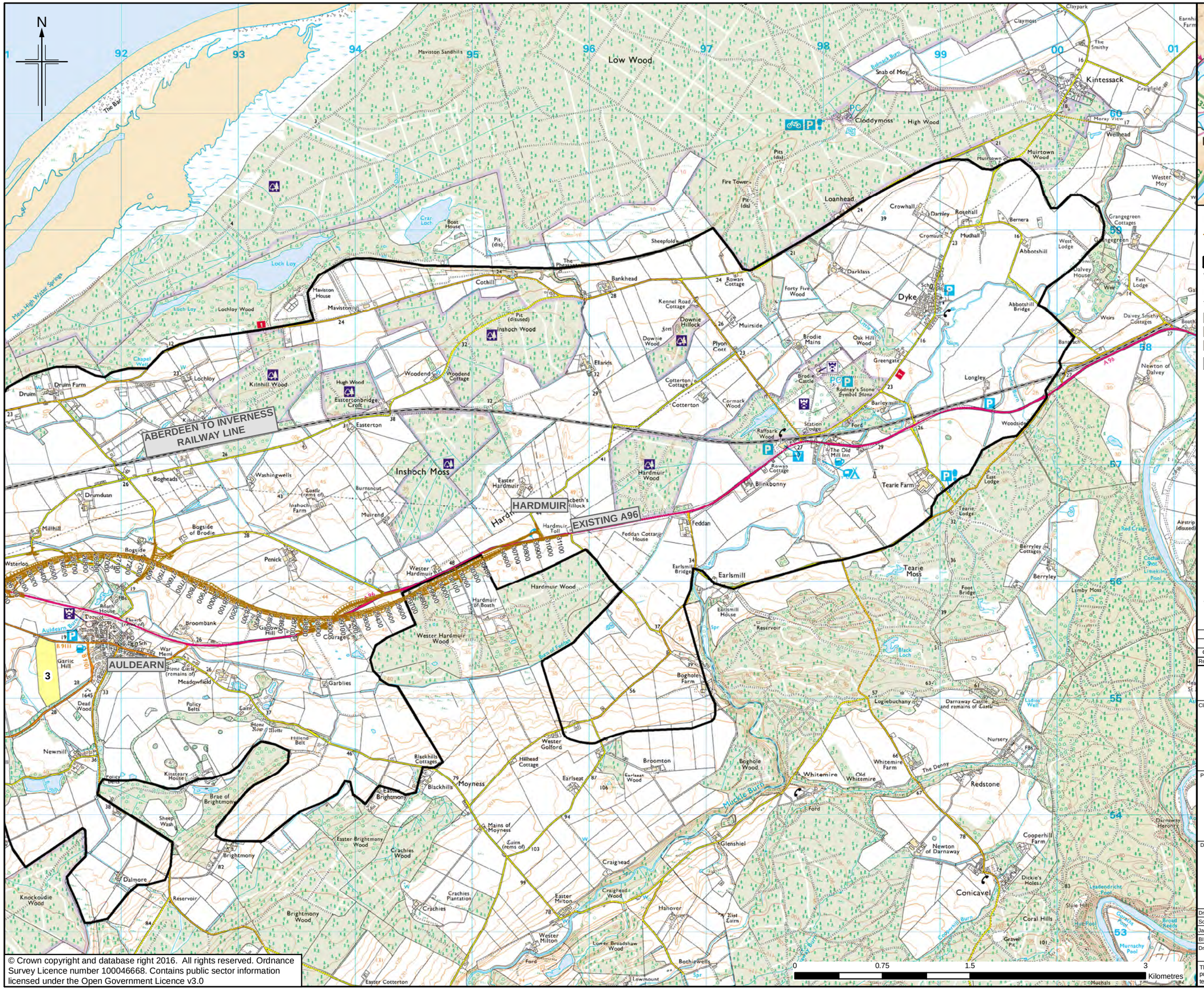

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0 0.75 1.5 3 Kilometres

Legend

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Figure 7d
DMRB Stage 3
Habitats Regulations Appraisal
Wigeon Foraging Distribution

Sheet 4 of 4

Drawing Status	FINAL	
Scale	1:30,000 @ A3	DO NOT SCALE
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