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South Gloucestershire Council, Bristol City Council &  
Natural England

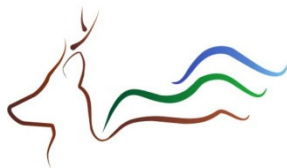
# Severnside/Avonmouth Wetland Habitat Project

## Stage 1: Distribution of Wetland Birds within the Study Area

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October 2010

Report no:WX71453/C1453/Final/V1



*Cresswell Associates*

a Hyder Consulting group company





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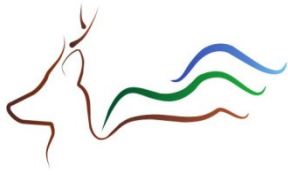
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# 1 Introduction

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Cresswell Associates (the ecological division of Hyder Consulting) has been commissioned by South Gloucestershire Council (SGC), Bristol City Council (BCC) and Natural England (collectively referred to as the 'Project Partnership') to carry out a wetland habitat creation project at Severnside and Avonmouth. The aim of the project is to identify areas of coastal floodplain for establishment as new wetland habitat for the qualifying bird species listed on the Severn Estuary Special Protection Area (SPA) and Ramsar site designations.

Stage 1 of the project comprises a review of desk-based information to identify those areas of particular importance for wintering and migratory waterfowl within the study area. Based upon these findings, Stage 2 will comprise a Review of the 1957/58 Severnside Consent (under Regulation 50 of the Habitats & c Regulations (1994) (as amended)), and an impact assessment of the Bristol Employment Zone and the Bristol City Sustainable Energy Strategy. These assessments will seek to determine the significance of future habitat losses from development in these areas upon the qualifying bird species for the Severn Estuary Natura 2000 site. Based upon the findings of these assessments, a series of options for strategic mitigation would be proposed, to off-set habitat losses arising as a result of the above development. These mitigations options could potentially include works to create, restore or enhance areas of wetland habitat. Based upon the findings of the assessment, recommendations for a preferred option would be made (subject to further consideration of issues such as flood risk, land use/ownership, existing hydrological conditions etc)

This document provides the findings from Stage 1 of the project and includes: (a) a summary of the desk-based information sources which have been reviewed; (b) descriptions of species distributions and abundances within the study area; (c) accompanying species-specific bird distribution and abundance maps.



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## 2 Methodology

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### 2.1 Estuarine birds

Consultation has taken place with representatives from the Project Partnership to agree that the following species will be included within Stage 1 of the project:

- The Annex I and migratory birds listed as qualifying species for the SPA, under Articles 4.1 and 4.2 of the EC Birds Directive: Bewick's swan; European white-fronted goose; shelduck; gadwall; redshank; and dunlin.
- The suite of wetland birds listed as part of the qualifying assemblage within the original SPA citation (the above species, plus: wigeon; teal; pintail; pochard; tufted duck; ringed plover; grey plover; curlew; whimbrel; and spotted redshank).
- Those species which were added to the qualifying assemblage in 1995 following a review of the SPA designation (mallard; shoveler; and lapwing).
- Those species which warrant inclusion within the SPA qualifying assemblage, due to their numbers exceeding 2,000 individuals, or 1% of the Great Britain wintering population throughout the SPA (as stipulated by the Regulation 33 Advice for the Natura 2000 site). These species comprise: grey heron; little egret; mute swan; golden plover; snipe; black-tailed godwit; bar-tailed godwit; knot; turnstone; and water rail.



## 2.2 Desk study sources

The following information sources have been reviewed to identify areas of particular importance within the study area for the species of wintering and migratory wildfowl listed above. Where possible, the locations and/or areas over which the following sources of information have been collated are presented on Figures 1a to c.

Key to Development Area Codes:

- SCA Severnside 57/58 Consent Area
- AEA Avonmouth Employment Area
- BCSES Bristol Citywide Sustainable Energy Strategy

Data source	Datasets or information obtained	Data coverage	Development Area
Wetland Bird Survey (WeBS) (BTO)	Severn - Avonmouth: Five year summaries (04/05 - 08/09); Five-year average monthly counts of each species; Five-year peak monthly counts of each species; Five-year autumn peak counts of each species; Five-year winter peak counts of each species; Five-year spring peak counts of each species (04/05 - 08/09 only); National and International importance of the site for each species	Intertidal edge of Avonmouth area	AEA & BCSES
	Core Count Data (Tabulated five-year synopsis) for: five count areas (14451 Severn Beach (1979/80-1983/84), (1984/85-1988/89), (1989/90-1993/94), (1994/95-1998/99), (1999/00-2003/04) & (2004/05-2008/09); 14320 Avonmouth Sewage Works (1979/80-1983/84), (1984/85-1988/89), (1993/94-1997/98) & (2003/4-2007/08); 14409 Severn – M5 Bridge (2008 only); 14406 Portbury Wharf (1981/82 – 1985/86); 14407 Royal Portbury Dock (1971, 1981 & 2008); and the entire Severn Estuary (2004/05-2008/09)	Intertidal edge of Study Area, and Avonmouth Sewage Works	SCA, AEA & BCSES
	Portbury Wharf: Five year summaries (96/97 - 00/01 and 04/05 - 08/09); Five-year average monthly counts of each species; Five-year peak monthly counts of each species; Five-year autumn peak counts of each species; Five-year winter peak counts of each species; Five-year spring peak counts of each species (04/05 - 08/09 only); National and International importance of the site for each species	Useful for context only - area entirely outwith Study Area	N/a



Data source	Datasets or information obtained	Data coverage	Development Area
Bristol Regional Environmental Records Centre (BRERC)	GIS layers containing species records for all 29 focal species from the BRERC data holding. Data originates from a range of sources, including incidental records submitted by members of the public, incidental records collected during Ecological surveys undertaken by BRERC, the BBA Wildlife Trust, and other organisations, along with specific AWT and BRERC bird surveys. Despite the geographic coverage of the data, approximately 95% of records originate from the AWT Avonmouth Pools Reserve, at Avonmouth sewage works, reflecting the importance of this area, and survey effort.	Incidental records for the entire Study Area, but focussing on the area immediately surrounding Avonmouth Pools Reserve	SCA, AEA & BCSES
Wessex Ecological Consultants	Sevenside High tide bird distributions (Dec 2001 - Jan 2002) for English Nature	Approximately 4 km of foreshore area and all land up to 1.5 km inland, between the northern end of the Avonmouth Docks at Chittening Industrial Estate, and Severn Beach	SCA, AEA & BCSES
	Sevenside Wintering Bird Survey Report Feb 2006 Mar 2006 for South Gloucestershire Council	Approximately 9 km of foreshore and all land up to 1 km inland, between the northern end of the Avonmouth Docks at Chittening Industrial Estate, and the Severn Road Bridge at Aust	SCA, AEA & BCSES
	Sevenside Wintering Bird Survey Report Dec 2006 Mar 2007 for South Gloucestershire Council	Approximately 9 km of foreshore and all land up to 1 km inland, between the northern end of the Avonmouth Docks at Chittening Industrial Estate, and the Severn Road Bridge at Aust	SCA, AEA & BCSES
	Sevenside Wintering Bird Survey Report (Dec 2008 - Feb 2009) for South Gloucestershire Council	Large area of land, extending from the Hallen Road in the south-west, to the B4055 Pilning to Easter Compton Road and main London to South Wales railway line, approximately 3.5 km to the north-east. Most of the area was between 1 km and 2 km of the Severn Estuary foreshore	SCA, AEA & BCSES
Environ UK Ltd	Sevenside Wintering Bird Survey Report (Winter 2006-2007): for Sevenside Distribution Land Ltd.	Five large survey areas centred in the area enclosed by the M49 motorway and the administrative boundary between BCC and SG; useful for context, but not sufficiently site-specific for the purposes of this study	SCA, AEA & BCSES





Data source	Datasets or information obtained	Data coverage	Development Area
Environ UK Ltd	Severnside Wintering Bird Survey Report (Winter 2006-2007 & 2009/10): for Severnside Distribution Land Ltd.	The survey coverage is as described above	SCA, AEA & BCSES
Avon Bird Club	Annual Bird Reports (1977 - 2008 inclusive)	Avon (South Gloucestershire, Bristol, Bath & north-east Somerset, North Somerset)	SCA, AEA & BCSES
Dr Peter Ferns (Cardiff University)	Wading birds of the Severn Estuary; a summary of the abundance and status of the wading birds utilising the Severn Estuary and adjacent coasts (1977), Nature Conservancy Council The Severn estuary's changing wader populations during the last two decades. <i>Biological Journal of the Linnean Society</i> (1994), <b>51</b> : 219-227.	Severn Estuary, including intertidal areas	SCA, AEA & BCSES
The Landmark Practice	Environmental Statement Ecology & Ornithology chapters, supporting appendices and first year monitoring report for Bristol Port Company Windfarm	Development site and ornithological disturbance buffer	AEA & BCSES
	Environmental Statement Ecology & Ornithology chapters and supporting appendices for Wessex Water Windfarm at Avonmouth Sewage Treatment Works	Development site and ornithological disturbance buffer	AEA & BCSES
	Environmental Statement Ecology & Ornithology chapters and supporting appendices for Bristol City Council Avonmouth Windfarm	Development site and ornithological disturbance buffer (crosses administrative boundary into South Gloucestershire)	SCA, AEA & BCSES
	Environmental Statement Ecology chapter and supporting appendices for Helius Energy Avonmouth Bio-mass Power Station	Development site and environs	AEA & BCSES
Encia Environmental Ltd	Environmental Statement Ecology chapter and supporting appendices for Avonmouth Resource Park	Development site and environs	AEA & BCSES
Royal Haskoning	Environmental Statement Ornithology chapter and supporting appendices for Bristol Port Company Deep Sea Container Terminal	Development site intertidal area likely to be affected by modified sediment dynamics	AEA & BCSES
SLR	Environmental Statement Ecology chapter and supporting appendices for Viridor Avonmouth Resource Recovery Centre (Former Sevalco Site)	Development site and environs	AEA & BCSES



Data source	Datasets or information obtained	Data coverage	Development Area
Halcrow Group	Ecological Impact Assessment (EclA) report for proposed new Avonmouth Way route corridor	Development site and environs	AEA & BCSES

The data sources listed in the table (above) have been reviewed in relation to the study area, with a view to collating baseline information pertaining to the distribution and abundance of the relevant species of wildfowl and waders.



## 2.3 Gap analysis

In parallel with the review of desk study records for the various species under consideration, a gap analysis has also been carried out. This involved an exercise to identify the likely extent of:

- (i) Spatial data gaps within the study area;
- (ii) Temporal data gaps within the study area; and
- (iii) Species-specific data gaps.

### 2.3.1 Spatial data gaps

#### Sevenside

The existing data sources are considered to provide a good level of spatial survey coverage across the areas of terrestrial habitat within the footprint of the 57/58 Sevenside Consent Area (see Figure 1a). In particular, the survey methodologies employed during the Sevenside bird surveys involved a combination of vantage point surveys from suitable view points and field counts of specific areas with restricted visibility (due to topography and vegetation *etc.*). This combination of survey techniques is considered to represent the most effective means of surveying for wintering wildfowl and waders across a low-lying agricultural and brownfield landscape.

As shown on Figure 1a, there are areas of land to the north and east of the study area for which existing bird survey records do not appear to be available. These areas predominantly comprise low-lying, sheep grazed pasture in excess of 1km from estuary's coastline. Comparable areas of land which fall within the Sevenside bird survey areas have been found to support a relatively limited assemblage of wildfowl and waders (most notably large flocks of lapwing and curlew). Therefore, it is considered possible that a comparable assemblage of birds could also be present within those areas for which no baseline bird information is available (however, it has not been possible to verify this assumption).

None of the data sources appear to provide spatial survey coverage which extends into the estuarine component of the 57/58 Sevenside Consent Area (*i.e.* those parts of the 57/58 Sevenside Consent Area which are located below the mean high water level). However, the absence of data from this area of inter-tidal estuarine habitat is not considered to represent a significant gap in the dataset, since it is located outside of the study area under consideration during the Review of the 57/58 Sevenside Consent (see the Stage 2 report for further details).

#### Avonmouth

The extent of spatial survey coverage within the Avonmouth area is less comprehensive than at Sevenside. The areas of saltmarsh in Chittinging Warth's central and southern sections, as well as the hinterland extending



1km inland were surveyed as part of the Severnside Bird Surveys (to a lesser or greater extent).

Outside of these areas, the extent to which baseline information pertaining to waterfowl has been collated becomes more sporadic. Relatively large amounts of baseline information have been found to exist for: (a) wetland sites which are already known to be of nature conservation value for waterfowl (*e.g.* Avonmouth Sewage Works); and (b) areas of land which have previously been subject to environmental assessment in relation to specific development proposals (*e.g.* the intertidal areas to the south of Chitting Warth which were subject to further bird surveys as part of the ecological impact assessment for Bristol Port Company's Deep Sea Container Terminal proposals).

The remaining areas of potentially suitable habitat for wetland birds within the Avonmouth study area do not necessarily appear to have been subject to the coordinated bird survey efforts, similar to those described above. In some cases, incidental records of wetland birds have previously been submitted to BRERC. These tend to relate to areas of land where public access is available, or where views can be obtained from adjacent Public Rights of Way (*e.g.* Disused Reservoir Pools). In the absence of any more comprehensive information, it has been deemed appropriate to include these *ad-hoc* records within the Stage 1 assessment; however, it is recognised that they may not necessarily be representative of species' actual abundances at these sites.

Finally, there appears to be a dearth of any baseline information pertaining to a large proportion of the Avonmouth Study area. In general, the areas for which no existing information has been identified fall into two broad categories: (i) industrial/brownfield sites; and (ii) greenfield sites for which public access is limited/unavailable (*e.g.* land to the east of the M49 corridor). Therefore, the absence of any bird data from these areas cannot be relied upon.

### 2.3.2 Temporal data gaps

A review of the data collection methods for the baseline information used to inform the Stage 1 Assessment reveals that, in many cases, the temporal coverage has not necessarily been sufficient to capture those time periods throughout which birds associated with the Severn Estuary SPA and Ramsar site could be present.

The existence of WeBS count data (where available) provides temporal survey coverage for parts of the study areas, across a given period (*e.g.* 14451 Severn Beach (1979/80-1983/84), (1984/85-1988/89), (1989/90-1993/94), (1994/95-1998/99), (1999/00-2003/04) & (2004/05-2008/09). However, it should be recognised that the majority of this information relates to the study area's intertidal habitats, with the only inland wetland site subject to WeBS counts being Avonmouth Sewage Works (Count Zone 14320).



Whilst the Severnside Bird Surveys generally provide good levels of spatial coverage across the Severnside Area and the northern parts of the Avonmouth Area, this survey work did not coincide with the spring and autumn passage periods. Consequently, it is likely that those species with a peak presence during these periods (*e.g.* whimbrel) would have been under-recorded or over-looked altogether by these surveys.

In some instances, targeted bird survey information is available for the spring and autumn passage periods. However, much of this was obtained for environmental assessments in relation to specific development proposals (*e.g.* the intertidal areas to the south of Chittingen Warth which were subject to further bird surveys as part of the ecological impact assessment for Bristol Port Company's Deep Sea Container Terminal proposals). As a result, these surveys were necessarily limited to a relatively small footprint (when compared to the large study under consideration within the Stage 1 and Stage 2 Assessments).

### 2.3.3 Species-specific data gaps

It is generally accepted that certain species of waterfowl may be under-represented owing to their behaviours and ease of detection by fieldworkers, or otherwise, in the field. In particular, it is recognised that species such as snipe and water rail tend to be cryptic in nature and appearance, spending large proportions of time concealed within areas of wetland vegetation. Many duck species move to/from roosting sites at dusk/dawn, and are therefore more easily missed by fieldworkers. Lapwings and golden plover are also known to form large nocturnal feeding flocks during the winter months. As a result of these species-specific factors, the potential exists for large aggregations of these birds to be under-recorded or over-looked. This effect may be more pronounced for these species when considered in combination with the potential weakness in spatial and temporal coverage (described in Sections 2.3.1 and 2.3.2, above).



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## 3 Results

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### 3.1 Qualifying species: Annex I & migratory birds

#### 3.1.1 Bewick's swan

The desk study has identified virtually no records of Bewick's swan (*Cygnus columbianus*) within the study area over recent years (the key area for this species within the Severn Estuary SPA being the upper estuary at Slimbridge (over 10 km to the north)). The only recent records of Bewick's swan relates to two birds which were present at Red Ledge in December 2000 (see Figure 1b for location) and Severn Beach in December 2004 (Avonmouth Ornithological Group, 2005).

#### 3.1.2 European white-fronted goose

As described for Bewick's swan (above), the key area of the Severn Estuary SPA for European white-fronted goose (*Anser anser albifrons*) are the sandbanks in the upper estuary at Slimbridge. The only recent records of this species within the study area were identified from the Avon Bird Report for 2003 to 2006 (inclusive). These related to small flocks of up to 17 birds which were recorded at Severn Beach on a sporadic basis.

#### 3.1.3 Shelduck

Shelduck (*Tadorna tadorna*) has been identified throughout the study area; the vast majority of records are associated with coastal sites. The distributions and peak winter counts of shelduck throughout the study area are presented on Figure 2, and described in further detail below.

##### Sevenside

The most recent WeBS data for Sevenside's estuarine areas (core count zone 14451: Severn Beach (N.B. this includes Northwick Warth which lies outwith the study area)) identify a five-year mean peak count of 95 birds within the count zone (2003/04-2007/08). At Sevenside, shelduck appear to be associated with Severn Beach and the area of saltmarsh immediately to the south, as well as New Pill Gout at the northern end of Chittingen Warth (see Figure 2). Peak monthly counts of up to 44 birds have been recorded within these areas on a regular basis during the Sevenside bird surveys. Furthermore, the 2001/02 Sevenside Bird Surveys identified the area of saltmarsh to the south of Severn Beach as representing a roost site for this species, with a corresponding peak monthly count of 33 birds for this area in January 2002 (Wessex Ecological Consultancy, 2002). Records of shelduck have also been identified for the following inland sites: Crook's Marsh; Astra Zeneca Fields, Gas Works; Sevenside Works and the M4 corridor north of Pilning. With the exception of Crook's Marsh, it is not clear whether these records relate to wintering or passage periods (rather than the breeding season) and, therefore, they have not been



mapped. However, in all cases, these records relate to no more than two birds in each location.

## Avonmouth

The winter 2008/09 WeBS data for the Avonmouth count zone (14408: Severn-Avonmouth) identify a peak count of 53 shelduck in February 2009. In addition, peak winter counts of up to 44 birds have been recorded throughout the central and southern sections of Chittening Warth and at the inter-tidal habitat in the southern half of the study area (including Holes Mouth), during the various Severnside bird surveys, as well as bird surveys in relation to Bristol City Council's proposed wind energy development at Chittening (the exact location of these birds is not specified and has not been mapped) and Bristol Port Company's Deep Sea Container Terminal proposals. In particular, the 2001/02 Severnside bird surveys identified the area of saltmarsh in the southern section of Chittening Warth as a roost site for this species. As shown on Figure 2, very few recent records of shelduck have been identified at inland sites during the winter: six birds at Hallen Marsh (March 2007); two birds at the Bristol City Council proposed wind energy development at Chittening (2005-2007); and five birds at Avonmouth Pools (January 1990).

Peak counts of up to 29 shelduck were recorded within the inter-tidal zone in the southern half of the study area during 2007 autumn migratory bird surveys (carried out in relation to Bristol Port Company's Deep Sea Container Terminal proposals). During the 2008 spring migration period, these surveys identified fewer shelducks at various locations within this area (with peak counts of fewer than 10 birds in each case).

### 3.1.4 Gadwall

Gadwall (*Anas strepera*) has been recorded throughout the study area, with corresponding desk study records for this species at a variety of estuarine and freshwater sites. The distributions and peak counts of gadwall throughout the study area are presented on Figure 3, and described in further detail below.

## Severnside

The desk study findings indicate that Orchard Pools support the largest aggregations of gadwall within Severnside. During the various Severnside bird surveys, peak counts of up to 21 birds were recorded at this site, with smaller numbers of birds also identified within the neighbouring Astra Zeneca fields to the south (see Figure 3). In addition, up to eight birds have also been recorded at Crook's Marsh during the 2001/2002 winter period (Wessex Ecological Consultancy, 2002).

The most recent WeBS data for Severnside's estuarine areas (core count zone 14451: Severn Beach (N.B. this includes Northwick Warth which lies outwith the study area)) identify a five-year mean peak count of 24 birds (2003/04-2007/08). The only site-specific records of gadwall from Severnside's estuarine habitats relate to small numbers of birds (up to 15



individuals) which have been recorded at Severn Beach and the area of saltmarsh to the south, as well as New Pill Gout throughout the Severnside bird surveys.

## Avonmouth

The winter 2008/09 WeBS data for Avonmouth's estuarine areas (count zone 14408: Severn-Avonmouth) identify a peak count of 38 gadwall in February 2009. The findings of the Severnside bird surveys confirm that flocks of up to 37 birds have been recorded along the southern section of Chittingen Warth on a frequent basis (in particular, at the freshwater outfalls at Stupp Pill, Mitchell's Salt Rhyne and Holes Mouth) (see Figure 3). In addition, wintering bird surveys carried out in relation to Bristol Port Company's Deep Sea Container Terminal proposals identified peak counts of up to 62 birds at various locations along the inter-tidal zone within the southern half of the study area.

Information from BRERC indicates that counts of up to 40 gadwall have been recorded at Avonmouth Pools in recent years (with comparable numbers recorded during the most recent WeBS counts at this site). However, records of this species at other inland sites have comprised fewer birds, with a peak count of 11 birds at Salt Rhine Balancing Pool in October 2000 and five birds at the disused reservoir pools in December 2000 (see Figure 3).

The bird surveys carried out in relation to Bristol Port Company's Deep Sea Container Terminal proposals recorded peak counts of up to four and 18 birds during the 2007 autumn and 2008 spring migratory periods, respectively. These birds were recorded at various locations within the inter-tidal habitats between the northern end of Avonmouth Docks and Stupp Pill. In addition, desk study records indicate that the following sites have supported small numbers of birds (fewer than 10) during the spring migration period in recent years: Avonmouth Pools, Salt Rhyne Balancing Pool and Disused Reservoir Pools.

### 3.1.5 Redshank

Desk study records for redshank (*Tringa totanus*) indicate that its distribution within the study areas is restricted to estuarine habitats. The distributions and peak counts of redshank throughout the study area are presented on Figure 4, and described in further detail below.

## Severnside

The most recent WeBS data for Severnside's estuarine areas (core count zone 14451: Severn Beach (N.B. this includes Northwick Warth which lies outwith the study area)) identify a five-year mean peak count of 161 birds within the count zone (2003/04-2007/08). The Severnside bird surveys have identified concentrations of redshank associated with saltmarsh and intertidal habitats along the Severnside coast. The peak count for this species relates to a flock of 200 birds which was recorded at New Pill Gout during bird surveys in March 2006. The remaining desk study records





involve flocks of between 30 and 75 birds which have been recorded at Severn Beach and the area of saltmarsh to the south, as well as the northern section of Chittingen Warth on a frequent basis throughout the Severnside bird surveys. In particular, these surveys have previously identified concentrations of (roosting) birds at: the area of saltmarsh to the south of Severn Beach (2001/02); and New Pill Gout (2001/02 and 2006/07). No recent desk study records for this species have been identified for any inland sites within the Severnside area.

## Avonmouth

The winter 2008/09 WeBS data for Avonmouth's estuarine areas (count zone 14408: Severn-Avonmouth) identify a peak count of 106 redshank (January 2009) within the count zone; however, comparison with the count data from other data sources indicates that this is likely to be under-representative.

The vast majority of site-specific desk study records for this species relate to Chittingen Warth. In particular, the Severnside bird surveys have recorded peak monthly counts of up to 108 birds throughout the central and southern sections of Chittingen Warth on a frequent basis during the winter months. In addition, a peak winter count of 145 birds was recorded at Chittingen during bird surveys in relation to Bristol City Council's proposed wind farm development (exact locations not specified and therefore this record has not been mapped) bird survey data relating to Bristol Port Company's Deep Sea Container Terminal proposals also include peak winter counts of up to 160 birds in the vicinity of Hole's Mouth, with lower counts recorded elsewhere across the inter-tidal zone between Chittingen Wall South and Avonmouth. Furthermore, data supplied by BRERC includes a count of 170 birds at Hole's Mouth in February 2001.

The desk-based information sources are indicative of the 'pills' (i.e. saltmarsh creeks discharging into the Severn Estuary) supporting concentrations of (roosting) birds, with sizeable flocks recorded at: Stupp Pill, Mitchell's Salt Rhyne and Holes Mouth (see Figure 4) and these birds are reported to have moved between pills. The findings of the 2006/07 Severnside bird surveys indicated a range of flocking behaviours, with feeding flocks moving between pills, whilst birds were reported to gather in a single large roosting flock at high tide (however, this behaviour was not recorded in 2007).

The bird surveys carried out in relation to Bristol Port Company's Deep Sea Container Terminal proposals recorded peak counts of up to six birds during the 2007 autumn and 2008 spring migratory periods.

The only recent desk study record of redshank at any inland sites relates to a single bird recorded to the south of Avonmouth Sewage Works.

### 3.1.6 Dunlin

Desk study records for dunlin (*Calidris alpina*) indicate that its distribution within the study areas is restricted to estuarine habitats. The distributions



and peak counts of dunlin throughout the study area are presented on Figure 5, and described in further detail below.

## Sevenside

The most recent WeBS data for Sevenside's estuarine areas (core count zone 14451: Severn Beach (N.B. this includes Northwick Warth which lies outwith the study area)) identify a five-year mean peak count of 2420 birds within the count zone (2003/04-2007/08). The Sevenside bird surveys have identified concentrations of dunlin associated with saltmarsh and intertidal habitats along the Sevenside coast, with large flocks recorded at Severn Beach and the area of saltmarsh to the south, as well as the northern section of Chittingen Warth. In particular, peak winter counts of between 100 and 900 birds have been recorded during the course of the Sevenside bird surveys at these locations. However, in February and March 2006 a peak count of 1100 dunlin was recorded at Severn Beach and New Pill Gout respectively (Wessex Ecological Consultants, 2007). These sites were identified as roost sites for this species during the Sevenside bird surveys in 2001/02 and/or 2006/07 (see Figure 5). The only record of dunlin at inland sites relate to a historical record of a single bird at the Sevenside Works (1968-1976).

## Avonmouth

The winter 2008/09 WeBS data for Avonmouth (count zone 14408: Severn-Avonmouth) identifies a peak count of 10 dunlin (November 2008) within the count zone. Clearly, this represents a significant under-estimate of the numbers of dunlin using this section of the estuary, since a peak count of 1900 birds was recorded at Chittingen Warth Central (2005-2007), during estuarine bird surveys associated with the Bristol City Council's proposed wind farm development (the exact location of these birds has not been specified and therefore this record has not been mapped). Furthermore, peak winter counts of between 310 and 1050 birds have been recorded within the central and southern sections of Chittingen Warth during the Sevenside bird surveys (see Figure 5), with roost sites identified at Stupp Pill, and the Chittingen Warth foreshore during the 2001/02 winter period. These findings are comparable with the peak counts of dunlin recorded during winter bird surveys in relation to Bristol Port Company's Deep Sea Container Terminal proposals. These surveys identified peak counts of up to 1600 birds associated with the inter-tidal zone in the southern half of the study area. No records of dunlin at any inland sites within the Avonmouth area have been identified as part of the desk study.

## 3.2 Qualifying assemblage species: Original SPA citation

### 3.2.1 Wigeon

The desk study records of wigeon (*Anas penelope*) indicate that its distribution is primarily associated with estuarine habitats; however, there are also records of this species from a small number of freshwater sites



within the study area. The distributions and peak counts of wigeon are presented on Figure 6, and described in further detail below.

## Sevenside

The most recent WeBS data for Sevenside's estuarine areas (and including Northwick Warth which lies outwith the study area) identify a five-year mean peak count of 436 birds (2003/04-2007/08). During the Sevenside bird surveys only relatively low numbers of wigeon were recorded from the Sevenside area, primarily in estuarine habitats. These comprised peak counts of no more than six birds at Severn Beach, the area of saltmarsh to the south of Severn Beach and the northern section of Chittingen Warth (see Figure 6). However, data supplied by BRERC are indicative of larger concentrations of wigeon having been present at times, since a record of 100 birds at Severn Beach in November 2001 was identified (see Figure 6).

The only records of wigeon from inland sites at Sevenside comprise: four birds at Crook's Marsh during the 2001/02 Sevenside bird surveys, as well as a historic record (1968-1976) of a single bird at the Sevenside Works (see Figure 6).

## Avonmouth

Wigeon was not recorded from the Avonmouth estuarine count zone (count zone 14408: Severn-Avonmouth) during the winter 2008/09 WeBS surveys. As described for Sevenside (above), small numbers of wigeon (fewer than 22 birds) were recorded from the central and southern sections of Chittingen Warth during the Sevenside bird surveys (see Figure 6), and bird surveys for Bristol City Council's proposed wind farm development at Chittingen. In addition, counts of up to 22 birds were identified from the bird data associated with Bristol Port Company's Deep Sea Container Terminal proposals. These counts were recorded at various locations along the inter-tidal habitats in the vicinity of Mole's Mouth. The only remaining records for this species within the Avonmouth area comprise: two birds at Salt Rhyne Balancing Pool in October 2000, and up to eight birds at Avonmouth Pools (November 2004) (see Figure 6).

### 3.2.2 Teal

Teal (*Anas crecca*) has been recorded throughout the study area, with desk study records for this species at a variety of estuarine and freshwater sites. The distributions and peak counts of teal are presented on Figure 7, and described in further detail below.

## Sevenside

The most recent WeBS data covering the Sevenside estuarine area (and including Northwick Warth which lies outwith the study area) identifies a five-year mean peak count of 208 teal (2003/04-2007/08). Within these estuarine sites, peak winter counts of between 2 and 75 birds have been recorded during the course of the Sevenside Bird surveys (see Figure 7). These surveys also identified that teal appear to be associated with 'pills',



where they feed at the water's edge in areas of mudflat and saltmarsh (Wessex Ecological Consultancy, 2006). In particular, New Pill Gout was identified as a roost site for teal during the 2001/02 and 2006/07 Severnside bird surveys, with counts of up to 75 birds recorded (December 2001) (see Figure 7).

In addition, teal have also been recorded at a number of inland sites within the Severnside area (albeit in lower numbers than the nearby estuarine areas). In particular, up to four birds have been recorded on a regular basis at Orchard Pools and the adjacent Astra Zeneca Fields during the Severnside bird surveys (see Figure 7). Furthermore, the Severnside surveys have also identified counts of up to 17 birds in the following areas on a more sporadic basis: Dyer's Common, Red Rhyne and Crook's Marsh.

## Avonmouth

The winter 2008/09 WeBS data for Avonmouth's estuarine areas include a peak count of 30 teal in February 2009. However, the findings of the Severnside bird surveys, the data supplied by BRERC and the bird surveys carried out in relation to Bristol Port Company's Deep Sea Container Terminal proposals indicate that larger numbers of birds have previously been recorded distributed throughout the central and southern sections of Chittening Warth, particularly in the vicinity of Hole's Mouth.

During the Deep Sea Container Terminal winter bird surveys, peak counts of up to 140 birds were recorded, with the largest counts occurring in the vicinity of Hole's Mouth during winter 2007/08. The Severnside bird surveys identified concentrations of teal associated with Stupp Pill Chittering Warth Central and Mitchell's Salt Rhyne (peak counts of between 19 and 70 birds (see Figure 7)). In addition, a peak count of 29 birds was also recorded at Hole's Mouth in December 2006. These findings are supplemented by data from BRERC which include a count of 62 birds at Chittening Warth Central in February 2001 (see Figure 7).

Teal have also previously been recorded from a number of inland sites. In particular, the most recent WeBS counts at Avonmouth Sewage Works identify a five-year mean peak count of 61 teal (2003/04-2007/08). Furthermore, counts of up to 200 birds have also previously been recorded at: Avonmouth Pools; Disused Reservoir Pools; Merebank; Seabank Power Station; and Salt Rhyne Balancing Pool (see Figure 7).

The bird surveys carried out in relation to Bristol Port Company's Deep Sea Container Terminal proposals recorded peak counts of up to four birds during the 2007 autumn and 2008 spring migratory periods. Furthermore, the BRERC desk study findings include counts of: (i) up to 17 birds at Avonmouth Pools and Disused Reservoir Pools during the spring passage period; and (ii) up to 14 birds at Avonmouth Pools and Salt Rhyne Balancing Pool in the autumn passage period



### 3.2.3 Pintail

The desk study has only revealed a limited number of pintail (*Anas acuta*) records within the study area. The distributions and peak counts of pintail are presented on Figure 8, and described in further detail below.

#### Sevenside

The most recent WeBS data covering the Sevenside estuarine area (and including Northwick Warth which lies outwith the study area) indicate a low abundance of pintail within this part of the Severn Estuary, with a peak count of only three birds in January 2005. The only estuarine records of pintail relate to single birds at Salmon Pool (December 2000) and the North Tip site (April 2001). In addition, three birds were recorded at Crook's Marsh in January 2002 during the Sevenside bird surveys. No other desk records of pintail in the Sevenside area have been identified during the desk study.

#### Avonmouth

The desk study findings indicate that pintail is largely absent from the Avonmouth area. In particular, this species was not recorded during the most recent WeBS counts at Avonmouth (2008/09) and Avonmouth Sewage Works (2003/04-2007/08). Low numbers of pintail (fewer than 10 birds) have been reported from Chittingen Warth Central during the 1990s (Wessex Ecological Consultancy, 2002), with further records of single birds at Stupp Pill (February 2006) and Avonmouth Pools (November 2000).

### 3.2.4 Pochard

The desk study findings indicate that pochard (*Aythya ferina*) has largely been restricted to a small number of key sites within the southern part of the study area over recent decades (as shown on Figure 9).

Historic desk study information from BRERC and a review of the relevant Avon Bird Club reports suggests that Avonmouth Pools regularly supported peak counts of up to 103 pochard during the late-1980s and 1990s (see Figure 9). However, the Avon Bird Reports for the period 2003 to 2008 (inclusive) indicate that numbers have declined over recent years, with peak counts of 10 birds in November 2006 and January 2007.

Data supplied by BRERC indicate that counts of up to 59 birds were recorded at the Disused Reservoir Pools during the 2000 and 2001 winter months (see Figure 9). However, it is possible that these count data could involve birds from Avonmouth Pools (given the close juxtaposition of these sites). More recent baseline information to confirm the continued presence/absence of these birds at this site does not appear to be available from any of the desk-based information sources used in this study. In addition, small numbers of birds (fewer than five individuals) have previously been recorded at Crook's Marsh and Merebank, (see Figure 9).

During the autumn and (to a lesser extent) the spring migratory periods, a limited number of records involving smaller numbers of pochard (fewer than



15 birds) have been identified for Avonmouth Pools and Disused Reservoir Pools.

### 3.2.5 Tufted duck

The desk study findings for tufted duck (*Aythya fuligula*) indicate that its distribution in the study area is primarily associated with a small number of freshwater bodies. The distributions and peak counts of tufted duck are presented on Figure 10, and described in further detail below.

#### Sevenside

The most recent WeBS data covering the Sevenside estuarine area (i.e. 2003/04-2007/08) indicate a low abundance of tufted duck within this part of the Severn Estuary, with a peak count of only three birds in February 2005 (and an absence of this species during all other WeBS counts over this period). The only regular records of this species within the Sevenside Area relate to relatively small numbers of birds (up to 13) which have previously been recorded at Orchard Pools and Crook's Marsh during the Sevenside bird surveys (see Figure 10). In addition, sporadic records of small numbers of birds (usually fewer than five individuals) have been identified at Sevenside following a review of the relevant Avon Bird Club reports from previous decades (however, more detailed information regarding the locations of these birds was not available).

#### Avonmouth

A review of the Avon Bird Reports suggests that Avonmouth Pools have regularly supported aggregations of up to 68 tufted ducks since the mid-1980s, with numbers appearing to have increased slightly at this site in recent years (see Figure 10). Furthermore, WeBS data for Avonmouth Sewage Works and records for the Disused Reservoir Pools indicate that these sites also support comparable numbers of birds (however, owing to the close juxtaposition of these sites, it is possible that these count data could involve the same birds). A record of a single bird having been present at Merebank in February 2006 was also identified (see Figure 10).

The 2006/07 Sevenside bird surveys recorded four tufted ducks at Chittingen Warth South in February 2007; however, no further records of this species have been identified for this site (or any other estuarine areas) as part of this study (see Figure 10).

Records of this species during the migratory periods include spring counts of up to 14 birds (May 2004). In addition, historic data indicated that up to 13 tufted ducks have previously been recorded at this site during the autumn migration period; however, more recent data suggests this site may have supported fewer birds in recent years. The BRERC data for Disused Reservoir Ponds also includes a count of up to 4 birds in May 1998.

### 3.2.6 Ringed plover

Ringed plover (*Charadrius hiaticula*) occurs at the Severn Estuary in greatest numbers as a spring/autumn passage migrant, with smaller



numbers over-wintering (see WeBS count data, below) and breeding. Desk study records indicate that its distribution is restricted to estuarine habitats within the study area (although this species is also known to frequent non-estuarine areas). The distributions and peak counts of ringed plover are presented on Figure 11, and described in further detail below.

## Sevenside

The most recent WeBS data covering the Sevenside estuarine area (and including Northwick Warth which lies outwith the study area) identify the following five-year mean peak count during the winter and autumn/spring passage periods:

- 175 birds (2003/04-2007/08 autumn periods);
- 13 birds (2003/04-2007/08 winter periods); and
- 97 birds (2003/04-2007/08 spring periods).

However, a review of the Avon Bird Reports for the same period, indicates that the WeBS data may be under-representative of bird numbers during the passage periods since, in some cases, significantly higher counts are presented in the Avon Bird Reports (albeit for short-lived time frames during the passage periods).

The Sevenside bird surveys identified that peak winter counts of up to 23 birds have been recorded at Severn Beach and the adjacent area of saltmarsh to the south. Furthermore, Severn Beach was identified as a roost site for this species during the surveys in winter 2001/02. In addition, a count of 18 birds (March 2006) was also recorded at New Pill Gout during the 2006 Sevenside bird surveys. No further records of this species have been identified for the Sevenside area.

The Sevenside bird surveys have taken place over the winter months (i.e. over periods between December and March) and outside of this species' peak passage periods (i.e. August/September and May/June). Therefore, the value of habitats within the Sevenside area for ringed plover 'on passage' cannot be confirmed definitely from this survey information. The only desk study record for ringed plover during the migratory period relates to 12 birds at Chittering Warth Central in April 2000.

## Avonmouth

The 2008/09 WeBS data for the Avonmouth count zone identify the following peak counts during the winter and spring passage periods (no autumn passage count is presented within the WeBS data):

- 26 birds (2003/04-2007/08 winter periods); and
- 2 birds (2003/04-2007/08 spring periods).

A review of the winter bird survey data collated in relation to Bristol Port Company's Deep Sea Container Terminal proposals identified that peak



counts of up to 47 and 30 birds were recorded within inter-tidal habitats throughout the southern half of the study area during winter 2006/07 and winter 2007/08 respectively.

In addition, the Severnside bird surveys have recorded a peak winter count of up to 12 birds at Chittingen Warth South during the 2001/02 winter period (see Figure 11). A count of 14 birds was also recorded during bird surveys in relation to Bristol City Council's proposed wind farm development (the specific location of these birds is not provided and therefore this record has not been mapped).

During the 2007 autumn and 2008 spring passage periods, peak counts of up to 17 and five birds respectively, were recorded within inter-tidal habitats throughout the southern half of the study area (in relation to Bristol Port Company's Deep Sea Container Terminal proposals).

A review of the Avon Bird Reports for the period 2004-2008 (inclusive) also indicates that breeding attempts involving nine pairs of ringed plover have taken place at Avonmouth Docks in recent years.

### 3.2.7 Grey plover

The desk study has only revealed a limited number of grey plover (*Pluvialis squatarola*) records within the study area. The distributions and peak counts of grey plover are presented on Figure 12, and described in further detail below.

The most recent WeBS data covering the Severnside estuarine area (and including Northwick Warth which lies outwith the study area) identify a five-year mean peak count of nine grey plover (i.e. 2003/04-2007/08). However, the Avon Bird Reports identify peak winter counts of between 16 and 38 birds during the corresponding period, suggesting that the WeBS data may be an under-estimate of grey plover numbers.

The only site-specific desk study findings of this species within the study area relate to single birds recorded at Severn Beach in February 2006 and in the vicinity of Hole's Mouth during winter 2007/08, as well as a count of up to 19 birds at Salmon Pool in May 2005 (likely to have comprised birds 'on passage' to breeding grounds).

### 3.2.8 Curlew

Curlew (*Numenius arquata*) has been recorded throughout the study area, with desk study records for this species at a variety of estuarine and freshwater sites. The distributions and peak counts of curlew are presented on Figure 13, and described in further detail below.

#### Severnside

The most recent WeBS data covering the Severnside estuarine (and including Northwick Warth which lies outwith the study area) identify a five-year mean peak count of 164 curlew (2003/04-2007/08). At Severnside, peak winter counts of between six and 77 birds have been recorded at





Severn Beach and the adjacent area of saltmarsh during the Severnside surveys (see Figure 13). The area of saltmarsh to the south of Severn Beach was also identified as a roost site for this species during the 2001/02 surveys. In addition, counts of more than 20 curlews have previously been recorded in the northern section of Chittening Warth, with flocks of up to 104 birds recorded at Stupp Pill in January 2007 (see Figure 13).

Flocks of up to 58 curlews have also been recorded at the following inland sites during the Severnside bird surveys: Whitehouse Farm; fields east of the M49; Horse Fields; Astra Zeneca fields; and Crook's Marsh (see Figure 13).

## Avonmouth

The winter 2008/09 WeBS data for the Avonmouth count zone includes a peak count of eight curlews in January 2009; however, based upon the count data from other desk study sources, this is considered likely to be under-representative of this species' abundance.

The distribution of this species in the Avonmouth area appears to be predominantly associated with estuarine sites (although birds have also been recorded at some inland areas). The Severnside bird surveys have recorded peak winter counts of between 47 and 120 birds within the central section of Chittening Warth (with roost sites for this species identified in this area). Chittening Warth South and Holes Mouth have also been found to support curlew during the winter period (however, the majority of these records involve smaller numbers of birds). The findings of the bird surveys carried out in relation to Bristol Port Company's Deep Sea Container Terminal proposals indicate that the southern half of the study area may support fewer curlew than Chittening Warth and Severn Beach during the winter period. These surveys identified peak counts of up to 10 birds between Stupp Pill and Avonmouth during winter 2006/07 and 2007/08.

A count of 35 curlews was recorded at Hallen Marsh in March 2006; however, no further significant inland records of this species have been identified (see Figure 13).

During the 2007 autumn and 2008 spring passage periods, peak counts of up to 25 and nine birds respectively, were recorded within inter-tidal habitats throughout the southern half of the study area (in relation to Bristol Port Company's Deep Sea Container Terminal proposals).

### 3.2.9 Whimbrel

Whimbrel (*Numenius phaeopus*) occurs at the Severn Estuary as a passage migrant during the autumn and spring periods, and is absent during the majority of the winter months. As a result, only a limited amount of site-specific desk study information is available in relation to this species (since many of the data sources reviewed for this study relate to the winter periods and do not cover the spring and autumn migratory periods). The distributions and peak counts of whimbrel are described in further detail below.



## Sevenside

The most recent WeBS data covering the Sevenside estuarine area (and including Northwick Warth which lies outwith the study area) identify the following five-year mean peak count during the autumn/spring passage periods:

- 2 birds (2003/04-2007/08 autumn periods);
- 2 birds (recorded in March 2004 and taken as a winter season record);  
and
- 6 birds (2003/04-2007/08 spring periods).

However, the Avon Bird Reports for the same period identify peak counts of between 23 and 120 birds, suggesting that the WeBS data may be under-representative of bird numbers during the passage periods (particularly during the spring).

This species was not recorded during the Sevenside bird surveys, since these took place outside the spring and autumn peak migration periods for this species (April/May and August/September). Information supplied by BRERC included count data for the following estuarine sites:

- up to six birds at Salmon Pool on several occasions in late-April/May 2000; and
- up to three birds at the north tip site in April 1998.

However, based upon the count data presented within the Avon Bird Reports, these findings are considered unlikely to be representative of whimbrel distribution and abundance within Sevenside. Therefore, the value of habitats within the Sevenside area for whimbrel 'on passage' cannot be confirmed definitively from this survey information.

## Avonmouth

The 2008/09 WeBS data for the Avonmouth count zone identify a peak count of 2 birds in May 2009 (this species does not appear to have been recorded during the autumn and winter periods). The only site-specific desk study records relate to counts of up to seven birds at the central and southern sections of Chittening Warth. This species was not recorded during the 2006-08 winter and migratory bird surveys carried out in relation to Bristol Port Company's Deep Sea Container Terminal proposals.

Based upon the count data presented within the Avon Bird Reports (described above), these findings could be under-representative of whimbrel distribution and abundance within Avonmouth.

### 3.2.10 Spotted redshank

The Severn Estuary is only known to support small numbers of spotted redshank (*Tringa erythropus*) primarily during the winter months and



autumn passage periods. A review of the most recent WeBS data for Severnside (i.e. 2003/04-2007/08) and Avonmouth (i.e. 2007/08), as well as the corresponding Avon Bird Reports, indicate that peak counts of up to two birds have been recorded in recent years. However, the only site-specific record of this species relates to a single bird at Hole's Mouth in February 2001.

### 3.3 Qualifying assemblage species: 1995 amendment

#### 3.3.1 Mallard

Mallard (*Anas platyrhynchos*) has been recorded throughout the study area, with desk study records for this species at a variety of estuarine and freshwater sites. The distributions and peak counts of mallard are presented on Figure 14, and described in further detail below.

##### Severnside

The most recent WeBS data covering the Severnside estuarine area (and including Northwick Warth which lies outwith the study area) identify a five-year mean peak count of 132 mallard (2003/04-2007/08). The Severnside bird surveys have recorded peak winter counts of between 6 and 44 birds at Severn Beach, and the adjacent area of saltmarsh to the south. In addition, peak counts of 67 birds have also previously been recorded at Chittening Warth North (January 2002).

Desk study records indicate that a number of inland sites have recently been found to support up to approximately 40 mallard on occasions. These comprise: Horse Fields; Orchard Pools; the Astra Zeneca Fields; Crook's Marsh and Hallen Marsh (see Figure 14).

##### Avonmouth

The winter 2008/09 WeBS data for the Avonmouth count zone includes a peak count of 42 mallard in November 2008. Counts of up to 80 birds have been recorded on a regular basis at Chittening Warth and Holes Mouth during the Severnside bird surveys. In addition, a count of 90 birds was also recorded at Chittening Warth (2005-2007), during bird surveys for Bristol City Council's proposed wind energy development at this location. The findings from the 2006-08 winter bird surveys carried out in relation to Bristol Port Company's Deep Sea Container Terminal proposals include peak counts of up to 110 mallard at various locations across an area of inter-tidal habitat within the southern half of the study area in winter 2007/08 (with peak counts occurring to the south of Hole's Mouth).

Desk study records supplied by BRERC confirm that counts of up to 35 birds have previously been recorded at a number of inland sites; including Avonmouth Pools, land to the south of Avonmouth Sewage Works and the Disused Reservoir Pools (see Figure 14). In addition, there are desk study records of up to 10 birds at a small number of other sites throughout the study area; however, given the small numbers of birds involved, these have not been mapped.



In addition, the findings of the 2007/08 migratory bird surveys carried out in relation to Bristol Port Company's Deep Sea Container Terminal proposals indicate that the southern half of the study area has previously supported large aggregations of mallard during the passage periods. In particular, peak counts of 140 birds and 23 birds were recorded during the 2007 autumn period and 2008 spring periods respectively.

### 3.3.2 Shoveler

Shoveler (*Anas clypeata*) has been recorded throughout the study area, with desk study records for this species at a variety of estuarine and freshwater sites. The distributions and peak counts of shoveler are presented on Figure 15, and described in further detail below.

#### Sevenside

The most recent WeBS data covering the Sevenside estuarine area (and including Northwick Warth which lies outwith the study area) (i.e. 2003/04-2007/08) identify a five-year mean peak count of six shoveler throughout the entire count zone (which is broadly comparable with the count data presented in the Avon Bird Reports for the same period). The Sevenside bird surveys have only recorded small numbers of birds (fewer than five individuals) at the following locations in Sevenside: saltmarsh to the south of Severn Beach; Orchard Pools; and Crook's Marsh (see Figure 15).

#### Avonmouth

The most recent WeBS count data for Avonmouth does not include shoveler; however, this species has been recorded from a small number of estuarine locations during the Sevenside bird surveys (see Figure 15). In particular, the 2006/07 surveys identified Holes Mouth as a site which supports relatively substantial concentrations of shoveler (and a corresponding peak count of 21 birds in December 2006). During the 2001/02 Sevenside bird surveys, a peak count of four birds was also recorded at Chittering Warth Central (January 2002) and BRERC desk study records also include counts of up to 30 birds at Avonmouth Pools during the spring migratory period in previous years.

In addition, the most recent WeBS count data for Avonmouth Sewage Works (i.e. 2003/04 – 2007/08) identify a mean peak count of 43 birds at this site. This count is broadly comparable with data from the Avon Bird Reports for the period 2003-2008. Records supplied by BRERC include: counts of 59 birds at Avonmouth Pools since 2000 (with records of up to 90 birds at this site prior to 2000); and a count of 34 birds at the Disused Reservoir Pools in December 2000.

### 3.3.3 Lapwing

Lapwing (*Vanellus vanellus*) has been recorded throughout the study area, with desk study records for this species at a variety of estuarine and inland sites. The distributions and peak counts of lapwing are presented on Figure 16, and described in further detail below.



## Severnside

The most recent WeBS data covering the Severnside estuarine area (and including Northwick Warth which lies outwith the study area) identify a five-year mean peak count of 354 lapwings (2003/04-2007/08). The results of the 2006/07 Severnside surveys include a count of 26 birds from fields adjacent to the Severn Bridge (see Figure 16). A single bird was recorded from the area of saltmarsh to the south of Severn Beach during the 2001/02 Severnside bird surveys. Furthermore, information supplied by BRERC includes a count of 110 birds from Severn Beach in November 2001.

A number of inland sites have also been found to be used by lapwing. In particular, a count of 625 birds was recorded from fields to the east of the M49 during the winter 2008/09 Severnside surveys. Smaller numbers of birds (fewer than 50) have also previously been identified at: Marsh Common; Brook Farm; the Red Rhyne area and Crook's Marsh (see Figure 16).

## Avonmouth

The most recent WeBS count data for Avonmouth do not include lapwing; however, a peak count of 570 birds was recorded at Chittingen Warth Central during the 2001/02 Severnside bird surveys. In addition, peak counts of 630 and 200 birds were recorded at Hole's Mouth and the area of intertidal habitat to the north in winter 2006/07 (during bird surveys associated with Bristol Port Company's Deep Sea Container Terminal proposals). No further desk study records involving substantial numbers of birds have been identified at estuarine sites within the Avonmouth area.

Records of lapwing at inland sites comprise: 318 birds in the vicinity of the St Modwen's Development site (January 2008); 200 birds at Merebank (February and March 2006); a peak mean WeBS count of 54 birds at Avonmouth Sewage Works (2003/04-2007/08); historic counts of up to 200 birds at Avonmouth Pools (the 1980s and 1990s); 36 birds at Hallen Marsh (March 2008); as well as smaller numbers of birds (generally fewer than five) at a variety of other sites (see Figure 16).

### 3.4 Qualifying assemblage species: Nationally important populations

#### 3.4.1 Grey heron

The desk study findings are indicative of relatively small numbers of grey heron (*Ardea cinerea*) being present throughout the study area. The most recent WeBS data for Severnside (i.e. 2003/04-2007/08) identify a mean peak count of seven birds (with comparable count data presented in the Avon Bird Reports for the corresponding period). In addition to these count data, there are existing records of small numbers of grey heron (usually no more than two birds) present at sites throughout the study area. Historic counts of up to 43 birds (May and July 2008) have also previously been



recorded during the spring and autumn passage periods at Avonmouth Sewage Works.

### 3.4.2 Little egret

Little Egret (*Egretta garzetta*) is present within the Severn Estuary throughout the year, with peak counts occurring in late-summer/autumn.

A review of the most recent WeBS data for Severnside (i.e. 2003/04-2007/08), as well as the corresponding Avon Bird Reports indicates that peak counts of up to six birds have been recorded in recent years; however, no further site-specific information regarding their distributions has been identified from any of the desk-based sources reviewed for this study.

At Avonmouth, the desk study findings indicate that single birds have previously been recorded at Disused Reservoir Pools in January 2002, and Avonmouth Sewage Works and its surroundings. No further information regarding the abundance and distribution of this species in the Avonmouth area has been identified from any of the desk-based sources reviewed for this study.

### 3.4.3 Mute swan

Mute swan (*Cygnus olor*) is resident throughout the year within the Severn Estuary. A review of all relevant desk study sources indicates that mute swan has been recorded as a wintering species at a variety of sites in the study area in recent years. However, in all cases, the number of swans recorded does not exceed 10 birds. Based upon the information supplied by BRERC, the desk study has identified a peak count of six birds at Orchard Pools in May 2001.

### 3.4.4 Golden plover

Golden plover (*Pluvialis apricaria*) is present within the Severn Estuary as an over-wintering species, with peak counts occurring during the autumn period. A review of all relevant desk study sources indicates that peak counts of up to 38 birds (Avon Bird Club, 2005) have been recorded in the Severnside area since 2003. No further (site-specific) information pertaining to this species' abundance and distribution within the study area has been identified from any of the desk-based sources reviewed as part of this study.

### 3.4.5 Snipe

Snipe (*Gallinago gallinago*) has been recorded throughout the study area, with desk study records for this species at a variety of estuarine and freshwater sites. However, owing to this species' cryptic nature, it is likely that the desk-based records of snipe are under-representative of baseline conditions in relation to this species. The distributions and peak counts of snipe throughout the study area are presented on Figure 17, and described in further detail below.



## Sevenside

The most recent WeBS data covering the Sevenside estuarine area (and including Northwick Warth which lies outwith the study area) identify a five-year mean peak count of 14 birds (2003/04-2007/08). The Avon Bird Report count data for Sevenside are broadly comparable with this; however, peak monthly counts of up to 48 birds have also been reported (albeit that site-specific locations of these birds were not identified).

Snipe has not been recorded at any of estuarine sites during the Sevenside bird surveys (although this is likely to be an artefact of this species' cryptic nature, rather than an absence of birds); however, a count of up to 53 was recorded from Dyer's Common during winter 2008/09 (see Figure 17). In addition, a single bird was also recorded at Orchard Pools during the same surveys.

## Avonmouth

This species had not been recorded during the most recent WeBS counts of Avonmouth's estuarine sites. However, counts of up to eight birds have been recorded from Chittening Warth and Seabank Power Station during the Sevenside bird surveys. In addition, there are existing records of small numbers of birds (no more than ten individuals) being present at the following inland sites: Avonmouth Pools; land to the south of Avonmouth Sewage Works; Merebank; Pools at Brook Farm; and Salt Rhyne Balancing Pool (see Figure 17). A small number of records involving single birds recorded at a small number of sites within the study area have also been identified. However, due to the small number of birds/sites, these have not been mapped.

### 3.4.6 Black-tailed godwit

Black-tailed godwit (*Limosa limosa islandica*) is present within the Severn Estuary as an over-wintering species and passage migrant, with peak counts occurring during the autumn period. A review of all relevant desk study sources indicates that peak counts of up to 85 birds (Avon Bird Club, 2006) have been recorded in the Sevenside area since 2003. The only site-specific wintering records of this species comprise a count of 50 birds recorded at Severn Beach (December 2004) and single birds at the area of saltmarsh to the south of Severn Beach in February 2006, and an area of inter-tidal habitat between Stupp Pill and Hole's Mouth during the 2007 autumn passage period.

### 3.4.7 Bar-tailed godwit

Bar-tailed godwit (*Limosa lapponica*) is present within the Severn Estuary as passage migrant. A review of all relevant desk study sources indicates that peak counts of up to 550 birds (Avon Bird Club, 2008) have been recorded in the Sevenside area since 2003. This species was not recorded during the Sevenside bird surveys (since these did not take place during the peak migration periods). However, information supplied by BRERC includes the following existing records for this species: counts of between 25 and 223



birds at Salmon Pool (late-April/May 2000); 18 birds at Chittening Warth (April 2000); seven birds at Red Ledge (September 1999) and four birds at New Pill Gout (January 2001) (see Figure 18).

### 3.4.8 Knot

Knot (*Calidris canutus*) is present within the Severn Estuary as an over-wintering species and passage migrant, with peak counts occurring in autumn. A review of all relevant desk study sources indicates that peak counts of up to 170 (Avon Bird Club, 2005) birds have been recorded in the Severnside area since 2003. In addition, the following existing records of this species have been identified within the study area (Figure 19): 30 birds at Salmon Pool (May 2000); up to two birds at Chittening Warth (April 2000 and December 2001); and single birds at Severn Beach (December 2004 and February 2006) and Hole's Mouth (May 2001).

### 3.4.9 Turnstone

Turnstone (*Arenaria interpres*) has been recorded exclusively at estuarine sites throughout the study area. The distributions and peak counts of turnstone are presented on Figure 20, and described in further detail below.

#### Severnside

The most recent WeBS data covering the Severnside estuarine area (and including Northwick Warth which lies outwith the study area) identify a five-year mean peak count of 146 birds (2003/04-2007/08). During the Severnside bird surveys, peak winter counts of between five and 66 birds were recorded at Severn Beach and the adjacent area of saltmarsh to the south (see Figure 20). In particular, Severn Beach was identified as supporting relatively substantial concentrations of turnstone during the 2006/07 winter period. In addition, peak winter counts of approximately 50 birds have previously been recorded at New Pill Gout (see Figure 20). No other records of this species have been identified from the desk-based sources reviewed as part of this study.

#### Avonmouth

The 2008/09 WeBS data for Avonmouth's estuarine areas include a winter mean peak count of 14 birds, and an autumn mean peak count of 51 birds (however, count data from other desk-based sources appear to indicate this species may have been under-recorded during the WeBS surveys). The Severnside bird surveys have previously recorded peak winter counts of up to 134 birds at Chittening Warth and Holes Mouth. Furthermore, a count of 75 birds was also recorded at Chittening Warth (2005-2007), during bird surveys associated with Bristol City Council's proposed wind energy development (the exact location of this record was not specified and, therefore, it has not been mapped). No other records of this species have been identified from the desk-based sources reviewed as part of this study.





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### 3.4.10 Water rail

Water rail (*Rallus aquaticus*) has been recorded throughout the study area in small numbers, with desk study records for this species at a variety of estuarine and freshwater sites. A review of all relevant desk study sources indicates that peak counts of at least six birds (Avon Bird Club, 2004) have been recorded at locations through the study area since 2003. The site specific desk study records for this species are sporadic in nature and only involve single birds at a small number of sites (therefore these have not been mapped). Owing to this species cryptic nature, the desk-based records are likely to be under-representative of baseline conditions.



## 4 Summary of findings

The following table provides a summary of the main findings for each of the species described in Section 3.

	Species	Sevenside	Avonmouth
<b>Qualifying species: Annex I &amp; migratory birds</b>	Bewick's swan	The only record of this species relates to two birds which were present at Severn Beach in December 2004.	The desk study has not identified any records of Bewick's swan within the Avonmouth area in recent years.
	European white-fronted goose	The only recent records of this species relate to small flocks of up to 17 birds which were recorded at Severn Beach on a sporadic basis between 2003 & 2006.	The desk study has not identified any records of this species within the Avonmouth area in recent years.
	Shelduck	The areas of saltmarsh have been found to support up to 44 birds in recent years, with smaller numbers (up to two birds) recorded at a small number of inland sites.	Peak winter counts of up to 44 birds have been recorded from the areas of saltmarsh and inter-tidal habitat in recent years, with smaller numbers (up to six birds) recorded at a small number of inland sites.  In addition, peak counts of up to 29 shelducks have been recorded from inter-tidal habitats within the southern half of the study area during the 2007 autumn passage period.



	Species	Sevenside	Avonmouth
	Gadwall	Peak counts of up to 21 birds have previously been recorded at Orchard Pools, with smaller numbers in neighbouring fields, Crook's Marsh and a number of estuarine sites.	Counts of up to 62 birds have previously been recorded at a number of estuarine sites (particularly, the saltmarsh 'pills'), as well as Avonmouth Pools and other inland sites.  During 2008 spring migration bird surveys, peak counts of 18 birds have previously been recorded within the southern half of the study area.
	Redshank	Desk study records relate exclusively to estuarine sites, with counts of up to 200 birds at New Pill Gout and nearby areas of saltmarsh.	Desk study records relate exclusively to estuarine sites, with counts of up to 170 birds at Hole's Mouth and inter-tidal habitat to the south of the study area, as well as smaller concentrations at Chittening Warth.
	Dunlin	Counts of between 100 and 1100 birds have previously been recorded at Severn Beach and Chittening Warth North on a regular basis. These were identified as roost sites for this species during the Sevenside bird surveys in 2001/02 and/or 2006/07	Peak winter counts of between 310 and 1900 birds have been recorded at Chittening Warth and the area of inter-tidal habitat in the southern half of the study area. Smaller flocks (up to 30 birds) have also been recorded at Hole's Mouth on occasions.
<b>Qualifying assemblage species: Original SPA citation</b>	Wigeon	No more than six birds have been recorded at any location during the Sevenside bird surveys; however BRERC data and WeBS counts indicate that this survey information for estuarine sites is likely to be an under-estimate.	No more than 22 birds have been recorded at any site in the Avonmouth area, which could represent an under-estimate of this species abundance and distribution.



	<b>Species</b>	<b>Sevenside</b>	<b>Avonmouth</b>
	Teal	At estuarine sites, counts of up to 75 birds have previously been recorded, with New Pill Gout identified as supporting concentrations of (roosting) birds. Low numbers have also been recorded at several inland sites.	The largest concentrations of teal were associated with Hole's Mouth with peak counts of 140 birds previously recorded. Stupp Pill and Mitchell's Salt Rhyne have also been found to support peak counts of between 19 and 70 birds. Furthermore, counts of up to 200 birds have also previously been recorded at a number of inland sites.
	Pintail	The most recent WeBS data covering the Sevenside estuarine area (i.e. 2003/04-2007/08) indicate a low abundance of pintail within this part of the Severn Estuary, with a peak count of only three birds in January 2005. These data are consistent with the finding of other desk study sources.	Low numbers of pintail (fewer than 10 birds) have been reported from a small number of estuarine and inland sites on a sporadic basis.
	Pochard	Virtually no records of this species have been identified in the Sevenside area.	Historic desk study data includes counts of up to 103 pochard between the late-1980s and early 2000s at Avonmouth Pools; however, more recent comparable records have not been identified.



	Species	Sevenside	Avonmouth
	Tufted duck	Low numbers of birds have been identified from all desk stud sources, with a peak counts of up to 13 birds recorded at Orchard pools and Crook's Marsh.	Avonmouth Pools have regularly supported aggregations of up to 68 tufted ducks since the mid-1980s, with numbers appearing to have increased slightly at this site in recent years. Only small numbers of birds (less than five) have been identified from other sites at Avonmouth.
	Ringed plover	Peak numbers of ringed plover occur during the passage periods. WeBS data and Avon Bird Reports indicate that in excess of 175 birds have previously been recorded at Sevenside (and its wider surroundings). The Sevenside surveys are likely to have under-recorded plover numbers, since they did not coincide with the peak passage periods.	Smaller numbers of plovers have been recorded on passage during WeBS surveys at Avonmouth (up to 26 birds). These count data, as well as the absence of this species from the Sevenside surveys are considered to potentially represent an under-estimate of bird abundance in the area.  Breeding attempts involving nine pairs of ringed plover have taken place at Avonmouth Docks in recent years.
	Grey plover	The desk study includes peak winter counts of between 16 and 38 birds at estuarine sites between 2003 and 2008 (suggesting that the corresponding WeBS data (9 birds) may be an under-estimate of grey plover numbers).	A record of single bird at Hole's Mouth during winter 2007/08 has been identified.



	<b>Species</b>	<b>Sevenside</b>	<b>Avonmouth</b>
	Curlew	Flocks of up to 104 birds have been recorded at Severn Beach and the adjacent area of saltmarsh to the south, as well as Stupp Pill. Flocks of up to 58 curlew have also been recorded at a number of inland sites.	Peak winter counts of between 47 and 120 birds have been recorded within the central section of Chittening Warth (with roost sites for this species identified in this area). Smaller numbers of birds have also been identified at Chittening Warth South, the inter-tidal habitats in the southern half of the study area (including Holes Mouth) and Hallen Marsh.
	Whimbrel	Peak numbers of whimbrel occur during the passage periods. The Avon Bird Reports indicate that up to 120 birds have previously been recorded at Sevenside (and its wider surroundings) since 2003. The findings of the Sevenside surveys are likely to have under-recorded whimbrel numbers, since they did not coincide with the peak passage periods.	Smaller numbers of whimbrel have been recorded on passage during WeBS surveys at Avonmouth (up to 2 birds). These count data, as well as the absence of this species from the Sevenside surveys are considered to potentially represent an under-estimate of bird abundance in the area.
	Spotted redshank	WeBS data indicate a peak count of up to two birds has been recorded in recent years	WeBS data and the findings of the Sevenside bird surveys indicate a peak count of up to two birds has been recorded in recent years



	Species	Sevenside	Avonmouth
<b>Qualifying assemblage species: 1995 amendment</b>	Mallard	Counts of up to 100 birds have previously been recorded at Severn Beach and Chittening Warth north. In addition, counts of up to 40 mallard have also been recorded at a number of inland sites.	Counts of up to 110 birds have previously been recorded on a regular basis at Chittening Warth and the inter-tidal habitats in the southern half of the study area (including Hole's Mouth). Up to 35 birds have previously been recorded at a number of inland sites.  In addition, autumn passage counts of up to 140 birds have previously been recorded at the inter-tidal habitats in the southern half of the study area during surveys in 2007.
	Shoveler	The only desk study records for this species relate to small numbers of birds (no more than six individuals) at a limited number of sites.	Concentrations of shoveler (up to 90 birds) have previously been recorded at Holes Mouth, Avonmouth Sewage Works, Avonmouth Pools and Disused Reservoir Pools.
	Lapwing	The largest count of lapwing identified during the desk study relates to up 625 birds from the fields to the east of the M49 (winter 2008/09). Smaller numbers of birds (less than 110) have also been recorded from a range of other sites.	Peak counts of up to 630 birds have been recorded at Chittening Warth Central and the inter-tidal habitats between Stupp Pill and Hole's Mouth. Counts of up to 318 birds have also previously been recorded from a number of inland sites.
<b>Qualifying assemblage species:</b>	Grey heron	There are existing records of small numbers of grey heron (usually no more than two birds) present at sites throughout the study area.	There are existing records of small numbers of grey heron (usually no more than two birds) present at sites throughout the study area.



	<b>Species</b>	<b>Sevenside</b>	<b>Avonmouth</b>
<b>Nationally important populations</b>	Little egret	Peak counts of up to six birds have been recorded in recent years; however, no further site-specific information regarding their distributions has been identified from any of the desk-based sources reviewed for this study.	The desk study findings indicate that small numbers of little egrets (up to two birds) have previously been recorded at Avonmouth Sewage Works and its surroundings
	Mute swan	Flocks of up to 10 birds have previously been recorded at a small number of sites, most frequently at Orchard Pools.	Flocks of up to 10 birds have previously been recorded at a small number of sites, most frequently at Avonmouth Sewage Works.
	Golden plover	A review of all relevant desk study sources indicates that peak counts of up to 38 birds (Avon Bird Club, 2005) have been recorded in the Sevenside area since 2003. No further (site-specific) information pertaining to this species' abundance and distribution within the study area has been identified from any of the desk-based sources reviewed as part of this study.	No site-specific information pertaining to this species' abundance and distribution within the study area has been identified from any of the desk-based sources reviewed as part of this study.





	<b>Species</b>	<b>Sevenside</b>	<b>Avonmouth</b>
	Snipe	This species is likely to be under-recorded within the study area, with the only site-specific record comprising a count of up to 53 birds from Dyer's Common during winter 2008/09.	This species is likely to be under-recorded within the study area. There are existing records of small numbers of birds (no more than ten individuals) being present at the following inland sites: Chittingen Warth; Seabank Power Station; Avonmouth Pools; land to the south of Avonmouth Sewage Works; Merebank; Pools at Brook Farm; and Salt Rhyne Balancing Pool.
	Black-tailed godwit	A review of all relevant desk study sources indicates that peak counts of up to 85 birds (Avon Bird Club, 2006) have been recorded in the Sevenside area since 2003. The only site-specific wintering records of this species comprise a count of 50 birds recorded at Severn Beach (December 2004) and a single bird at the area of saltmarsh to the south of Severn Beach in February 2006.	A desk study record of a single bird at an area of inter-tidal habitat between Stupp Pill and Hole's Mouth in autumn 2007 has been identified.
	Bar-tailed godwit	Peak numbers of bar-tailed godwit occur during the passage periods and, therefore (to some extent) this species is likely to be under-recorded. Counts of up to 223 birds have previously been recorded at Salmon Pools, with smaller numbers recorded at a limited number of other estuarine sites.	No site-specific information pertaining to this species' abundance and distribution within the study area has been identified from any of the desk-based sources reviewed as part of this study.



	<b>Species</b>	<b>Sevenside</b>	<b>Avonmouth</b>
	Knot	Peak counts of up to 170 birds (Avon Bird Club, 2005) have been recorded in the Sevenside area since 2003. Site-specific records of up to 30 birds have also been identified for a limited number of other estuarine sites.	No site-specific information pertaining to this species' abundance and distribution within the study area has been identified from any of the desk-based sources reviewed as part of this study.
	Turnstone	Severn Beach and its adjacent area of saltmarsh have previously been found to support up to 66 birds, with similar numbers recorded at New Pill Gout.	The Sevenside bird surveys have previously recorded peak winter counts of up to 200 birds at Chittening Warth and Holes Mouth. Furthermore, a count of 75 birds was also recorded at Chittening Warth (2005-2007), during bird surveys associated with Bristol City Council's proposed wind energy development.
	Water rail	A review of all relevant desk study sources indicates that peak counts of at least six birds (Avon Bird Club, 2004) have been recorded at locations through the study area since 2003. However, owing to this species cryptic nature, the desk-based records are likely to be under-representative of baseline conditions.	A review of all relevant desk study sources indicates that peak counts of at least six birds (Avon Bird Club, 2004) have been recorded at locations through the study area since 2003. However, owing to this species cryptic nature, the desk-based records are likely to be under-representative of baseline conditions.