EDF Energy

Sizewell C New Nuclear Power Station: Terrestrial and Freshwater Ecology, and Ornithology

DRAFT Black Redstart Breeding Bird Report 2011

June 2012

AMEC Environment & Infrastructure UK Limited

EDF Energy

Sizewell C New Nuclear Power Station: Terrestrial and Freshwater Ecology, and Ornithology

DRAFT Black Redstart Breeding Bird Report 2011

June 2012

AMEC Environment & Infrastructure UK Limited

Report for

EDF Energy

Main Contributors

Mike Raven

[redacted]

Lynn Whitfield

Approved by

[redacted]

Alan Kirby

AMEC Environment & Infrastructure UK Limited

17 Angel Gate, City Road, London EC1V 2SH,
United Kingdom
Tel +44 (0) 207 843 1400
Fax +44 (0) 207 843 1410

Doc Reg No. 28130-CR333

r:\projects\28130 sizewell ecology studies\reports\sizewell main site\birds\black redstart 2011\black redstart survey report 2011 - draft.doc

Certificate No. FS 13881 Certificate No. EMS 69090

Disclaimer

This report has been prepared in a working draft form and has not been finalised or formally reviewed. As such it should be taken as an indication only of the material and conclusions that will form the final report. Any calculations or findings presented here may be changed or altered and should not be taken to reflect AMEC's opinions or conclusions.

Copyright and Non-Disclosure Notice

Third Party Disclaimer

Document Revisions

No.	Details	Date
1	Draft Report	June 2012

Contents

June 2012
Doc Reg No. 28130-CR333

1. Introduction

1.1 Purpose and of this Report

AMEC Environment & Infrastructure UK Ltd (AMEC) was commissioned by EDF Energy to undertake a breeding bird survey to provide information on the type and level of use by black redstart (*Phoenicurus ochruros*) around the Sizewell Power Stations (Sizewell A and B) in Suffolk. The primary purpose of this work was to gather information that may be used to identify any potential impacts on the breeding population of black redstart due to the development of a new nuclear facility at Sizewell (referred to in this report as Sizewell C). This report details the findings from surveys undertaken in spring and summer 2011.

1.2 Scope and Survey Area Description

The aim of the surveys was to identify breeding pairs of black redstart within the built area of the Sizewell Power Stations (Sizewell A and B). The surveys would also identify any potential foraging areas for black redstart within the power stations and adjacent areas of land.

The survey area referred to in this report comprises the built area of Sizewell A and B Power Stations and the areas of open ground immediately outside the fenced area of the complex, to the north and east of the fenced area.

To the east of the power stations (on the seaward side) is short grassland and scrub which leads down to sand dunes, vegetated shingle and ultimately shingle beach. To the north of Sizewell B is an area of grassland and scrub, and to the west, wet scrub, woodland and wet unimproved grassland (bordering on the Sizewell Marshes SSSI). The survey area includes the coastal habitat adjacent to the east of the power stations and the grassland adjacent to the north. The wet scrub and woodland to the west of the power stations does not provide any suitable foraging areas for black redstarts. **Figure 2.1** shows the survey area.

The build area of the Sizewell A and B complex primarily comprises of buildings and hard standing areas. These hard standing areas are often used for the temporary storage of materials and machinery, and both these areas and the buildings provide potential nest sites for black redstart. This area also includes small areas and strips of short grassland and amenity plantings of scrub and trees. All of these areas provide potential foraging sites for black redstart.

1.3 Species Background

The black redstart is a rare breeder, passage migrant and winter visitor in Britain. In Europe, the species is a common breeding bird, with an estimated population of between four and eight million pairs (BirdLife International, 2004). In Britain, up until the 1940s, the black redstart was a very sporadic breeder in the country. During WW2, black redstarts began to nest in bombed-out urban sites in London after which a regular breeding population was established here and in other urban areas in England. By 1977, the population in England totalled 104 territory-holding males, of which 22 were within 8km of the centre of London and 20 in Suffolk

(Brown & Grice, 2005). Of these, 61 pairs were proven to breed (of which 10 pairs were in Suffolk). Today, the species is still predominantly associated with urban area, but also breeds in other large built structures such as power stations, gas works and dock yards (Brown & Grice, 2005). Numbers have varied considerably between years, with generally 60-110 territory-holding males reported in England in the 1990s. In 2008, 54 territory-holding males were reported in England, although this was considered to be an underestimate of the true population due to the low reporting rates in London and other urban areas that are rarely visited by birdwatchers (Holling, 2010).

During winter, some black redstarts remain within their breeding home ranges although most urban areas are deserted (Brown & Grice, 2005). During the Winter Bird Atlas period of 1981-84 much of the UK winter population of black redstart (estimated at 500 birds) was concentrated along south and southwest coasts of England, with few recorded on the east coast (Lack, 1986). Many of the passage migrant and wintering birds are likely to originate from western Continental Europe, with some of our home-bred birds known to over-winter in southern Europe (Brown & Grice, 2005).

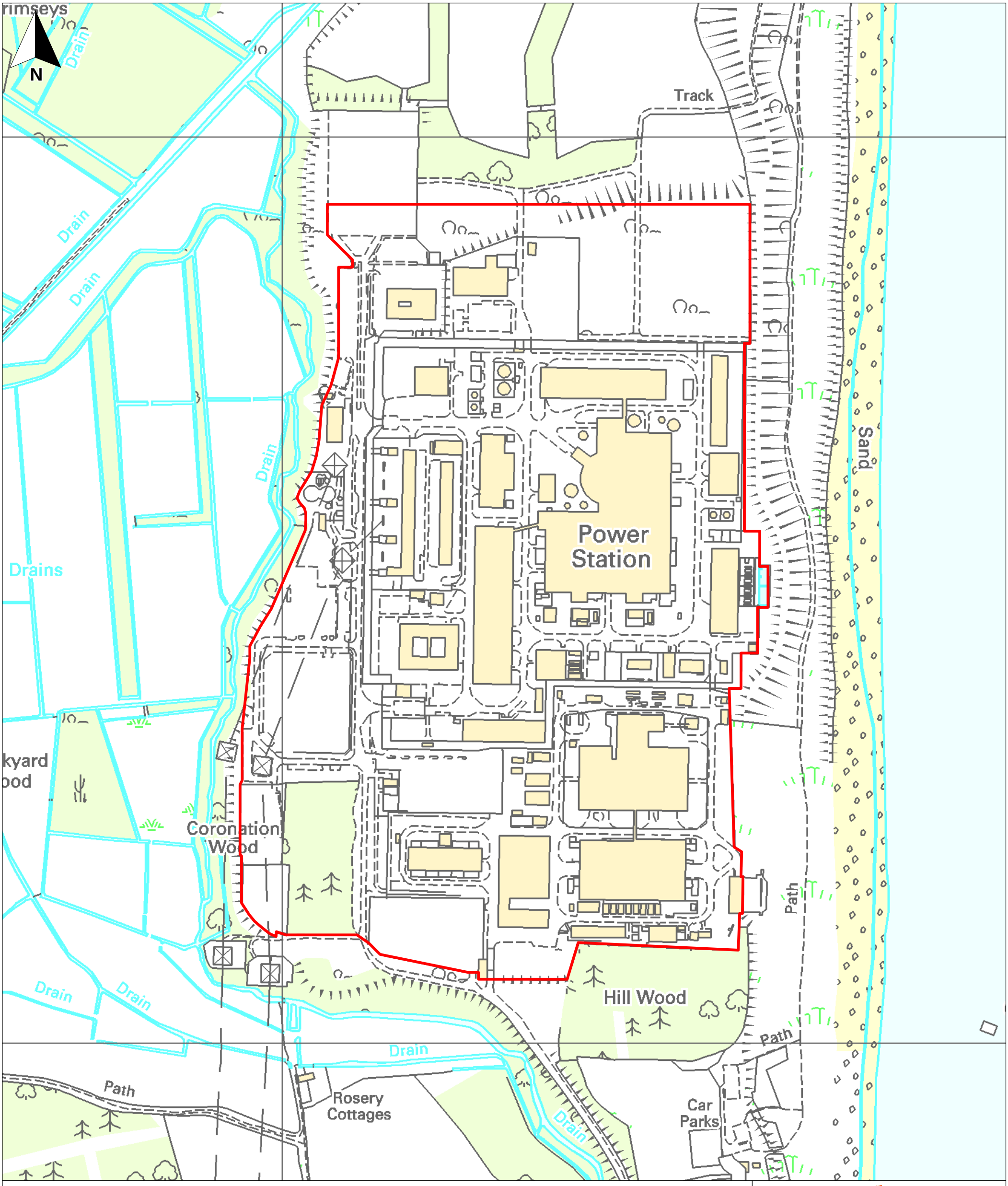
In Suffolk, the black redstart is an uncommon summer visitor and passage migrant, with occasional birds over-wintering (Piotrowski, 2003). Black redstart first bred in Suffolk in 1938 after which a small but regular breeding population established itself in the county. Since the 1940s, the breeding population in Suffolk has varied greatly in numbers between years, with high numbers recorded during the 1970s and 1980s. Up to 40 territory-holding males were present in 1985-86, of which many were found to be first-summer birds, whose nesting attempts were often unsuccessful (Piotrowski, 2003). Black redstarts have bred at various locations within Suffolk, but particularly in the docklands of Ipswich and Felixstowe, in Lowestoft, Bury St Edmunds and at the Sizewell nuclear power stations. The population remained at a high level in the county during the late 1980s and early 1990s (c.20-40 territories), centred in Felixstowe, Ipswich and Lowestoft after which numbers declined rapidly to only five in 1998 (Piotrowski, 2003). In 2010, 4-5 pairs bred in Suffolk at: Bury St Edmunds (1), Sizewell (2+), Ipswich (1) and Lowestoft (1) (Mason [ed], 2011). Black redstarts first bred at Sizewell in 1963 (Brown & Grice) and 1-2 pairs have bred at the site in most years since the 1990s. One or two birds also over-winter at the site in most years (pers. comm. Tony Howe, Magnox employee at Sizewell A).

2. Methodology

A breeding bird survey was undertaken within the survey area during the 2011 breeding season for black redstart (April-July). Four visits were made to the Sizewell A and B complexes during which areas of suitable nesting and foraging habitat was searched and any observations of black redstarts were recorded onto detailed maps of the area. The sex and approximate age (juvenile, adult female, first winter/summer adult male or full-plumaged adult male)[1] of the individuals was recorded together with details of their activity, such as singing, feeding and returning to nest sites. Tony Howe (Magnox employee at Sizewell A) has been monitoring and ringing black redstarts at Sizewell A for more than ten years. During this period he has located many black redstart nest sites and has built-up a detailed knowledge of the use of the area by this species. During the visits to Sizewell A, Tony Howe escorted the surveyor around the site. Visits were undertaken on 15 April, 11 May, 16 June and 5 July 2011. Any observations of black redstarts obtained subsequent to the survey from August to December 2011 have also been included in this report.

[1] The plumage of male black redstarts in their first winter and following summer is very similar to that of the female which remains largely unchanged in appearance from first winter onwards. In the third year, the male birds acquire their full adult male plumage.

June 2012
Doc Reg No. 28130-CR333



Key:

Survey area

0 m 250 m

Scale 1:4,000 @ A3

EDF

Sizewell Black Redstart Survey Report

Figure 2.1
Study Area

January 2012
28130-A331.wor tugwc

amec

3. Results

A detailed account of the observations of black redstarts obtained during each visit is provided below.

Visit 1: April 15
Sizewell A: a male bird was heard singing in the south-east corner of Sizewell A.

Sizewell B: A pair of birds was seen foraging along the fence-line on short-grass along the boundary between the proposed new build area and Sizewell B. A male bird was also heard singing nearby.

Visit 2: May 11
Sizewell A: a female and young adult male (a first summer male) were seen in the south and south-east of Sizewell A. The male bird was heard singing.

Sizewell B: a female bird and first summer male bird were seen. The male was heard singing from a number of locations within the Sizewell B complex. The male was also seen carrying nesting material to a potential nest site within Sizewell B.

Visit 3: June 16
Sizewell A: a first summer male was heard singing and seen carrying food to a potential unidentified nest site in the south-east of Sizewell A. A female bird was also seen with the immature male bird; a different male (a full adult plumaged bird) was also seen on the side of a building in the same area.

Sizewell B: a pair of birds was seen carrying caterpillars to a nest site within Sizewell B. The nest was hidden from view, located behind a vent, 6-8m up on the side of a building. These birds were also seen feeding on short grass along the boundary between Sizewell B and the proposed new build area, and flying around buildings and construction equipment in the area.

Visit 4: July 5
Sizewell A: adult birds were heard alarm calling and at least two recently fledged young were seen on the south-east boundary of Sizewell A. An adult bird was also seen feeding inside the little tern fence which is located on the beach adjacent to Sizewell A and B.

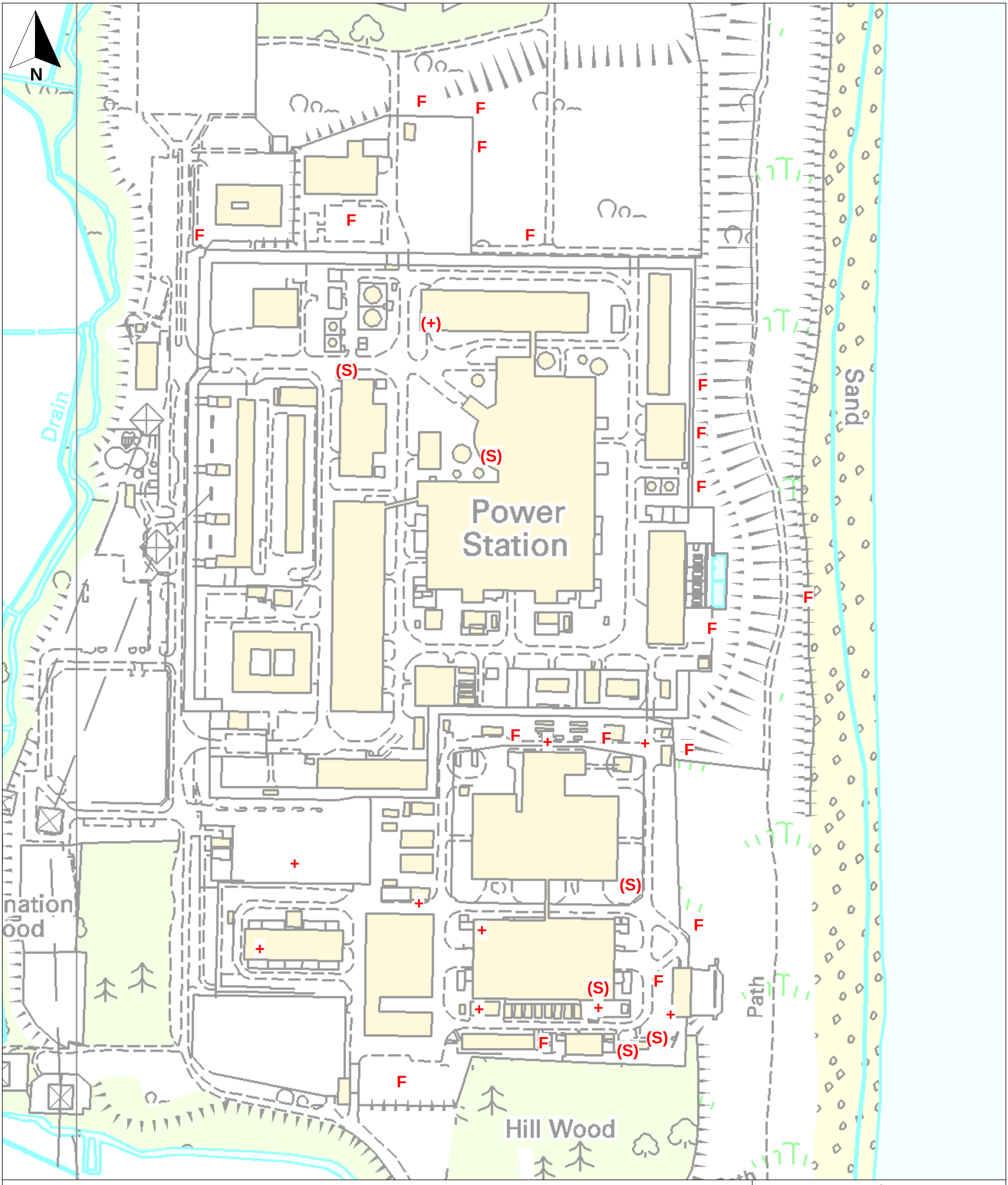
Sizewell B: an adult female bird was seen feeding at least two recently fledged young on the north-east boundary of Sizewell B. No singing males were heard and there was no sign of activity at the nest site identified on June 16.

Subsequent Sightings in 2011
Following the breeding bird survey, black redstarts were seen on a further five dates during other ornithological survey visits to Sizewell in 2011, as follows:

- 12 August: a full-plumaged adult male was seen on the eastern boundary of Sizewell A;

- 31 August: two juvenile birds were seen feeding around the scrub adjacent to the eastern boundary of Sizewell A;
- 9 September: a female or first winter male bird was seen foraging within the fenced off area on Sizewell beach;
- 26 September: a male bird was heard singing from buildings on the eastern edge of Sizewell A, and
- 23 November: a male bird was heard singing from buildings on the eastern edge of Sizewell A.

Figure 3.1 shows the location of singing male birds, areas where foraging was observed and nest sites located in 2011, and in previous years within Sizewell A by Tony Howe.



Key:

F	Foraging area
(S)	Singing male
+	pre-2011 nest site
(+)	2011 nest site

0 m 200 m

Scale 1:3,000 @ A3

EDF

Sizewell Black Redstart Survey Report

Figure 3.1
Survey Results

January 2012
28130-A332.wor tugwc

amec

4. Discussion

Results from the surveys indicate that two pairs of black redstart bred within the Sizewell Power Station complex in 2011, one each in Sizewell A and B. An additional male bird (in full adult-plumage) was also present in Sizewell A. Juvenile birds seen on the boundary of Sizewell A on August 31 indicate that a second brood may have been raised there. Black redstarts may start to produce a second brood whilst the first is still dependant on their parents (Weggler, 2006). In 2010, two pairs were reported to have bred at Sizewell (Mason [ed], 2011), although up to four singing males were observed during AMEC survey work undertaken in the area that year.

During the survey visits, Tony Howe identified various sites where nesting had taken place within Sizewell A since 2001. Nest boxes had been erected for the species, although had only been used on one occasion. The nest locations generally change each year, with a great variety of sites used including buildings (including within buildings that are being actively used by humans), piles of equipment and the inside of pipes. Buildings are used as high vantage points from where male birds sing, primarily from April to July, although occasional birds sing during autumn and winter (Cramp, [ed], 1988).

Black redstarts are primarily an insectivorous species, and the diet comprises a wide range of invertebrates but also includes seeds and fruit. Birds will hunt on the ground and from perches and will also catch insects in the air (Cramp [ed], 1988). The foraging areas at Sizewell primarily consist of areas of short grass around the perimeter of the built complex, including within the proposed new build area. Black redstarts were also seen feeding in the dunes adjacent and to the east of Sizewell A. Birds were seen perched on fence-lines (primarily along the seaward boundary of Sizewell A and B and the boundary between Sizewell B and the new build area) from where insect prey was pounced upon. Around the perimeter of the built area there are numerous small strips of short grassland which are well exposed to sunlight. This grassland is plant-species rich and provides important habitat for insects, with the sandy soils also providing ideal habitat for the holes of solitary wasps and bees (all potential prey for black redstart). During the various surveys undertaken at Sizewell in 2010 and 2011, no black redstarts were observed more than 200m from the built area of the power stations. Cramp [ed] 1988 states that black redstarts typically forage up to 200m from the nest site. This indicates that the foraging resource for black redstarts breeding at Sizewell is likely to be within or adjacent to the power stations complex.

Black redstarts have bred at Sizewell since 1963, and since the decline of the county population in the 1990s, Sizewell has become one of the most reliable breeding sites in Suffolk for the species. Black redstarts will raise two and occasionally three broods within the breeding season, which generally extends from mid-April to August. Much of the population at Sizewell consists of summer visitors although 1-2 individuals regularly stay at the site throughout the winter (pers. comm. Tony Howe). Migrant birds arrive on the Suffolk coast in late March although territorial behaviour is generally not observed until April. Tony Howe noted that the majority of male black redstarts breeding at Sizewell were first year birds (yearlings). Weggler (2008) found that yearling male black redstarts were more likely to pair with yearling females, which successfully raised only half the number of chicks as full adult females.

Table 4.1 shows the number of pairs and territory-holding males of black redstart (not all males find a partner) recorded at Sizewell since 2000 (figures derived from the annual county bird

report, Suffolk Birds). It should be noted that much of the monitoring of this species within the Sizewell Power Station complex has been confined to Sizewell A, and that it is possible that pairs breeding in Sizewell B have not been recorded (pers. comm. Tony Howe).

Table 4.1 Breeding Black Redstart at Sizewell

Year	Number of pairs	Number of Additional Territorial Males
2000	2	1
2001	2-3	0
2002	3	0
2003	1+	0
2004	1	0
2005*	0	1
2006	1	0
2007	n/a	n/a
2008	1	0
2009	1	0
2010	2	1-2*

* Additional data derived from AMEC surveys undertaken in the Sizewell area in 2010

The data shown in Table 4.1 shows that in most years at least 1-2 pairs of black redstart breed at Sizewell. A study of black redstarts in the Czech Republic found that the mean territory size was 1.2 hectares although this varied from 1 to 3 hectares in urban environments (Schwarzova & Exnerova, 2004). The study found that the selection of territories was dependant on the presence of buildings which were very important in providing nest sites and sites for feeding and singing. Buildings and other song posts also frequently formed the boundary of a breeding territory. Other studies have found territory sizes ranging from 0.35-1.0 ha in France and 2.9 to 7.4 ha in Germany (Cramp [ed], 1988). The current built area of the Sizewell Power Stations covers approximately 30 hectares and therefore the breeding density at Sizewell is clearly much smaller than that of many urban and non-urban study sites in Continental Europe.

Two pairs of black redstart represent 4% of the estimated UK population of 50 pairs. The Sizewell site is therefore clearly of national importance to this species. The one or two birds that occasionally stay during the winter represent less than 1% of the estimated 500 birds present in the UK in winter (Lack, 1986). In Suffolk during winter, a handful of birds are present, usually at sites such as Lowestoft and Felixstowe and therefore on this basis, Sizewell is of regional importance to black redstart in winter.

5. Conclusion

Results from the surveys indicate that Sizewell supports a nationally important breeding population of black redstart that has remained relatively stable over a long period of time. The proposed development has the potential to have both negative and positive effects on the population. The construction and operation of Sizewell C could be beneficial to black redstart by providing additional nesting habitat within the built area of the new power station. However, there is also the potential for foraging areas used by birds primarily from Sizewell B to be lost due to the construction of Sizewell C.

June 2012
Doc Reg No. 28130-CR333

6. References

BirdLife International (2004). *Birds in Europe – Population estimates, trends and conservation status*. Cambridge, UK

Brown, A. & Grice, P. (2005). *Birds in England.* T & A D Poyser Ltd, London.

Cramp. S [ed] (1988). *Handbook of the Birds of Europe, the Middle East and North Africa: The Birds of the Western Palearctic Volume V Tyrant Flycatchers to Thrushes*. Oxford University Press, Oxford.

Holling, M. (2010). Rare Breeding Birds in the United Kingdom in 2008. Rare Breeding Birds Panel.

Lack, P. (1986). *The Atlas of Wintering Birds in Britain and Ireland*. T & A D Poyser Ltd, Stafford.

Mason, N. [ed] (2011). *Suffolk Birds 2010*. Suffolk Naturalists' Society.

Piotrowski, S. (2003). *The Birds of Suffolk*. A & C Black Publishers Ltd, London.

Schwarzova, L. & Exnerova, A. (2004). Territory size and habitat selection in subadult and adult males of Black Redstart (*Phoenicurus ochruros*) in an urban environment. *Ornis Fennica*. Vol. 81, no. 1, pp. 33-39. 2004.

Weggler, M. (2008). Age-related reproductive success in dichromatic male Black Redstarts Phoenicurus ochruros: Why are yearlings handicapped? *Ibis:* Volume 143, Issue 2, pages 264–272, April 2001.

Weggler, M. (2006). *Constraints on, and determinants of, the annual number of breeding attempts in the multi-brooded Black Redstart Phoenicurus ochruros*. University of Zurich, Zoological Institute, Department of Ecology, Winterthurerstr. 190, CH-8057 Zurich, Switzerland.